NOTE

SECTION 101 AND COMPUTER-IMPLEMENTED INVENTIONS

Robert D. Swanson*

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ABSTRACT

The law surrounding the patentability of computer-implemented inventions is extraordinarily unclear. Thankfully, the Federal Circuit has granted rehearing en banc to CLS Bank v. Alice to determine the test for computer-implemented inventions under § 101. This Note identifies three current approaches in Federal Circuit doctrine, and finds each lacking. In their place, this Note proposes and defends the data manipulation test, which would hold that a claim is not directed to an abstract idea if it contains a computer element such that: (1) the computer manipulates data, rather than merely being present, (2) the data being manipulated is inherent to the computer, and (3) the data manipulation is directed to one or more particular applications. As this Note argues, the data manipulation test is an easily administrable compromise test that the Federal Circuit, or the Supreme Court upon review, can adopt in CLS Bank.

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INTRODUCTION

The current case law on whether many computer-related inventions constitute patentable subject matter under § 101 of the Patent Act is extraordinarily unclear. In the past two years, the Supreme Court has twice taken § 101 cases, producing opinions that have generated serious controversy among the patent bar. As a result, the Federal Circuit has struggled to determine when computer-related claims pass § 101, with its post-Bilski case law being defined by a major circuit split over computer-implemented inventions.

With the Federal Circuit’s en banc review of CLS Bank on the horizon, this Note attempts to end this confusion. This Note does not engage in the debate over whether broad subject matter eligibility is preferable to the Supreme Court’s recent restrictions. Rather, this Note accepts the Court’s rulings and proposes an administrable test drawn from current precedent that the Federal Circuit can adopt in its upcoming CLS Bank en banc decision. I follow a

pragmatic approach, demonstrating how courts can apply the Supreme Court’s § 101 jurisprudence and existing Federal Circuit doctrine to focus on the real issue: the effect a computer element has on a claim’s patentability. As one Federal Circuit panel has already done, courts should examine the computer’s role in the invention.

In Part III, this Note proposes a test to guide that inquiry. To build to that point, I explore in Part I the recent case law on § 101. There, I identify three tests the Federal Circuit has employed, pinpointing useful methodology in each that the court can extend in CLS Bank. Part II discusses common approaches to abstract ideas in the literature, demonstrating why they would fail in practice. After introducing the data manipulation test for computer-implemented inventions in Part III, I explore the test’s boundaries through several real and hypothetical examples. This Note concludes by surveying a number of the test’s advantages and responding to conventional criticisms.

I. RECENT CASE LAW ON COMPUTER-IMPLEMENTED INVENTIONS

Section 101 of the Patent Act states that patentable subject matter encompasses “any new and useful process, machine, manufacture, or composition of matter.” Often, courts mention that this “include[s] anything under the sun that is made by man.” However, there are three common law exceptions to § 101: “laws of nature, physical phenomena, and abstract ideas.”

Courts typically invalidate computer-implemented inventions under the abstract idea exception. The Bilski decision is the most recent Supreme Court

7. It is worth noting that § 101 was itself a codification of common law. Peter S. Menell, Forty Years of Wandering in the Wilderness and No Closer to the Promised Land: Bilski’s Superficial Textualism and the Missed Opportunity to Return Patent Law to Its Technology Mooring, 63 STAN. L. REV. 1289, 1302-03 (2011). Moreover, the Supreme Court’s Bilski opinion erroneously treated § 101 as an area of statutory law rather than common law. Id. at 1301-02.
9. See, e.g., CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366 (Fed. Cir. 2011); Dealertrack, Inc. v. Huber, 674 F.3d 1315 (Fed. Cir. 2012); Fort Properties, Inc. v. Am. Master Lease LLC, 671 F.3d 1317 (Fed. Cir. 2012). Note, however, that the boundaries between the different exceptions have never been very well defined. No court or commentator has authoritatively distinguished between laws of nature and abstract ideas when it comes to computer-related claims. Earlier cases characterized algorithms—like mathematical relationships—as laws of nature. Courts now generally analyze computer-related inventions as abstract ideas; computing technology has advanced beyond merely implementing mathematical relationships that exist in nature, and has developed its own concepts. While the relationship between decimal and binary numbers may exist in nature,
A. Bilski v. Kappos

_Bilski v. Kappos_ came to the Supreme Court from an _en banc_ decision in the Federal Circuit. The _In re Bilski_ court held that the machine or transformation test, drawn from a trilogy of prior Supreme Court cases, is the sole patent eligibility test for process claims under § 101. Under the machine or transformation test, if a process (1) “is tied to a particular machine,” or (2) “transforms a particular article into a different state or thing,” the process is not abstract (or, for laws of nature, the process does not preempt the law).

Many in the patent bar viewed this decision in terms of the Federal Circuit’s relationship with the Supreme Court. The Supreme Court had long criticized the Federal Circuit for being too pro-patent, but the _In re Bilski_ opinion drew heavily from specific language in Supreme Court precedent to invalidate the patent.

The Supreme Court, however, disagreed with the Federal Circuit’s reasoning. To the surprise of many, the Supreme Court granted certiorari in _Bilski_ and affirmed under different analysis. Justice Kennedy’s majority opinion disapproved of the Federal Circuit’s use of the machine or transformation test, holding that while it “is a useful and important clue,” it “is not the sole test for deciding whether an invention is a patent-eligible ‘process.’” The Court refused to provide any further guidance, stating that it “need not define further what constitutes a patentable ‘process,’ beyond pointing to the definition of that term in § 100(b) and looking to the guideposts in _Benson_, _Flook_, and _Diehr._” In concluding, the Court emphasized that it “by no means foreclose[s] the Federal Circuit’s development of other limiting criteria that further the purposes of the Patent Act and are not inconsistent with its text.”

The Supreme Court thus did little more in _Bilski_ than disapprove of the machine or transformation test as the sole test for process claims and punt the

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12. _In re Bilski_, 545 F.3d at 954 (“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.”)


15. _Id._ at 3231.

16. _Id._
issue back to the Federal Circuit. The result was to only deepen the divisions already present in the Federal Circuit. Any judge that approved of the machine or transformation test could continue to apply it, so long as she considered “other limiting criteria.” Likewise, any judge that disliked the machine or transformation test could reject it as mostly inapplicable to “Information Age” inventions and consider any other criteria he preferred instead.¹⁷

Post-Bilski, this split is most manifest in cases involving computer-implemented inventions. Since Bilski, the Federal Circuit has arguably employed three principal approaches to computer-implemented inventions: (1) invalidating claims only when they are manifestly abstract, (2) upholding claims where the computer serves as a meaningful limit on the claim’s scope, and (3) focusing on whether the computer is integral to the claimed process.

B. The “Manifestly Abstract” Test

Under the manifestly abstract test, a claim survives a § 101 challenge “[u]nless the single most reasonable understanding is that a claim is directed to nothing more than a fundamental truth or disembodied concept, with no limitations in the claim attaching that idea to a specific application.”¹⁸ This version of the test was articulated in the now-vacated CLS Bank International v. Alice Corp. Pty. Ltd., but the test has its origins in Research Corp. Technologies v. Microsoft (“RCT”).¹⁹ In RCT, the court held that it “will not presume to define ‘abstract’ beyond the recognition that this disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter.”²⁰

Clearly, this test is extraordinarily broad—nearly any claim will have at least one limitation attaching the abstract idea to a specific application.²¹ If a

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¹⁷. See id. at 3227 (questioning the machine or transformation test’s applicability to Information Age inventions).
²⁰. Id. at 868.
²¹. Under previous, less restrictive law, patent drafters would often attempt to impart patent eligibility on computer-related claims by re-writing the claim so that it principally claims a computer. The Federal Circuit at one time essentially blessed this strategy en banc in In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994), abrogated by In re Bilski, 545 F.3d 943. The court held that installing new “programming creates a new machine, because a general-purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.” Alappat, 33 F.3d at 1545. This decision gave patent drafters free rein to write software process claims as system claims to the computer with the software installed. The Federal Circuit abrogated Alappat in In re Bilski, although the Supreme Court’s affirmation of Bilski on alternate reasoning has allowed one post-Bilski Federal Circuit panel to rely on it. See Ultracemical LLC v. Hulu LLC, 657 F.3d 1323, 1328-29 (Fed. Cir. 2011); see also CyberSource, 654 F.3d at 1375 (distinguishing Alappat). Especially after the Prometheus decision, which requires “unconventional” steps beyond the natural law (or algorithm, in this case), and which also
method or system has any use whatsoever, it will not be manifestly abstract. Only claims directed to the idea alone, such as Samuel Morse’s famous claim to electromagnetism, would fail this test.

Although a number of scholars have argued for a broad § 101 filter, such a test is no longer appropriate, as it is inconsistent with Supreme Court precedent. In both Bilski and Mayo Collaborative Services v. Prometheus Laboratories, Inc., the Supreme Court tightened § 101’s requirements, rejecting the idea that § 101 is merely a coarse eligibility filter.

Prometheus—a law of nature case and thus not directly applicable to abstract ideas doctrine—emphasized the Court’s Bilski decision, signaling its intention that § 101 restrict patentable subject matter. Two concepts from the Prometheus case are most likely to find their way into abstract ideas cases: (1) its step-by-step method of analyzing a claim, and (2) its focus on whether the invention adds any unconventional activity to the background principle.

Without going into unnecessary detail, the Prometheus decision somewhat revived a method of analyzing a claim that the Supreme Court introduced in the Parker v. Flook case and subsequently buried in Diamond v. Diehr. The Prometheus opinion, like in Flook, followed the process step by step, asking whether each step adds anything to the law of nature, which the court assumes is known. Instead of stopping at the end of the process, the Prometheus Court, like in Diehr, considers the claim as a whole, asking whether the ordered combination adds to the law of nature.

At first glance, the manifestly abstract test as articulated in CLS Bank arguably follows this approach. The test requires that at least one claim limitation direct the idea to a specific application, which is similar to going step by step through the claim and asking whether the step adds unconventional activity to the background principle. However, upon closer inspection, the manifestly abstract test is not nearly as restrictive as the methodology in Prometheus. In particular, having a specific application is vastly broader than adding unconventional activity to the background principle.

This distinction is plainly apparent in CLS Bank. The invention in CLS Bank is “a computerized trading platform for exchanging obligations in which a trusted third party settles obligations between a first and second party so as to eliminate ‘settlement risk.’” In other words, the patents claim a business method that uses an intermediary to reduce risk in certain financial transactions.

emphasizes the insignificant post-solution activity doctrine, Alappat is (or at least should be) a relic of the past. Prometheus, 132 S. Ct. at 1298.

25. Id. at 1297-98.
26. Id. at 1298 (“to consider the three steps as an ordered combination adds nothing to the laws of nature that is not already present when the steps are considered separately.”).
27. CLS Bank, 685 F.3d at 1343.
transactions—in essence, a two-sided escrow arrangement. Besides the two-sided escrow idea, the invention encompasses a general-purpose computer, which is used to exchange data and perform certain complex calculations.

Using the Prometheus methodology, the claims surely fail. The escrow idea is a background principle, and the computer activity is merely conventional data processing. The CLS Bank court, using the manifestly abstract test, concluded otherwise, holding that the claims “cover the practical application of a business concept in a specific way.”

Looking at each of the limitations, the majority noted a number of specific steps in the business method that “do not appear to preempt much in the way of innovation.” Therefore, under the manifestly abstract test, the CLS Bank claims were not manifestly abstract because they were directed to a specific application. In the end, despite using seemingly similar language to Prometheus, the manifestly abstract test circumvents Prometheus’ intent.

The Federal Circuit used a slightly modified version of the manifestly abstract test in the vacated Ultramercial, LLC v. Hulu, LLC decision. The claims in Ultramercial v. Hulu recited a process for showing a consumer on the Internet an advertisement in return for giving her access to a “media product.” Clearly, this process requires the Internet, as streaming video is not possible without it, but the real invention was not the ability to stream video—rather, the claims described a strategy of generating revenue from showing advertisements before giving access to the media product.

The Ultramercial court held that the claims constitute patentable subject matter because they “disclose a practical application” of “the mere idea that advertising can be used as a form of currency.” This “practical application test”—which appears in the CLS Bank version of the manifestly abstract test—is itself slightly controversial. However, the court stated later in the opinion

28. *Id.* at 1355.
29. *Id.* at 1356.
31. *Id.* at 1328.
32. This statement is quite similar to the State Street Bank test that was rejected in In re Bilski and Bilski v. Kappos. State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1373 (Fed. Cir. 1998), abrogated by In re Bilski, 545 F.3d 943, 959 (Fed. Cir. 2008) (holding that an invention is patentable if it is directed to a “useful, concrete, and tangible result”). Moreover, there is a very fine distinction in the Supreme Court’s jurisprudence between disclosing a practical application and limiting an abstract idea to a particular technological field. Cf. Bilski v. Kappos, 130 S. Ct. at 3218 (“[T]he prohibition against patenting abstract ideas ‘cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’ or adding ‘insignificant postsolution activity’” (quoting Diehr, 450 U.S. at 191-92)); Bilski v. Kappos, 130 S. Ct. at 3230 (“an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”) (emphasis added) (quoting Diehr, 450 U.S. at 187)). The Ultramercial invention could easily fall on the unpatentable side of these statements (if they can in fact be distinguished), as it merely limits the use of the idea that advertising can
that the claim’s “breadth and lack of specificity does not render the claimed subject matter impermissibly abstract.”\textsuperscript{33} This second statement refers to the claim’s failure to specify a particular mechanism for delivering media content to the consumer, but conflicts with the initial reasoning that limited the claim’s scope to a specific application of the abstract idea. Thus, the \textit{Ultramercial} opinion simultaneously upheld the claims for being limited in scope and posited that scope is irrelevant to the inquiry.

The court also noted that many of the claimed steps “are likely to require intricate and complex computer programming,”\textsuperscript{34} and that “the invention involves an extensive computer interface.”\textsuperscript{35} Although the opinion refused to “define the level of programming complexity required before a computer-implemented method can be patent-eligible,” it incorporated this consideration in the manifestly abstract test.\textsuperscript{36} Yet this cannot be a workable factor—it would be impossible for a group of computer scientists, much less a group of judges, to agree on a definition of “complex computer programming.” Further, even if judges could define the term, its definition may become obsolete rapidly as science progresses. Most significantly, the claims at issue in \textit{Ultramercial} do not even claim the complex computer programming—they claim the business method by which the complex computer programming can be made profitable. The \textit{Ultramercial} claims, therefore, do not even pass the \textit{Ultramercial} test. It should not be surprising, then, that subsequent cases did not follow this approach.

\textbf{C. The Scope Test}

Three post-Bilski cases, \textit{Cybersource v. Retail Decisions,}\textsuperscript{37} \textit{Dealertrack v. Huber,}\textsuperscript{38} and \textit{Fort Properties v. American Master Lease,}\textsuperscript{39} roughly follow an approach that examines whether the computer serves as a meaningful limit on

\textbf{be used as currency in the technological environment of the Internet. This contrasts with the invention in the Supreme Court’s famous \textit{O’Reily v. Morse} case, 52 U.S. 62 (1853), which applied the laws of electromagnetism to create the telegraph. If the “application of a law of nature” and “limit to a particular technological environment” language can be distinguished, it is likely in this manner—knowledge of the law of nature can be applied to create new inventions that rely on that law of nature, but the law of nature itself cannot be claimed, even if the claim is limited to a particular industry. Applying this thinking to \textit{Ultramercial}, then, the abstract idea—that advertisement can be used as currency—is not applied to create a new invention, as video streaming and similar technology were already widely known. Rather, the claims merely limit the abstract idea to the particular technological field of accessing media products online.}

\textsuperscript{33} \textit{Ultramercial}, 657 F.3d at 1329 (Rader, J., concurring).
\textsuperscript{34} \textit{Id.} at 1328 (majority opinion).
\textsuperscript{35} \textit{Id.}
\textsuperscript{36} \textit{Id.}
\textsuperscript{37} \textit{CyberSource}, 654 F.3d 1366 (Fed. Cir. 2011).
\textsuperscript{38} \textit{Dealertrack}, 674 F.3d 1315 (Fed. Cir. 2012).
\textsuperscript{39} \textit{Fort Properties}, 671 F.3d 1317 (Fed. Cir. 2012).
the claim’s scope. This language originates from the machine or transformation
test: “the use of a specific machine or transformation of an article must impose
meaningful limits on the claim’s scope to impart patent-eligibility.”

Unlike the manifestly abstract test, which CLS Bank explicitly stated, the
Federal Circuit has elaborated this test’s bounds principally through the three
cases that have applied it. This Note will thus explore these cases in
chronological order.

Cybersource v. Retail Decisions, decided after RCT, involved a method for
detecting credit card fraud on the Internet by comparing the Internet address on
the purchase to the credit cards used at that address. The claim was not limited
to any particular formula for detecting fraud, but was directed toward
“constructing a map of credit card numbers,” and “utilizing the map of credit
card numbers to determine if the credit card transaction is valid.” The patent
also included system claims to “a computer-readable medium” storing
instructions for executing the same process as in the process claim.

Much of the Cybersource opinion is devoted to characterizing the method
claims as mental processes, which previous Supreme Court cases had held were
unpatentable abstract ideas. Addressing the system claims, the court found
that “the incidental use of a computer to perform the mental process of claim 3
does not impose a sufficiently meaningful limit on the claim’s scope.” The
panel also rejected the notion that “simply reciting the use of a computer to
eexecute an algorithm that can be performed entirely in the human mind” is
patentable.

Since Cybersource, however, the Federal Circuit has been less apt to apply
the mental processes doctrine to computer-implemented inventions. Most
recent computer-implemented inventions require computer calculations so
complex or voluminous that the human mind could not practically perform
them. Instead, combining Cybersource’s rulings on the method and system
claims, the Federal Circuit has held that such inventions simply apply a
general-purpose computer to these calculations, indicating that the computer
does not serve as a meaningful limit on the claim’s scope. Although the Federal
Circuit has not characterized it as such, a general-purpose computer can, in this
context, be logically considered an extension of the human mind. The ability of
a computer to perform complex calculations is not the invention, and
calculations are abstract mental processes, so routine applications of a
computer to perform complex calculations are unpatentable abstract ideas.
While proponents of the manifestly abstract test initially fought the idea that

40. In re Bilski, 545 F.3d at 961.
42. Id.
43. See Benson, 409 U.S. at 67; Flook, 437 U.S. at 586.
44. CyberSource, 654 F.3d at 1375.
45. Id.
inserting a general-purpose computer into an abstract process does not necessarily make the process patent eligible, this contingent has since acknowledged that computers cannot necessarily confer patent-eligibility.\(^46\)

The Dealertrack and Fort Properties cases apply this framework to invalidate claims. The patent in Dealertrack claimed a process involving a credit application clearinghouse for car dealerships. Essentially, the method comprised of “receiving credit application data,” “obtaining credit report data,” forwarding the data to various lenders, and receiving decisions back from the lenders.\(^47\) Unlike in Cybersource, a computer system and network are entirely necessary to the process, both because the process is automated and because of the sheer amount of data that must be manipulated. This fact made it difficult for the court to invalidate the claims purely under the mental processes doctrine.

The Dealertrack majority held that the claim’s scope was so broad as to preempt the abstract idea of processing information through a clearinghouse.\(^48\) While the patentee—surely mindful of the manifestly abstract test\(^49\)—argued that the phrase “computer aided” in the claims limited the abstract idea to a practical application, the court rejected the computer as failing to place any real limit on the claim’s scope.\(^50\)

The Fort Properties claims forced the court to directly address the effect of a computer element on a claim’s patentability. The Fort Properties case involved two sets of claims, one without any computer limitation, and the second with a computer element. Apart from the computer limitation, the claims were identical, as both were directed to a method for manipulating a real estate portfolio to take advantage of a favorable tax provision.\(^51\)

After rejecting the first set of claims based on Bilski, the court considered

\(^{46}\) See CLS Bank, 685 F.3d at 1353, 1355 (“mere computer implementation cannot render an otherwise abstract idea patent eligible,” “the mere fact of computer implementation alone does not resolve the patent eligibility question”). However, the manifestly abstract test arguably sidesteps this doctrine by allowing any use of a general-purpose computer in a specific application to pass the test.


\(^{48}\) Dealertrack, 674 F.3d at 1333 (“In this case, however, we are compelled to conclude that the claims are invalid as being directed to an abstract idea preemptive of a fundamental concept or idea that would foreclose innovation in this area.”).

\(^{49}\) Addressing Ultramercial, the court noted that the Ultramercial claims require “an extensive computer interface,” whereas this process is merely computer-aided. \textit{Id.} at 1334. Ultimately, however, this distinction is unsatisfying. Although the Ultramercial invention, according to the Ultramercial court, necessitates “complex computer programming,” the Dealertrack invention surely requires more, as the claims encompass a large interactive computer network. \textit{Ultramercial}, 657 F.3d at 1328. The Ultramercial claim describes its programming steps in more detail, but the code only functions to register user mouse clicks, count the number of times an advertisement has been shown, and give the consumer access to a media product. \textit{Ultramercial}, 657 F.3d at 1324-25.

\(^{50}\) Dealertrack, 674 F.3d at 1333-34.

\(^{51}\) Fort Properties, 671 F.3d at 1318-19.
whether the computer element transformed the otherwise unpatentable claims into patentable subject matter. Quoting *Cybersource* and *Ultramercial*, the opinion asked whether the computer “impose[d] meaningful limits on the claim’s scope,” or whether the invention involved “advances in computer technology.”\(^\text{52}\) As the computer element did not substantively alter the claimed process, the court concluded that “the computer limitation [was] insignificant post-solution activity,” and did “not impose meaningful limits on the claim’s scope.”\(^\text{53}\) Therefore, the claims constituted unpatentable subject matter.

The Federal Circuit has yet to uphold claims under the scope test, so its exact boundaries are difficult to discern. Presumably the *RCT* claims, which were upheld under the manifestly abstract test, would also pass this test. The *RCT* patent claimed a digital halftoning process useful for generating images in printing and computer displays. Halftoning allows computer displays and printers to simulate the full spectrum of colors using only a limited number of primary colors. Because the method places dots or pixels of the primary colors in particular patterns, the image can appear to the viewer as a continuous tone image. The particular method claimed a pixel-by-pixel comparison process using a “blue noise mask.”\(^\text{54}\)

Clearly, the computer is heavily involved in every step of the process. This invention certainly does not seem to be an abstract idea, but because the test is so vague, it is difficult to generate a principled reason why the computer imposes a meaningful limit on the claim’s scope. The claim has no scope beyond the computer because the computer is necessary to implement the invention, but the computer is also necessary in *Dealertrack*.

The mental processes doctrine, as extended by *Cybersource*, is also little help. The *RCT* invention uses a general-purpose computer. Moreover, a human mind could presumably compare pixels using a blue noise mask even though there is no need for halftoning absent computer technology. At their most basic level, computers simply manipulate data by performing various calculations, something that human minds can also do, albeit much slower.

More fundamentally, purely scope-based tests fail because different inventions deserve different scope—some are major breakthroughs and others are incremental improvements. It is impossible to methodically determine the correct scope for each invention. Examining whether a computer sufficiently limits a claim’s scope is similarly doomed—there is no principled way to discern how much limitation is enough. If courts allow any limitation to be enough, they end up right where they started—the mere presence of a computer as necessary to implement an invention confers patentability. The Federal

\(^{52}\) *Id.* at 1323 (quoting *CyberSource*, 654 F.3d at 1375 and *Ultramercial*, 657 F.3d at 1328).

\(^{53}\) *Id.* at 1324.

Circuit has definitively rejected the notion that this is sufficient.

Therefore, the scope test provides little assistance in separating patent-eligible inventions from unpatentable claims. Although developing this doctrine using test cases over time could be possible, the Federal Circuit is so split on computer-implemented inventions that this strategy would be unlikely to succeed. Computing technology is so complex that courts could likely find some reason to distinguish nearly identical cases. The scope test simply cannot provide the needed clarity to be a workable solution.

D. The “Integral” Test

What this Note will call the “integral test” was articulated in Bancorp Services, L.L.C. v. Sun Life Assurance Co. of Canada,55 the last case decided before the Federal Circuit granted the en banc petition in CLS Bank. The integral test resembles the scope test explained in Fort Properties, but differs sufficiently in its focus to be considered a separate test. The test, as elaborated by Bancorp, states that “[t]o salvage an otherwise patent-ineligible process, a computer must be integral to the claimed invention, facilitating the process in a way that a person making calculations or computations could not.”56 The Bancorp court apparently considers this to be a test for when the computer serves as a meaningful limit on the claim’s scope. However, because the integral test focuses on the computer’s role in the process and not the claim’s breadth, it is distinct.

Bancorp invalidated claims to a method of managing a stable value protected life insurance policy. The process involved numerous precise calculations that required substantial computing power.57 The Bancorp claims thus were substantively similar to those in Fort Properties and CLS Bank. The court disposed of these claims quickly under the integral test, albeit using “meaningful limits” language: “The computer required by some of Bancorp’s claims is employed only for its most basic function, the performance of repetitive calculations, and as such does not impose meaningful limits on the scope of those claims.”58 Distinguishing this case from CLS Bank, the panel observed that “the computer limitations do not play a ‘significant part’ in the performance of the claimed invention.”59 These statements demonstrate that the court is less concerned with the claim’s scope than the computer’s role in the invention.

Although this Note builds upon the integral test’s approach, the test is

56. Id. at 1278.
57. Id. at 1269-72.
58. Id. at 1278.
59. Id. at 1280 (quoting CLS Bank, 685 F.3d at 1355).
currently too undefined to be consistently administered. It is entirely unclear what the term “integral” means, despite the specification that a computer must “facilitat[e] the process in a way that a person making calculations or computations could not.”\(^{60}\) A person cannot feasibly perform all of the calculations required by the inventions in \textit{Bancorp}, \textit{Fort Properties}, \textit{Dealertrack}, or \textit{CLS Bank}. The court likely intends the foregoing language to exclude inventions that apply a general-purpose computer to make routine calculations. Even if the language were meant as a per se exclusion, which is unlikely, it does not adequately establish the boundaries of patentable subject matter because it defines “integral” in the negative—stating that something is not integral is useful, but it does not define what \textit{is} integral. More elaboration, as provided by the test proposed in this Note, is needed.

E. **Summary**

The current state of abstract idea doctrine is thus characterized by total discord. Through seven cases, the Federal Circuit is split four to three. The Supreme Court has weighed in twice, but \textit{Bilski} has only caused more confusion and \textit{Prometheus} has so far been criticized and ignored.

The Federal Circuit has proposed three principle tests in its post-\textit{Bilski} case law. One, contrary to the Supreme Court’s intentions in \textit{Bilski} and \textit{Prometheus}, operates as a broad eligibility filter, rejecting claims that are so manifestly abstract as to not even be directed to a specific application. Such claims would likely be directed explicitly to fundamental ideas or algorithms in the abstract. A second test examines whether the computer serves as a meaningful limit on the claim’s scope. This test is highly indeterminate, as the “meaningful limit” language is overly subjective. This scope test has developed into a third test, focusing on whether the computer is integral to the claimed invention. The integral test is also too indeterminate in its current form; however, concentrating on the computer’s role in the process is a useful approach to be developed further in this Note.

Given the extent of current disagreement, courts are in dire need of a new compromise test that is easy to administer and derivative of current precedent.\(^{61}\) The test proposed in this Note attempts to draw upon concepts from all three current approaches to arrive at a workable definition of an abstract idea for computer-implemented inventions. The Federal Circuit, in \textit{en banc} consideration of \textit{CLS Bank}, or the Supreme Court, in a later case, could adopt this test to resolve current disputes in doctrine and to provide owners of patents on computer-implemented inventions with much-needed predictability.

\(^{60}\) \textit{Id.} at 1278.

\(^{61}\) No test can completely harmonize the case law, as the cases clearly contradict each other. However, the most effective proposal will use current precedent to the greatest extent possible, making the test simpler to adopt.
II. CURRENT APPROACHES IN THE LITERATURE TO ABSTRACT IDEAS

As Lemley, Risch, Sichelman, and Wagner summarize nicely in “Life After Bilski,” academics traditionally conceptualize § 101 as a gatekeeper. Under this view, § 101 excludes entire categories of inventions as contrary to the policies of patent law. However, there are several drawbacks to this approach. First, innovation is unpredictable; excluding certain subject areas per se may unintentionally stunt future innovation that a good patent policy would protect. Second, delineating the lines between subject areas is exceedingly difficult. What constitutes a business method? What about a medical diagnostic test? As an example, do the claims in Ultramercial recite a business method or a software process? Just as the courts have struggled to define an abstract idea, the same would happen with per se subject matter exclusions. The strategy of categorically excluding inventions has the effect of kicking the can down the road without providing additional clarity. Finally, such an approach is impractical. Courts have repeatedly declined to impose per se limitations on patentable subject matter, most recently in Bilski, and there is no indication the Court will go that route in the future.

Another approach is to use § 112 instead of § 101 to regulate overly vague or broad claims. The theory is that applicants cannot successfully enable or describe inventions when they claim broad property rights. While this idea has some merit, as it can prevent claims that go beyond the scope of the actual invention, it ultimately fails. Its principal defect is that § 112 pertains to the disclosure only at the time of filing. Although an invention may be the only known application of a law of nature or abstract idea at the time of filing, future innovation could render that understanding obsolete. Sometimes, as was the case with Morse’s claim 8, the claim is clearly not enabled by the specification. Other times, a patent may claim the only conceivable application of a natural law at the time of filing, when in fact downstream innovation may discover other applications. This often happens with computer-aided inventions because the related technology develops rapidly. Therefore, § 112 is not designed to effectively screen unpatentable subject matter from patentable subject matter.

A third prominent category defines abstract ideas as inventions that do not

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63. Id. at 1326-27.
64. Id. at 1327.
65. Justice Stevens’ concurring opinion in Bilski rejected business methods per se under § 101. Some commentators believe that Justice Stevens initially wrote a majority opinion and lost the majority before the opinion issued. See, e.g., Chisum, supra note 3. Now that Justice Stevens is no longer on the Court, and in light of the unanimous decision in Prometheus, it looks unlikely that courts will impose any per se subject matter exclusions in the near future.
relate to a practical end. This category encompasses two distinct proposals. The first proposal is from Michael Risch, who argues that § 101 should be resituated as an inquiry into an invention’s usefulness. This approach has a number of disadvantages. First, Risch’s test requires that § 101 be decided partially as a factual issue. Certain factors, such as whether there is a market demand for the invention, necessitate factual testimony. Incorporating factual questions into § 101 would compel a substantial shift in patentable subject matter doctrine, which currently regards § 101 as a wholly legal issue. Moreover, as the *Prometheus* decision reinforces, § 101 is a threshold inquiry that courts must decide at the outset. Thus, a factual approach that requires expert testimony is impractical.

Second, Risch’s test is either difficult to administer or woefully underinclusive—nearly any invention can be defended as useful. As long as the invention is not anticipated by some prior art—the requirement of § 102—and is enabled under § 112, it likely represents improvement in the art, and thus satisfies any threshold usefulness test. Furthermore, the Supreme Court conclusively rejected this inclusive approach in *Bilski* and *Prometheus*, rendering the test unhelpful for this Note’s practical purposes. Alternatively, if usefulness is defined more restrictively, the test becomes as confusing as the current abstract ideas doctrine. “Usefulness” is entirely indeterminate, and, even if given more teeth, is still too vague to provide a workable test.

Finally, Risch’s proposal fails because it applies a textual approach to a common law area. As mentioned earlier in this Note, the 1952 Patent Act codified existing common law on patentable subject matter. Section 101 is intentionally broad, so as to not foreclose future common law development in the area. Thus, extrapolating any real limitation from the text of § 101 is contrary to the provision’s intent and structure.

The second proposal in the “practical end” category comes from “Life After Bilski.” The authors suggest that “[c]laims are proper when the scope of the patentee’s claims is commensurate with a practical, real world contribution the patentee has made.” In addition, they provide an incomplete list of five factors relevant to the determination, ranging from whether the technological

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69. While Risch may advocate underinclusiveness as a policy matter, this paper refuses to engage in those debates. Given the Supreme Court’s clear directive that the Federal Circuit must apply § 101 with some force, an underinclusive test is not a viable solution.
70. Although the patents at issue in *Bilski* and *Prometheus* were generally bad (and likely would not have survived other statutory requirements), the Supreme Court has clearly moved away from an inclusive attitude toward § 101.
71. Menell, *supra* note 7, at 1302-03.
72. *Id.* at 1296-97, 1302-03.
field is fast-moving to whether the patentee has made an important contribution relative to the prior art.\footnote{Id. at 1339-41.}

This approach has a number of weaknesses. First, a test with five or more factors would be nearly impossible to administer consistently. Any test with so many unranked factors requires judges to resolve competing factors. With a highly divided Federal Circuit, this resolution would likely become as panel-dependent as the current approach.

Second, the proposed factors are all broad and would necessitate significant discovery and trial time to implement. This would be a step in the wrong direction because the Federal Circuit is already deeply concerned about the cost and length of patent cases.\footnote{Randall Rader, Chief Judge, Fed. Cir., The State of Patent Litigation, Address at a Joint Meeting of the Fed. Circuit Bar Ass’n and the Eastern Dist. of Tex. Bar Ass’n (Sept. 27, 2011), available at http://www.patentlyo.com/files/raderstateofpatentlit.pdf.}

Third, and similarly to the Risch usefulness test, this inquiry depends on factual issues. To their credit, the authors advocate shifting § 101 to a back-end consideration that is resolved only if the patent first survives the other requirements of the Patent Act. However, this change would likely require the Supreme Court’s blessing after \emph{Prometheus}, making it difficult for the Federal Circuit to effectively adopt.

Finally, and perhaps most importantly, the “Life After Bilski” test is simply not helpful in close cases, especially for computer-implemented inventions. Most close § 101 cases consider claims that are narrowly tailored to a practical end. For example, the claim in \emph{Cybersource} is limited to detecting credit card fraud online, and is solely directed to that purpose. Although it is defensible to conclude that all of the relevant post-\emph{Bilski} Federal Circuit cases should pass the § 101 test, this test may not even reject the \emph{Bilski} claims that restrict the hedging method to energy commodity markets. Those claims are narrowly tailored to energy commodity markets and strive to protect buyers and sellers from rapid price changes—certainly a practical end. Nearly any invention can be said to have a practical end; so as long as the claims are limited to a particular field, they will likely pass the “Life After Bilski” test.

Further, several of the “Life After Bilski” factors focus on the industry or technological field, so the test fails to distinguish between inventions within each field.\footnote{See, for example, factors two—whether the industry relies heavily on cumulative invention—and three—whether the technological field is fast moving. The first factor, while examining the invention itself, still somewhat looks at the industry, as it asks whether the claimed invention is potentially generative of many kinds of new inventions—a highly industry-dependent factor. See generally Lemley, \textit{supra} note 62, at 1339-41.} The main remaining factor is whether the patentee has “made an important contribution relative to the prior art,” an exceptionally subjective consideration. Clearly, a more specific test is needed.
III. A Test for Computer-Implemented Inventions

A more specific test should focus on the computer’s role in the invention. Some inventions merely use a computer to perform a great number of calculations or to transfer data from point A to B. In these cases, the computer is necessary to perform the claimed method, but it does not act as any further limitation on the process. For example, in *Benson*, the claim is to a mathematical formula only useful in the context of that calculation or data transfer, which is an unpatentable abstract idea. 77

If a computer is to confer patentability on a claim, it should be because the invention interacts with the computer in a particular way. Any other methodology skirts the basic question: how does the computer affect the invention’s patentability?

Therefore, rather than search for a poor proxy test, courts should confront the issue and explicitly scrutinize the computer’s role in the process. As computers manipulate data by definition, the manipulation of data is a good focal point. Therefore, this Note proposes the following test:

A claim is not directed to an abstract idea if it contains a computer element such that:

1) The computer manipulates data, rather than merely being present,
2) The data being manipulated is inherent to the computer, and
3) The data manipulation is directed to one or more particular applications.

The main potential ambiguity is in defining “inherent to the computer.” Data is inherent to the computer if it does not directly represent information about the world. 78 For example, the *Cybersource* process manipulates data on credit card numbers. While that data is stored in the computer in an artificial, computer-readable format, that data directly represents information about the world—credit card numbers—so the *Cybersource* claim fails the test.

Take the *RCT* method by contrast. That process involved a comparison of pixels and a blue noise mask. While the pixels make up an image, which is potentially a direct representation of the world, the process operates one level lower, on the pixels themselves. This particular data, as *Bancorp* explained, 79 is

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77. *Benson*, 409 U.S. at 71-72 (“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.”).

78. In some ways, this is similar to a test of “advances in computer technology” or “advances in programming.” However, this language would not constitute a workable test, as it is highly subjective. Any new test must involve little freedom in its application because there is such disagreement within the Federal Circuit. As the post-*Bilski* jurisprudence demonstrates, vague tests like “advances in computer technology” would only fuel further debate.

79. *Bancorp*, 687 F.3d at 1279.
inherent to the computer, so the claim is not directed to an abstract idea.\textsuperscript{80}

A. Applying the Data Manipulation Test: Some Examples

The following subparts apply to the data manipulation test to the remaining post-\textit{Bilski} Federal Circuit cases, several other cases, and one hypothetical.

1. Inventions Not Manipulating Data

\textit{Ultramercial v. Hulu} is one example of a case impacted by part (1) of the test. The \textit{Ultramercial} claims recite a process that (a) shows the consumer an advertisement, (b) registers a response to the advertisement or verifies that the advertisement was shown, (c) gives the consumer access to a media product, and (d) updates records to reflect that the advertisement was shown. Although it is a close call, \textit{Ultramercial} probably does not pass part (1). The process requires a computer because it takes place online, but the computer does not truly manipulate data. While online video streaming technology involves “complex computer programming,”\textsuperscript{81} the claim does not recite a method applying that technology. Rather, the patent claims the idea of showing an advertisement before giving access to a media product. The patent does not provide an implementation of the “giving access” step, nor does it say how the computer can do something like stream video online. Thus, while the method requires the computer to manipulate data, the claim is not to this manipulation.

After that observation, the only possible data manipulation left in the process happens when the computer registers that the user has viewed the advertisement (by listening for a mouse, click for example). This manipulation is so de minimis that it should not count as data manipulation under part (1). A court applying the test, however, would not have to consider that question because the data is obviously not inherent to the computer. The data represents whether the user viewed the advertisement, or, put simply, whether the user clicked the mouse. Therefore, the outcome in the district court was correct—\textit{Ultramercial} claims the abstract idea of using an advertisement as currency, and the computer element does nothing to save the claim.

2. Inventions Not Involving Data Inherent to the Computer

Like the \textit{Cybersource} claims, the inventions in \textit{Dealertrack}, \textit{Fort

\textsuperscript{80} To some extent, this is an inversion of how \textit{In re Bilski} read \textit{In re Abele}, 684 F.2d 902 (C.C.P.A. 1982) abrogated by \textit{In re Bilski}, 545 F.3d 943. \textit{In re Bilski}, 545 F.3d at 963 (“the electronic transformation of the data itself into a visual depiction in \textit{Abele} was sufficient” to render the claim patentable). However, the data manipulation test proposed here arrives at the same result as the \textit{Abele} court. See discussion infra Part IV.1.e.

\textsuperscript{81} This quote is a reference to the court’s opinion. \textit{Ultramercial}, 657 F.3d at 1328.
Properties, CLS Bank, and Bancorp would all classify as inventions not involving data inherent to the computer. While the computer is necessary to the claims in these cases—in fact, the computers in some must perform relatively complex functions—the data manipulated is not inherent to the computer. Taking Dealertrack as an example, the computers in the Dealertrack method manipulate credit card application and credit report data, transferring it between various parties. This data—credit scores, personal information, and whatever else is included in the applications—directly represents information about the world. Although the computer programmers may use computer science-specific data structures to represent the data, this does not change the fact that the data directly reflect some fact about the world. Thus, unlike RCT, in which the method operates on pixels, which is a step removed from a real-world image, the Dealertrack method operates on the real-world data itself.

The Fort Properties (real estate portfolio data), CLS Bank (financial transaction data), and Bancorp (life insurance policy data) claims are the same: these inventions manipulate data that directly represents information about the world. These claims would therefore be invalid under the data manipulation test.

3. Inventions Not Directed to a Particular Application

a. In re Abele

The In re Abele claims demonstrate the importance of part (3) of the proposed test. Abele, decided prior to Bilski, principally involved two claims: the first was to an algorithm for computer tomography (claim 5), and the second applied that algorithm in the context of x-ray imaging (claim 6).\(^8^3\) While the Abele court found claim 5 invalid under § 101, claim 6 survived. The test proposed in this Note would reach the same result.

Both claim 5 and claim 6 pass the first two parts of the test. The data manipulation in these claims is similar to the RCT process—an algorithm is used to arrange computer data into a meaningful image. Here, the data manipulated are data points in a data field. Claim 6 applies this algorithm to “X-ray attenuation data produced in a two dimensional field by a computed

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82. 684 F.2d 902 (C.C.P.A. 1982) abrogated by In re Bilski, 545 F.3d 943.
83. Id. at 908. For reference, the claims are reproduced in full below:
5. A method of displaying data in a field comprising the steps of calculating the difference between the local value of the data at a data point in the field and the average value of the data in a region of the field which surrounds said point for each point in said field, and displaying the value of said difference as a signed gray scale at a point in a picture which corresponds to said data point.
6. The method of claim 5 wherein said data is X-ray attenuation data produced in a two dimensional field by a computed tomography scanner.

tomography scanner.”

Part (3) of the test asks whether the “data manipulation is directed to one or more particular applications.” This language sets a low bar for claims, so tomography is a particular application under part (3), and claim 6 is patentable. On the other hand, claim 5, which is not restricted to tomography, clearly fails part (3). Claim 5 expounds the algorithm in the abstract, speaking only of a “data field” and a “data point.” At no point is there any context for this data, nor is there any concrete discussion of the data’s use. Despite part (3)’s relative leniency, claim 5 would not meet this basic condition.

b. Linked List

To further explore the bounds of part (3), take the linked list data structure in computer science. A linked list is a “list implemented by each item having a link to the next item.” In other words, each item holds certain information, which is ordered by the item also storing the memory location of the next item in the list. The linked list is a basic concept in computer science that is used in a multitude of programs.

Assume that a programmer at one moment in time invented the linked list. Could he patent the idea? Under Benson, the answer is no because the patent would preempt the whole mathematical formula, as it “has no substantial practical application except in connection with a digital computer.” However, the linked list patent, like claim 5 in Abele, easily passes the first two parts of the data manipulation test. To stay true to Benson, the test requires a third prong relating to the invention’s application. As discussed earlier, applied algorithms are patentable, but algorithms limited to a particular technological field are not. Thus, all that part (3) requires is that the algorithm be directed to some concrete use. As in Abele, the algorithm itself is unpatentable, but the algorithm applied in a particular process is patentable subject matter.

Turning back to the linked list, it is only patentable in the context of the particular program in which it was first invented. This is directed to a particular application, and since it is such a basic concept with simple application to other programs, it is likely obvious in any future software. To be clear, however, the
linked list does impart § 101 eligibility in future programs. The concept itself may not be patented. Patentability for concepts is thus narrowly defined, allowing for downstream innovation, while preserving the patentability of computing breakthroughs, as in RCT or claim 6 in Abele.

4. Inventions Passing the Data Manipulation Test

Another instructive case is SiRF Technology, Inc. v. International Trade Commission (SiRF),89 which the Federal Circuit decided between its In re Bilski decision and the Supreme Court’s Bilski v. Kappos.90 SiRF involved patents on improved GPS (Global Positioning System) technology. The method claims at issue claimed a process for calculating a GPS receiver’s position based on satellite signals. The court held that the claims recited patentable subject matter,91 a correct outcome according to the test proposed here. Applying the test, the claims easily pass part (1), as the process interprets data. The claims satisfy part (2) as well, because the process manipulates satellite signals, which is data inherent to the satellites. This case is quite difficult to decide in the post-Bilski world, where the machine or transformation test is a useful and important clue, but not the sole test. First, the court would have to decide, without any further guidance, whether a GPS receiver is a “special purpose computer,” satisfying the machine or transformation test.92 Then, even if it does pass the machine or transformation test, the court would have to blindly decide whether this claim is otherwise an abstract idea. However, under the data manipulation test, this case is quite easy. The computer manipulates satellite signals (parts 1 and 3), data that is inherent to the computer (part 2).

5. New Computer Systems Distinguished From Computer-Implemented Inventions

One final example illustrates the important difference between machine and process claims. A company called Paice recently filed suit against Hyundai and Kia for infringing three of its patents on hybrid vehicles.93 Although the three patents all claim entire hybrid vehicles, the invention is really a hybrid car engine controller, which is a computer system that regulates the various electric and combustion motors in a hybrid car.94 Unlike a process claim, which

89. SiRF Tech., Inc. v. Int’l Trade Comm’n, 601 F.3d 1319 (Fed. Cir. 2010).
90. SiRF was thus decided purely on the machine or transformation test.
91. SiRF, 601 F.3d at 1333.
92. See, e.g., Cybersource, 654 F.3d at 1374-76.
describes the steps performed, these claims characterize the controller in terms of its functions.\textsuperscript{95}

Claims to a hybrid car engine controller (or, technically, an entire hybrid vehicle) presumptively fall within the “machine” or “manufacture” categories of § 101. However, as shown by Cybersource, it is possible for a claim that was drafted as a machine claim to be analyzed as a process claim.\textsuperscript{96} When the claim is really a process claim written as a system claim, courts sometimes refuse to “exalt form over substance.”\textsuperscript{97} Indeed, to prevent claim drafters from circumventing § 101 limitations, the Federal Circuit has recently scrutinized system claims to ensure that they are not disguised processes.

The data manipulation test, in line with the questions presented in the CLS Bank \textit{en banc} grant, solves this problem by characterizing all such claims as “computer-implemented inventions” and refusing to treat otherwise identical system and process claims differently. While there is sometimes a fine line between new computer systems and computer-implemented inventions, courts should be trusted to discern whether the invention is a new computer system or merely implemented by a computer. They have already proven adept at doing so in Cybersource and Fort Properties. Moreover, posing the initial question, “is this invention a computer or is it merely implemented by a computer?” quickly exposes claims to processes that are written as system claims.

When the hybrid car engine controller claims are scrutinized, it is clear that they are directed to machines rather than software. As the controller is described in terms of its components each performing certain functions, the patent claims the computer rather than the computer’s software.\textsuperscript{98} These claims are materially different than claims to a “computer-readable medium”—so-called Beauregard claims\textsuperscript{99}—and are therefore system claims. As true machine

\textsuperscript{95} See, e.g., supra note 94, ‘634 Patent col. 58 l. 19-27 (“wherein the controller is operable to operate the engine when torque required from the engine to propel the hybrid vehicle and/or to drive one or more of the first or the second motors to charge the battery is at least equal to a setpoint (SP) above which the torque produced by the engine is efficiently produced, and wherein the torque produced by the engine when operated at the SP is substantially less than the maximum torque output (MTO) of the engine.”).

\textsuperscript{96} Cybersource, 654 F.3d at 1373-75.

\textsuperscript{97} Id. at 1374; Abele, 684 F.2d at 909.

\textsuperscript{98} Of course, it is possible to claim software as a computer and its components. However, these claims, such as the system claims in CLS Bank, are easily identified as software claims because the computer components are defined in terms of the steps they perform in the method.

\textsuperscript{99} Claims to a “computer-readable medium,” often containing program instructions (software) to perform a function stem from In re Beauregard, 53 F.3d 1583 (Fed. Cir. 1995). Along with Alappat, 33 F.3d 1526, the Federal Circuit essentially allowed all software claims to become patentable if they were written as system claims. Recent decisions have called these cases into question, and Alappat has even been abrogated. See Cybersource, 654 F.3d at 1373-74; Ex Parte Jodi L. Coppinger, David P. Delay, Brian J. Levine, & Frank A. Pavelski, No. 2009-009934, 2011 WL 798170, at *2 (Bd. Pat. App. & Interf. Mar. 2, 2011)
claims, § 101 presents no real obstacle, so these patents claim patentable subject matter. In contrast, the software used in the hybrid car engine controller would be subject to the data manipulation test. The result of this inquiry would likely turn on whether the processes manipulate data inherent to the computer.

This correlates with Cybersource’s distinction between a general-purpose computer and a special-purpose computer. The addition of a general-purpose computer does not render an otherwise unpatentable software claim patentable under Cybersource. A process involving a special-purpose computer is often patentable.100 Put simply, if the computer is designed for a special-purpose function, it can be patented using machine claim language. If it is not, the data manipulation test does not allow an otherwise unpatentable process involving a general-purpose computer to be patentable as a system because it does not distinguish between system and process claims directed to identical subject matter. Therefore, if a new general-purpose computer is developed, the inventor can claim it using machine claim language. The data manipulation test will not allow unpatentable processes to be patentable under the fiction that they constitute a new machine.101

B. Advantages of the Data Manipulation Test

This Note now will discuss four advantages of the proposed test: 1) it is simple to administer and avoids confusion, 2) it is difficult to draft around, 3) it promotes good policy, and 4) it is drawn from current precedent, so it is straightforward to adopt.

1. Simple to Administer

As discussed previously in this Note, the current state of the law is highly confusing.102 Bilski v. Kappos directs courts to consider the machine or transformation test, but it also tells them to look at other unnamed factors.103 Perhaps the Supreme Court hoped that the Federal Circuit would develop new standards in the wake of Bilski, but the earlier survey of post-Bilski Federal

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100. See SiRF, 601 F.3d at 1332-33.
101. As is fairly obvious, this statement directly contradicts the Federal Circuit’s en banc ruling in In re Alappat, 33 F.3d 1526 (Fed. Cir. 1994) abrogated by In re Bilski, 545 F.3d 943. Although Alappat may still technically be valid precedent after the Supreme Court affirmed In re Bilski on different reasoning, it is extinct in practice. This is especially true now that adherents to the manifestly abstract test in CLS Bank blessed the idea that the addition of a general-purpose computer does not render an otherwise unpatentable process patentable. The Federal Circuit should bury Alappat with finality and abrogate it in the CLS Bank rehearing.
102. See supra p. 1.
103. Bilski v. Kappos, 130 S. Ct. at 3227 (“The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible ‘process.’”).
Circuit cases demonstrates that no progress has been made. Sometimes courts use the machine or transformation test and sometimes they do not, but all opinions include some wandering through various abstract ideas concepts before arriving at a conclusion. Without any guiding principles, it should come as no surprise that the current split has arisen. Moreover, for all judges, who are firmly committed to coming to the correct decision by the rules, this rule-less wasteland of post-\textit{Bilski} jurisprudence is excruciatingly difficult to maneuver. Thus, especially given the variety of opposing views among members of the Federal Circuit on the issue, the need for a clear test that courts can consistently apply is obvious.

The test proposed in this Note provides a solution. Although the machine or transformation test is relatively definitive, serious debate arose over what constitutes a machine or a transformation. The data manipulation test is much less ambiguous. Most claims will pass part (1), which is fairly straightforward—either the computer manipulates data or it does not. For part (2), lawyers will be able to make superficial arguments (e.g. “the process manipulates the individual bits”), but ultimately it is a simple application of the facts as to whether the computer data represents something about the real world (e.g. credit card numbers) or whether the process works on data inherent to the computer (e.g. the pixels of a computer image). This is a workable test that requires minimal briefing and few judicial resources to apply.

2. Difficult to Draft Around

The distinction between data inherent to the computer and data not inherent to the computer is easy to administer, but at first glance it also appears easy to draft around. Upon closer inspection, however, such an attempt would be fruitless. If a claim were drafted to add an extra level of indirection, making the data appear inherent to the computer, it would fail to catch infringers, who have no incentive to inefficiently use that indirection. Consider \textit{Cybersource} again: if we modified the \textit{Cybersource} claim so that the process acted on data representing the credit card data, what would result? \textit{Cybersource} may claim patentable subject matter, but competitors would never infringe, as they would manipulate the credit card data directly.

\textit{Cybersource} could claim infringement under the doctrine of equivalents, but courts can reject this argument in one of three ways. First, the doctrine of equivalents is limited by prosecution history estoppel.\textsuperscript{104} If the patentee originally claimed a process without the extra level of indirection, and later added the indirection to maneuver around § 101, estoppel would prevent the patentee from asserting that the claim covers the process without indirection. Second, courts can apply the ensnarement defense to limit the patent to

patentable subject matter. The doctrine of equivalents is meant to give patents a fair scope. If the patentee never could have obtained a patent on a process that it claims infringes under the doctrine of equivalents, the doctrine of equivalents should not apply. Finally, and most simply, courts can find that an extra level of indirection does not perform the same function “in substantially the same way,” as the doctrine of equivalents requires.

Part (1) is similarly difficult to draft around. Patent drafters can add some data manipulation to the process, but two problems result. First, this requires an extra step in the process, one that potential infringers may not take. Second, the added data manipulation must pass part (2) of the test. In all, it is nearly impossible to artificially include data manipulation steps in the process that infringers will take and that avoids all the pitfalls of drafting around part (2) mentioned above.

Take Ultramercial as an example. Suppose that the Ultramercial claim included a database of information related to the process, and the process was written in terms of that database (i.e. A method comprising . . . “recalling the number of times the advertisement has played” . . . ). This may allow the Ultramercial claims to get past part (1), but it still fails part (2). That information, such as the number of times an advertisement is shown, is not inherent to the computer. Potential infringers may also be able to cheaply design around the claim by creating a different system for storing and interacting with the data.

Finally, drafters can maneuver around part (3), but it forces claims to be limited, freeing up downstream innovation. Part (3) thus accomplishes its purpose of preventing broad patents on pure algorithms or ideas.

3. Fosters Good Policy

As a policy matter, using the extra level of indirection in part (2) to divide patentable and unpatentable subject matter is important because it successfully distinguishes between bland applications of computers as efficient information processors and real advances in computer technology. This Note does not intend to enter the broader policy debates around § 101, but as it proposes a new rule, it would be incomplete without a brief mention of the policies it furthers.

New contributions to computer technology should be given robust patent protection. The data manipulation test clearly provides that protection, as
new inventions in computing technology involve data inherent to the computer. If the invention does something new with internal computer data, it very likely enhances computer or computer-related technology. As the data manipulation test is not a gatekeeping test, it does not categorically exclude any particular kind of patent. However, claims that merely use computers to quickly process large data sets, such as the claims in \textit{Cybersource} and \textit{Fort Properties}, will have a difficult time surviving.

4. \textit{Drawn from Current Precedent}

The data manipulation test follows smoothly from current precedent, so it would be easy for courts to adopt. The Supreme Court’s \textit{Bilski} opinion leaves the door wide open for a new rule to supplant the machine or transformation test, as it rejects the machine or transformation test as the sole test and invites the Federal Circuit to develop “other limiting criteria.” Moreover, the data manipulation test expounds on language in several post-\textit{Bilski} decisions requiring that a computer element “impose a meaningful limitation on the claim’s scope.”

The data manipulation test also squares with earlier Supreme Court doctrine on abstract ideas. Like \textit{Benson}, it rejects claims to the idea itself. \textit{Flook} introduces the concept of “post-solution activity,” which indicates that the addition of a computer to efficiently process data is insufficient to transform an unpatentable claim into a patentable one. The data manipulation test internalizes this doctrine in part (2), which invalidates claims like the ones in \textit{Cybersource} and \textit{Fort Properties}. Moreover, this Note’s test squares with \textit{Flook} and \textit{Prometheus}’ admonition to assume that the discovered law of nature is known. The test examines each step of the process for the manipulation of data inherent to the computer. As applied in any process that passes part (3) and satisfies §§ 102 and 103, such data manipulation is unconventional activity beyond the background algorithm. Finally, as in \textit{Diehr}, the test prevents claims from preempting the abstract idea by requiring them to recite specific, practical applications of data manipulation.

One common but misguided criticism is that, by requiring that the data manipulated be inherent to the computer, the passing claims will be more

\begin{itemize}
  \item[108.] Practical considerations prevent something like “enhancing computer or computer-related technology” from being the test. Courts cannot consistently administer this test, just as the \textit{Life After Bilski} test fails in its application because it cannot be clearly defined. One main reason the case law surrounding abstract ideas is so convoluted is the fact that “abstract idea” is nearly impossible to define. Merely defining “abstract idea” as something that is also difficult to define only perpetuates the problem.
  \item[109.] \textit{Bilski} v. \textit{Kappos}, 130 S. Ct. at 3231.
  \item[110.] See, e.g., \textit{Cybersource}, 654 F.3d at 1375; \textit{Dealertrack,} 674 F.3d at 1333; \textit{Fort Properties}, 671 F.3d at 1323. Note that this language was introduced in \textit{In re Bilski}, but the Supreme Court never disapproved of this part of the opinion in \textit{Bilski} v. \textit{Kappos}.\end{itemize}
abstract—not less, as the abstract ideas exception contemplates. This misunderstanding conflates the meaning of abstraction in patent law with its meaning in computer science. In computer science, data inherent to the computer is sometimes referred to as one “level of abstraction” away from the real world. In contrast, the abstract ideas concept in patent law refers to fundamental ideas or algorithms. The data manipulation test, by requiring a particular application in part (3), prevents basic ideas from being patented, and, by requiring the manipulation of data inherent to a computer, moves further into the world of technology. The resulting inventions, rather than being algorithms or routine applications of computers to large data sets, will principally be advances in computer technology—core subject matter that patent law intends to protect.

Lastly, the test strikes a balance between all sides of the debate. It refuses to invalidate all business method patents per se; it allows processes that do not improve computer hardware, so long as they further the broader improvement of computer technology; and it excludes claims that merely run a large data set through a computer-implemented algorithm. The data manipulation test borrows concepts from all three of the current approaches: part (1) from the scope test, part (2) from the integral test, and part (3) from the manifestly abstract test. Of the seven post-Bilski Federal Circuit decisions, only Ultramercial and CLS Bank, decisions since vacated, would reach a different result. Furthermore, the test is friendly to other claims that courts have upheld in cases like SiRF and Nazomi Communications v. Samsung Telecommunications. Thus, rather than reject one view entirely, the data manipulation test presents a realistic compromise that the Federal Circuit could adopt in en banc consideration of CLS Bank.

CONCLUSION

Something must be done about § 101 and computer-implemented inventions. The Federal Circuit is panel-dependent on the issue, and the Supreme Court has not provided any useful guidance. Thankfully, the Federal Circuit has recognized the problem and granted an en banc petition in CLS Bank.

This Note presents a solution. The data manipulation test avoids vague legal standards in favor of a simple factual inquiry. It also ensures greater accuracy by examining the process itself, refusing to use a distant proxy like the machine or transformation test. Finally, and perhaps most importantly, it stakes out middle ground between the various positions and upsets little precedent, making it a viable compromise answer for the court to adopt in CLS Bank.