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State Street Bank & Trust Co. v. Signature Financial Group, Inc.: Ought the Mathematical Algorithm and Business Method Exceptions Return to Business As Usual?

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STATE STREET BANK & TRUST CO. V. SIGNATURE FINANCIAL GROUP, INC.: OUGHT THE MATHEMATICAL ALGORITHM AND BUSINESS METHOD EXCEPTIONS RETURN TO BUSINESS AS USUAL?

I. INTRODUCTION

In the past, inventors have had to rely on the concepts of copyright and trademark to protect their software related business activities from appropriation by competitors. However, after a series of recent developments culminating with the Federal Circuit Court of Appeals decision in State Street Bank & Trust Co. v. Signature Financial Group, Inc.,¹ companies and inventors alike may now consider seeking patent protection for their software.

The opinion, authored by Judge Giles S. Rich, may have far reaching effects on the financial industry, as it explicitly endorses patent protection for computer implemented "business methods."² In particular, in a single sweep, the opinion removed long-standing barriers to patents that encompass business methods, by holding that such inventions constitute patentable subject matter if they merely produce a “useful, concrete and tangible result."³ Additionally, the State Street court grasped the opportunity to abandon another time-honored test for statutory subject matter, the so-called Freeman-Walter-Abele test that previously had served as a litmus-test for unpatentable mathematical algorithms.⁴

The discussion will begin with the historical development and evolution of the business method and mathematical algorithm exceptions, followed by an analysis of recent trends leading to the State Street decision. The commentary then includes a few modest predictions of what the future may hold with respect to the financial and Internet commerce industries in the wake of the

² Id. at 1375.
³ Id. at 1374 (quoting In re Alappat, 33 F.3d 1526, 1544, 31 U.S.P.Q.2d 1545, 1577 (Fed. Cir. 1994)).
⁴ Id.
decision. Finally, the note concludes with a discussion pertaining to the wisdom of a permanent removal of the business method exception.

II. THE WINDING ROAD OF PRECEDENTS

A. PATENTS GENERALLY

Article one, Section 8 of the United States Constitution authorizes the Congress to establish a patent protection regime in order to promote "the Progress of Science" by granting inventors exclusive use of their inventions for "limited Times." Congress, in turn, created a patent protection scheme codified in Title 35 of the United States Code, which states in part that subject to specific limitations, patent monopoly is available for processes, machines, manufacture, and compositions of matter. A patent successfully prosecuted in the Patent and Trademark Office thus grants to an inventor the exclusive rights to make, use, and sell the invention for a term of up to twenty years. Another benefit of patent protection is that, unlike the case for copyrights, even independently developed inventions infringe the work of an inventor.

Under the constitutional grant to create a system of patent protection, Congress has enacted several iterations of the Patent Act, and the current Act declares that in order to qualify for patent protection, an invention must satisfy the requirements of utility, novelty, nonobviousness, and enablement. Additionally, the invention at issue must fall into a category of so-called

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5 U.S. CONST. art. I, § 8, cl. 8.
8 PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS § 1.03[6] at 1-24 rev. (1998) (stating that the copyright monopoly "only excludes others from 'copying' ").
patentable subject matter. A literal reading of § 101 of the Patent Act, which describes, in general terms, what constitutes patentable inventions, does not disclose any statutory limitation to the subject matter of patent as "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of [the Patent Act]." Indeed, the notable decision in Diamond v. Chakrabarty construed § 101 of the Patent Act to "include anything under the sun that is made by man." However, the Court was quick to point out that § 101 is not completely without boundaries. Rather, the determination of what constitutes patentable subject matter is the product of a long judicial evolutionary process. For example, one fundamental rule prohibits patents for abstract ideas. This rule appears to derive from the traditional notion that patents are intended to encompass devices or physical items in the useful arts rather than concepts in the theoretical realm. This principle was articulated by the Supreme Court in Rubber-Tip Pencil Co. v. Howard: "[a]n idea of itself is not patentable, but a new device by which it may be made practically useful is." Similarly, in Diamond v. Chakrabarty, the Court stated that

[t]he laws of nature, physical phenomena, and abstract ideas have been held not patentable. Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that E=mc²; nor could Newton have patented the law of gravity. Such discoveries are "manifestations

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18 Id.
20 Id. at 507.
Thus, over the years, the courts have announced and modified patentable subject matter rules generally as well as particular and specific restrictions, such as those which address patents for business methods and mathematical algorithms.

B. THE BUSINESS METHOD EXCEPTION

The business method exception to patentable subject matter seems to originate from the related rules against patents for "printed matter" and "business methods." The rules evolved from a series of cases in which patent claims were asserted for new printed business forms. For example, in a case involving a patent for a means of credit insurance, the court struck down the patent since

"[t]here is nothing peculiar or novel in preparing a sheet of paper with headings generally appropriate to classes of facts to be recorded, and whatever peculiarity there may be about the headings in this case is a peculiarity resulting from the transactions themselves... Given a series of transactions, there is no patentable novelty in recording them, where, as in this case, such record consists simply in setting down some of their details in an order or sequence common to each record."

21 Chakrabarty, 447 U.S. at 309 (quoting Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130, 76 U.S.P.Q. (BNA) 280, 281 (1948)). See also O'Reilly v. Morse, 56 U.S. (15 How.) 62, 112 (1853) (denying Samuel Morse's famous claim for the use of "electro magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances" because the claim was for the use of magnetism without regard to any specific process and thus represented merely an idea).


23 United States Credit Sys. Co., 59 F. at 143. One justification for the printed matter exception is that "it is necessary to 'channel' certain creations into the realm of patent law, and other creations (notably those in written form) into copyright law." MERGES ET AL., supra note 22, at 155.
Similarly, courts held that systems of transacting business were not patentable subject matter, unless, of course, the claims were for the physical execution of a new system. *Hotel Security Checking Co. v. Lorraine Co.* is generally considered the origin for the business method exception. The subject of the patent claim was termed a "method of and means for cash-registering and account-checking" designed to prevent frauds and peculation by waiters and cashiers in hotels and restaurants. The court stated that it was manifest that the subject matter of the claims was not for the traditional classes of machines, manufacture or compositions of matter. Thus, the court concluded, "[i]f within the language of the statute at all, it must be as a 'new and useful art.'" The court proceeded: "In the sense of the patent law, an art is not a mere abstraction. A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretation of the term, an art." The court reiterated its view that "[n]o mere abstraction, no idea, however brilliant, can be the subject of a patent irrespective of the means designed to give it effect." With this single sentence, the *Hotel Security Checking* court halted, if only temporarily, the expansion of the scope of patent protection.

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24 Hotel Sec. Checking Co. v. Lorraine Co., 160 F. 467 (2d Cir. 1908).
25 Although courts had invalidated claims for printed materials to be used as a part of a business method before the *Hotel Security* decision, none of the earlier courts held that any exception for "methods of doing business" existed. Michael L. Fuelling, *Manufacturing, Selling, and Accounting: Patenting Business Methods*, 76 J. PAT. & TRADEMARK OFF. SOCY 471, 482 (1994). See, e.g., Munson v. City of New York, 124 U.S. 601 (1888) (finding no novelty in a method for preserving, filing, and cancelling bonds by pasting them in blank books); United States Credit Sys. Co., 59 F. at 139 (finding no novelty in claim for a form contract to insure merchants' transactions); Hocke v. New York Cent. & H.R.R. Co., 122 F. 467 (2d Cir. 1903) (invalidating a claim for a means to secure against loss of freight by using receipts for obviousness).
26 Hotel Sec. Checking Co., 160 F. at 467. Under the system, the object of the invention was to accurately check the account of the cashier and of each waiter. Id. at 467. In carrying out the system, each waiter was provided with slips of paper while the person in charge of each department was provided with a sheet of paper ruled lengthwise in parallel columns, each waiter having a particular column exclusively appropriated to him. Id. Quite simply, the amounts of food removed from the kitchen would be entered by the supervisor on the sheets, and the entries would then be compared with the tally of each individual waiter to determine if any "dishonesty" occurred and if so, where the fault lies. Id. at 467-68.
27 Id. at 469.
28 Id. (emphasis added).
29 Id. (citing Fowler v. City of New York, 121 F. 747, 748 (2d Cir. 1903)).
and, more importantly, it gave birth to the business methods exception to patentable subject matter which would come to last for a century.  

The combined effect of the dual doctrines prohibiting patents for printed matter and business methods is that most business and financial innovations have been considered simply unpatentable. In fact, as a recent case pointed out, the 1994 Manual of Patent Examining Procedure stated the view of the Patent and Trademark Office accordingly in quite unambiguous language: "[t]hough seemingly within the category of process or method, a method of doing business can be rejected as not being within the statutory classes."  

A classic case adhering to the business method doctrine was Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc. The dispute arose when a patent was sought for a scheme for parking automobiles in an open lot to improve the view of a drive-in movie screen for all patrons. The lower court upheld the validity of the patent, evidently impressed by its novelty. The case was, however, promptly reversed by the First Circuit, which stated that

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30 See, e.g., 1 ERNEST BAINBRIDGE LIPSCOMB III, WALKER ON PATENTS § 2:17 at 171 (3d ed. 1984) ("[A] 'system' or method of transacting business is not an 'art,' nor does it come within any other designation of patentable subject matter... apart from the physical means of conducting the system."); ROSENBERG, supra note 8, at 6-82 ("Whereas an apparatus or system capable of performing a business function may comprise patentable subject matter, the law remains that a method or doing business whether or not generated by an apparatus or system does not constitute patentable subject matter.").

31 See Donald S. Chisum, The Patentability of Algorithms, 47 U. PITT. L. REV. 959, 964 (1986) (stating that "[i]t is thought to be black-letter law that a 'system of transacting business disconnected from the means for carrying out the system' does not constitute patentable subject matter") (quoting Hotel Sec. Checking Co. v. Lorraine Co., 160 F. 467 (2d Cir. 1900)).

32 State St. Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1377, 47 U.S.P.Q.2d (BNA) 1596, 1604 (quoting MANUAL OF PATENT EXAMINING PROCEDURE § 706.03(a) (West 1994)).

33 Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc., 174 F.2d 547, 81 U.S.P.Q. (BNA) 149 (1st Cir. 1949).

34 Id. at 550.


[t]his arcuate arrangement of parking stalls in a lot is obviously only an adaptation to automobiles of the conventional arrangement of seats in a theatre employed since ancient times to enable patrons to see the performance. . . . [A] system for the transaction of business, such, for example, as the cafeteria system for transacting the restaurant business . . . however novel, useful, or commercially successful is not patentable apart from the means for making the system practically useful. . . .

As a result of the court's explicit directive to prohibit business methods patents, Loew's is often cited for the proposition that business methods in general are not patentable. It is exactly these kinds of blanket assertions by courts and legal scholars alike that distilled the doctrine to such a degree of clarity that the business methods exception had become "hornbook" law cast in stone by the time that recent decisions came to cast the doctrine into doubt.

C. THE MATHEMATICAL ALGORITHM EXCEPTION

Another limit to patentable subject matter thought to be well established until the State Street decision pertains to claims that encompass mathematical algorithms. Three general categories of unpatentable subject matter have crystallized from Supreme Court precedent: "laws of nature, natural phenomena, and abstract ideas." As a subset of the general prohibition against patents for mere expressions of abstract ideas, mathematical algorithms have traditionally been considered unpatentable subject matter.

1. The Gottschalk Trilogy of Cases. The mathematical algorithm exception is generally thought to have originated in the case of

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37 Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc., 174 F.2d at 552 (emphasis added).
Gottschalk v. Benson. In that case, the United States Supreme Court held that a method for converting binary-coded decimal numerals into pure binary numerals with the use of a computer was not patentable subject matter. In particular, the court held that since the claimed mathematical formula had no significant practical application without a computer, "the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." Additionally, the court declared that a transformation of an article "to a different state or thing" is the basic requirement for the patentability of a process claim that does not include particular machines. The Gottschalk court stated that "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." Thus, the court held, the grant of patent protection for the use of a scientific principle, rather than for a specific application, would impede rather than promote the progress of science.

The second case in what has been called "the Supreme Court Trilogy" of cases considering patent protection for software was Parker v. Flook. The Parker Court held that the claim for a mathematical process to calculate alarm limits for a chemical process merely was a known mathematical algorithm tailored to a

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42 The process of replacing the old relays in telephone networks with computerized switches required the programming of computers to perform telephone functions. Garner et al., Advanced Claim Drafting and Amendment Writing Workshop for Electronics and Computer-Related Subject Matter, 501 P.L.I. 229, 239 (1998). Relevant to the Benson case was the process of converting the decimal digits of a phone call to binary digits usable by the computers. Id. The patent at issue was the algorithm to make this conversion. Id.
43 409 U.S. at 71-72.
44 Id. at 72.
45 Id. at 70 (emphasis added).
46 Id. at 67. The Gottschalk court did not hold that computer software programs could never be patentable, but it did state that "transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines." 409 U.S at 70. Thus, the mere processing of numbers by a mathematical equation on a computer did not constitute patentable subject matter as no transformation or reduction had taken place.
47 U.S. CONST. art. I, § 8, cl. 8 (patent and copyright clause).
“post-solution activity.” In other words, the court considered the claim as an attempt to transform an unpatentable scientific principle into a patentable process by cladding it in a practical invention. The effective result of the decision was to extend the Gottschalk rule such that not only were mathematical algorithms not patentable, but most any process utilizing such algorithms was invalidated as well.

The third and final installment of the Supreme Court trilogy came three years later in Diamond v. Diehr, which restricted the application of the Benson-Parker analysis. The claim was for a process that used a computer to apply a well-known mathematical formula to calculate the termination point for a rubber curing process. The analysis of the Parker Court likely would have concluded that the claim merely was for an “improved method of calculation.” Thus, although the formula was tied to a specific end use, the Parker analysis would in all likelihood have found the invention to be unpatentable subject matter under § 101. The Diamond Court, however, drew a distinction from the Gottschalk and Parker decisions by declaring that the algorithm at issue did not merely calculate abstract numerical values, but rather “involve[d] the transformation of an article, in this case raw, uncured synthetic rubber, into a different state or thing.” The Court declared that “when a claim recites a mathematical formula (or scientific principle or phenomenon of nature), an inquiry must be made into whether the claim is seeking patent protection for that...

50 Id. at 590. The claimed process updated the alarm limits at which the chemical reactions involved in catalytic conversion of hydrocarbons become unstable. Id. at 585.
51 Id. at 590. The Court elaborated: “A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques.” Id. at 590.
53 See State Street, 927 F. Supp. at 509 (“The process involved a well-known mathematical formula [the Arrhenius formula] coupled with constant measurement of temperature inside a mold; a computer calculated ongoing changes in temperature and automatically terminated the curing process at the proper point with a degree of precision theretofore unknown in the art.”).
54 Parker v. Flook, 437 U.S. at 595 n.18.
55 Id.
56 Diamond v. Diehr, 450 U.S. at 184 (emphasis added).
formula in the abstract. A mathematical formula as such is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.\textsuperscript{57}

This has been dubbed the preemption inquiry, by which a software patent incorporating a mathematical algorithm must not preempt the "human use of [the] equation by 'head and hand'."\textsuperscript{58}

The \textit{Diamond} Court continued:

On the other hand, when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of [section] 101.\textsuperscript{59}

Thus, \textit{Diamond} made clear that the physical transformation alluded to in \textit{Gottschalk}\textsuperscript{60} and \textit{Parker}\textsuperscript{61} was a prerequisite to such kinds of patent protection. Consequently, all software patents utilizing mathematical algorithms must satisfy this "transformation inquiry."\textsuperscript{62}

2. \textit{The Gottschalk Doctrine Implemented: The Freeman-Walter-Abele Test.} To determine whether the claimed subject matter constitutes an unpatentable mathematical algorithm according to the principles developed in the \textit{Gottschalk-Parker-Diamond} trilogy, the Court of Customs and Patent Appeals (C.C.P.A.) formulated a

\textsuperscript{57} \textit{Diehr}, 450 U.S. at 191.

\textsuperscript{58} Jur Strobos, \textit{Stalking the Elusive Patentable Software: Are there still Diehr or was it just a Flook?}, 6 \textit{Harv. J. L. \\

\textsuperscript{59} \textit{Diehr}, 450 U.S. at 192.

\textsuperscript{60} 409 U.S. 63, 70, 175 U.S.P.Q. (BNA) 673, 676 (1972).


\textsuperscript{62} Strobos, \textit{supra} note 58, at 387 (stating that "[t]he second [inquiry] addresses whether the particular claimed use is a process with a product, or a transformation and reduction of a particular entity, such as input data, to a different state, rather than an idea or 'patent protection for that formula in the abstract'." (quoting \textit{Diehr}, 450 U.S at 184, 187, 191)).
second trio of cases, logically entitled the *Freeman-Walter-Abele* test.\(^{63}\) In 1978, the *Freeman* court stated that

> [f]irst, it must be determined whether the claim directly or indirectly recites an 'algorithm' in the [Gottschalk] sense of that term, for a claim which fails even to recite an algorithm clearly cannot wholly preempt an algorithm. Second, the claim must be further analyzed to ascertain whether in its entirety it wholly preempts that algorithm.\(^{64}\)

Two years later, the *Walter* court modified the second step of the *Freeman* test ever so slightly:

> If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between physical elements of the claim . . . or to refine or limit claim steps . . ., the claim being otherwise statutory, the claim passes muster under [section] 101. If, however, the mathematical algorithm is merely presented and solved by the claimed invention, as was the case in [Gottschalk] and [Parker], and is not applied in any manner to physical elements or process steps, no amount of post-solution activity will render the claim statutory; nor is it saved by a preamble merely reciting the field of use of the mathematical algorithm.\(^{65}\)

Finally, in 1982, the C.C.P.A. expanded the second prong such that it only applied to claims in which structural relationships or process steps were defined, limited, or refined by the application of the algorithm.\(^{66}\) The court stated that "if the claim would be 'otherwise statutory' . . . albeit inoperative or less useful without

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\(^{64}\) *In re Freeman*, 573 F.2d at 1245.

\(^{65}\) *In re Walter*, 618 F.2d at 767.

\(^{66}\) *In re Abele*, 684 F.2d at 907.
the algorithm, the claim likewise presents statutory subject matter when the algorithm is included.67

The final version of the Freeman-Walter-Abele test was articulated in the State Street Bank case as follows:

First, the claim is analyzed to determine whether a mathematical algorithm is directly or indirectly recited. Next, if a mathematical algorithm is found, the claim as a whole is further analyzed to determine whether the algorithm is 'applied in any manner to physical elements or process steps,' and, if it is, it 'passes muster under [section] 101.'68

In other words, under the second inquiry, if the mathematical algorithm is applied to one or more elements of an otherwise statutory process claim, the requirements of § 101 are met.69

Thus, in order to identify unpatentable mathematical algorithms, one must show that "they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful.'"70 In practical terms, this means that the patentability of an algorithm hinges on its application in a "useful" way.

Examples of what constitutes a "useful" way can be found in cases such as In re Alappat71 and Arrhythmia Research Technology Inc. v. Corazonix Corp.72 In re Alappat involved a mathematical algorithm that transformed data from an electrical input signal to produce a smooth waveform display on a monitor.73 In other words, the algorithm "massaged" the information from the input

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67 Id.
69 In re Schrader, 22 F. 3d 290, 292, 30 U.S.P.Q.2d (BNA) 1455, 1457 (Fed. Cir. 1994).
70 State Street, 149 F.3d at 1373.
73 In re Alappat, 33 F.3d at 1537.
signal to be displayed more clearly on an oscilloscope. The court held that the calculations constituted a practical application of the abstract underlying idea, because the smooth waveform on the monitor constituted "a useful, concrete and tangible result."

The invention at issue in Arrhythmia similarly constituted a practical application of an abstract idea. The invention processed electrocardiograph (EKG) signals from patients' heartbeats through a series of calculations and the final result, output information for heart activity, was the useful, concrete, or tangible thing because it represented the condition of a patient's heart.

A contrasting example of a patent claim for computer software that failed the Freeman-Walter-Abele test is found in In re Schrader. The case concerned a claim for a way of conducting auctions, where the sales revenue was maximized by a method which would compute the highest value of a plurality of items such as contiguous tracts of land. The method simply employed linear mathematical programming to calculate the sum total of the bids for the parcels sold independently, or alternatively, the total value of the parcels if sold in consolidated groups, the idea being that a tract of land might be more valuable to a purchaser if it could be secured as a contiguous group.

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74 Id. at 1537. "[The invention] eliminated any apparent discontinuity, jaggedness or oscillation in the waveform, thus giving the visual appearance of a smooth continuous waveform." Id.

75 Id. at 1544. The invention improved the output on the screen of a digital oscilloscope through the use of calculations to "transform, i.e., rasterize, digitized waveforms (data) into anti-aliased, pixel illumination data to produce a smooth waveform." Id.

76 Electrodes attached to the patient's body detect the heart's electrical signals in accordance with the various phases of heart activity. Arrhythmia, 958 F.2d at 1054-55. These analog signals were converted to digital form and were processed mathematically to detect the signals that represent an acute type of heart arrhythmia known as ventricular tachycardia. Id.

77 In re Schrader, 22 F.3d 290, 30 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994).

78 Id. at 291.

79 "Linear programming is a known procedure for solving business problems involving profit maximization." Id., at 293 n.7 (citing 12 McGRAW HILL ENCYCLOPEDIA OF SCIENCE & TECHNOLOGY, at 385-387 (6th ed. 1987)).

80 Id., at 291:

For example, in an auction involving two contiguous tracts of land, tracts 1 and 2, the following bids might be received and recorded: Bid 1--$100,000 for tract 1 by bidder A; Bid 2--$200,000 for tract 2 by bidder B; and Bid 3--$250,000 for both tracts 1 and 2 by bidder C. The
Schrader argued that "the method physically regroups raw bids into new groupings [and, therefore,] physically transforms bid data into completion data or display data."81

The court found the argument unpersuasive as it held there was "nothing physical about bids per se."82 Thus, as "the grouping or regrouping of bids [could not] constitute a physical change, effect, or result," the court could not find any kind of physical transformation of data.83 The court acknowledged that for purposes of section 101, the claims were "indistinguishable from the claims involving the manipulation of data representing CAT scan images held patentable in [Abele]."84 However, the court held that the distinction arose in the fact that Abele involved the "transformation or conversion of subject matter representative of or constituting physical activity or objects,"85 whereby the court strictly adhered to the physical transformation prong of the two-part Freeman-Walter-Abele test.86

The examples show how strictly the clear directives of the Freeman-Walter-Abele test have been followed, illustrating the degree of validity that the courts have accorded it until the very recent developments that eventually resulted in its removal from the doctrinal toolbox.

III. MODERN DEVELOPMENT

A. THE BUSINESS METHOD EXCEPTION

Until very recently, court decisions have shown continued support for, and adherence to, the vitality of the business methods exception. For example, In re Alappat stated in dicta that "busi-
business methodology” is not [section] 101 subject matter.\(^{87}\)

However, the business method exception was rather sharply criticized in Judge Newman’s dissent to the Federal Circuit’s analysis of *In re Schrader*:

[T]he Board [of Patent Appeals and Interferences] remarked that the “method of doing business” is a fuzzy concept, observed the inconclusiveness of precedent, and sought guidance from this court. Indeed it is fuzzy. . . . The decisions that have spoken of “methods of doing business” have, or could have, resolved the issue in each case simply by relying on the statutory requirements of patentability such as novelty and unobviousness.\(^{88}\)

Judge Newman explained that “[t]he cases simply reaffirm that the patent system is directed to tangible things and procedures, not mere ideas.”\(^{89}\) In particular, she pointed out that the court in the *Hotel Security Checking* case, often cited as establishing the business methods exception to patentable subject matter, discussed the obviousness of the record keeping system at considerably greater detail and length than whether the subject matter was statutory.\(^{90}\) Thus, she concluded, the *Hotel Security Checking* court’s lack of sufficient analysis on the point of statutory subject matter supported her assertion that “the jurisprudence does not require the creation of a distinct business class of unpatentable subject matter.”\(^{91}\)

The *Hotel Security Checking* court held that the fundamental

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\(^{88}\) *In re Schrader*, 22 F.3d at 298.

\(^{89}\) *Id.*

\(^{90}\) *Id.*

\(^{91}\) *Id.*
principle of the invention was "as old as the art of bookkeeping, i.e., charging the goods of the employer to the agent who takes them." Thus, in effect, the patent was declared invalid for simple lack of novelty/obviousness rather than for lack of patentable subject matter. In fact, as Judge Newman points out, the court did not assume any position on the matter of whether the patent claim in fact constituted patentable subject matter. Thus, it seems clear that nearly one century's worth of case law and commentary on the business method doctrine has been based on a mere dictum.

Judge Newman further declared that as of the date of the Schrader decision, no court had disqualified a patent for a novel and non-obvious method or process solely because it represents a business method. Rather, she claimed, most court decisions that refer to the business method exception rely on the basic notion that mere ideas without physical embodiments cannot be protected by patent.

An excellent illustration of Judge Newman's point is Loew's Drive-In Theatre, a case thought to support the business method doctrine while actually disposing of the claimed invention for lack of novelty. The court stated that the invention at issue might constitute a business method, but ultimately invalidated the claim for a system of pointing cars at a drive-in movie theatre toward the screen for lack of novelty.

Echoing the modern rethinking of the business method exception in the courts, the 1996 Manual of Patent Examining Procedure was recently revised to exclude the following paragraph from section 374 [Vol. 6:359]

J. INTELL. PROP. L.

Hotel Sec. Checking, Inc. v. Lorraine, 160 F. 467, 469 (2d Cir. 1908).

In re Schrader 22 F.3d at 298, 30 U.S.P.Q.2d 1455, 1462 (1994) (referring to Hotel Security, 160 F. at 472 (holding that "if at the time of [the] application, there had been no system of bookkeeping of any kind in restaurants, we would be confronted with the question whether a new and useful system of cash-registering and account-checking is such an art as is patentable under the statute.").

Id. at 298.

Id.


Id. at 552. "This arcuate arrangement of parking stalls in a lot is obviously only an adaptation to automobiles of the conventional arrangement of seats in a theatre employed since ancient times to enable patrons to see the performance while looking comfortably ahead in normal sitting position without twisting the body or turning the head." Id.
BUSINESS METHOD EXCEPTIONS

706.03(a): "Though seemingly within the category of process or method, a method of doing business can be rejected as not being within the statutory classes." Additionally, the Examination Guidelines for Computer-Related Inventions, published and effective in 1996, states that "[o]ffice personnel have had difficulty in properly treating claims directed to methods of doing business." To remedy this problem, the guidelines suggest that "[c]laims should not be categorized as methods of doing business." Rather, "such claims should be treated like any other process claims, pursuant to [the] Guidelines." Although the Guidelines do not have the force of law, and while any potential failure by the Patent and Trademark Office personnel to follow the Guidelines is neither appealable nor petitionable, the Guidelines are "based on the Office's current understanding of the law and are believed to be fully consistent with binding precedent of the Supreme Court, the Federal Circuit and the Federal Circuit's predecessor courts." Thus, as due consideration should be afforded the PTO's understanding of the applicable laws and precedent, the only possible conclusion is that the business method exception seems to have eroded over the course of a century to the point of documented extinction as of the guideline revisions of 1996. Thus, it was only a matter of time before a court would step into the limelight and sound the death knell for a doctrine considered by many as ailing and deserving to be put out of its misery.


100 Id.

101 Id. See also In re Trovato, 60 F.3d at 807 (suggesting that while the Guidelines do not have the force and effect of law, they may serve as persuasive authority).


103 Id.

104 The Guidelines were published in the Federal Register on February 28, 1996, and took effect on March 29, 1996.

105 See, e.g., In re Schrader, 22 F.3d 290, 298, 30 U.S.P.Q.2d (BNA) 1455, 1462 (Fed. Cir. 1994) (Newman, J., dissenting) (stating that the business method "merits retirement from the glossary of section 101.").
B. THE MATHEMATICAL ALGORITHM EXCEPTION

The Examination Guidelines for Computer-Related Inventions also articulate the current understanding of the Patent and Trademark Office regarding the patentability of software incorporating mathematical algorithms. The Guidelines state that "a process that merely manipulates an abstract idea or performs a purely mathematical algorithm is non-statutory despite the fact that it might inherently have some usefulness." In other words, this is the familiar prohibition against patents for abstract ideas articulated in the Gottschalk-Parker-Diamond trilogy. The guidelines also adopt the physical transformation test from the Freeman-Walter-Abele line of decisions.

If the 'acts' of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. Thus, a process consisting solely of mathematical operations, [that is], converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

However, while a process claim consisting solely of mathematical operations is non-statutory whether or not it is performed on a computer, the Guidelines state that a "process will receive statutory protection if it is limited to a practical application of the abstract idea or mathematical algorithm in the technological arts (i.e., involve some species of physical transformation of input data)."

In summary, the Examination Guidelines depicted a harmonious correlation between the PTO guidelines and the case law that has traditionally been relied upon for analysis of inventions that

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108 Id. at 7484.
109 See supra pages 18 to 25 (discussing the Gottschalk trilogy of cases).
110 See supra, pages 25 to 35 (discussing the Freeman-Walter-Abele test).
112 Id.
incorporate mathematical algorithms. This harmony would not last long.

IV. THE STATE STREET DECISIONS

A. CASE BACKGROUND

The patent at issue, patent number 5,193,056 (the '056 patent), currently is held by Signature Financial Group, Inc. by assignment from Mr. Boes, the original registrant. The patent issued in March of 1993 and is entitled "[a] data processing system for Hub and Spoke financial services configuration." The system avoids legal restrictions against commingling assets of disparate mutual funds by allowing for two or more mutual funds—so-called Spokes—to combine their assets in a common second-generation investment portfolio—the so-called hub. The purpose of such an arrangement is to pool common expenses in order to realize economies of scale and to reduce the proportionate fraction of costs. Additionally, such an arrangement results in tax advantages, and allows for small funds (previously precluded from operating due to prohibitively large expenses) to pool their assets and to become attractive to investors. However, the drawback,

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114 Patent No. 5,193,056, Background of the invention. ("'Hub and Spoke' [is a] service mark of Signature Financial Group, Inc.") Id.
115 Id.
116 Id. "To name just a few expenses, every fund... pays an investment advisory fee to an investment adviser who invests the fund's assets, custodian fees to a custodian for the safekeeping of the fund's assets, portfolio accounting fees for the determination of the fund's asset value and income... an audit fee to the fund's independent accountants... and a legal fee..." Id.
117 Id. Having a large amount of assets results in various economies of scale in fund operating costs and "[s]ince many of a fund's expenses are independent of the fund's asset base, a larger fund asset base produces a lower operating expense ratio (expenses to assets), which increases the net investment performance of the fund." Id.
118 Id. "As a partnership, [the hub] receives "flow-through" tax treatment and, so, the [hub] does not pay taxes, but rather all economic gain or loss flows through to the [hub] investors." Id.
119 Patent No. 5,193,056, Background of the invention. "[A] fund with a small amount of assets, which ordinarily would not be a viable fund because it would have a prohibitively high operating expense ratio, can now be established on a cost-effective basis by investing..." Id.
as the patent explains, is that such a hub and spoke configuration presents "great administrative challenges." For example, because the partners (spokes) in the portfolio themselves are mutual funds, their assets fluctuate daily as customers make additional investments or withdrawals. Further compounding the complexity are factors such as the rise or fall of the portfolio asset values and the addition or complete removal of spokes from the hub. In addition, the shares of the spoke mutual funds are generally traded publicly, which means that the value of each of the spokes must be calculated quickly and accurately to satisfy the shareholders' demands for rapid performance evaluations.

To overcome such administerial difficulties, the '056 patent provides a data processing system and method for monitoring and recording the information flow and data necessary for maintaining the partnership portfolio. The data processing system determines the percentage share (allocation ratio) that each fund has in the portfolio, while taking into consideration daily changes both in the value of the portfolio's investment securities (as determined by market prices) and in the amount of each fund's assets (as determined by daily shareholder purchases and redemptions). The system also allocates to each fund the portfolio's daily income, expenses, and net realized and unrealized gain or loss.

its assets in a [hub]. Id.

The patent provides an example:

[C]onsider a portfolio made up of Funds A and B. Assume that at the start of the day Fund A has $750,000 invested in the portfolio and Fund B has $250,000 invested.... Next, assume that by the end of the day the portfolio has not changed in value due to market fluctuations, but that additional purchases by fund shareholders have given Fund A $800,000 in assets and Fund B $275,000 in assets. The portfolio has grown to $1,075,000 in assets, with Fund A having a 74.4% share [down from 75%] and Fund B having a 25.6% share [up from 25%]. Id.

State St. Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1371, 47 U.S.P.Q.2d (BNA) 1596, 1599 (Fed. Cir. 1998) (stating that "in some instances, a mutual fund administrator is required to calculate the value of the shares to the nearest penny within as little as an hour and a half after the market closes. Given the complexity of the calculations, a computer or equivalent device is a virtual necessity to perform the task.").

Patent No. 5,193,056, Abstract.

Id.

Signature, the holder of the '056 patent is an administrator and accounting agent for mutual funds.\textsuperscript{126} State Street, a competitor fund administrator, attempted to license the patented hub and spoke process, possibly after realizing the potential value of such a process, but negotiations failed.\textsuperscript{127} State Street subsequently filed a declaratory judgment action to invalidate Signature's patent for failure to claim a statutory subject matter under § 101 of the Patent Act, because "the invention claims an unpatentable mathematic algorithm as defined by established Supreme Court precedent."\textsuperscript{128} Signature, on the other hand, declared that its Hub and Spoke data processing system was a "computer-implemented invention that is patentable both under recent Federal Circuit precedent and guidelines for patent examiners issued by the U.S. Patent and Trademark Office."\textsuperscript{129}

The adverse positions taken by the parties set the stage for a promising conflict: Serious competitors, significant financial stakes, and a wavering line of precedent.

B. THE DISTRICT COURT OPINION: A SIMPLE APPLICATION OF DOCTRINE

1. \textit{The Mathematical Algorithm Exception}. The district court framed the summary judgment issue as "whether computer software that essentially performs mathematical accounting functions and is configured to run on a [personal] computer is patentable under 35 U.S.C. § 101."\textsuperscript{130} The court seemed less than enthused by the task at hand as it referred to the issue of software patentability as a "jurisprudential quagmire."\textsuperscript{131} Thus, it was

\begin{thebibliography}{99}
\item \textsuperscript{126} State St. Bank & Trust Co., 149 F.3d 1368, 1370, 47 U.S.P.Q.2d (BNA) 1596, 1598 (Fed. Cir. 1998).
\item Id.
\item Id.
\item Id. at 506.
\item Id. Referring to John A. Burtis, \textit{Towards a Rational Jurisprudence of Computer-Related Patentability in Light of In re Alappat}, 79 MINN. L. REV. 1129, (1995): "[T]he question whether computer-related inventions driven by mathematically-based software deserve the market protection afforded under federal patent law has vexed both theorists and practitioners since computers entered the marketplace some thirty years ago."
\end{thebibliography}
with unease that the court embarked on a treacherous voyage through the history of the decisions regarding the patentability of software implemented inventions under § 101. The court further explained that, in light of the mathematical algorithm exception, the determination of patentability for computer software is quite a difficult task "because a computer program directs the computer to perform mathematical functions (i.e., process data) to achieve a desired result."\textsuperscript{132}

The lower court's analysis of the '056 patent began with an application of the Freeman-Walter-Abeli mathematical algorithm test.\textsuperscript{133} Thus, the first question was whether the patent recited a mathematical algorithm,\textsuperscript{134} and under the Benson decision, indicia of mathematical algorithms may include any series of "mathematical operations or calculations."\textsuperscript{135} The court determined that while the '056 patent did not recite a mathematical formula directly, "the data processing system is an apparatus specifically designed to solve a mathematical problem."\textsuperscript{136} In particular, the court found that three of the patent claims recited "calculating data as a function of the machine" in determining items such as the allocation of income, expenses, gains, and losses for each spoke, as well as determining each spoke's percentage share in the hub considering daily market fluctuations.\textsuperscript{137} An invention that inputs, processes, and outputs numbers, the court concluded, must by definition perform mathematical operations,

\begin{itemize}
  \item \textsuperscript{132} State St. Bank and Trust Co., 927 F. Supp. 502, 508, 38 U.S.P.Q.2d (BNA) 1530 (D. Mass. 1996) (emphasis added) (quoting Jur Strobos, Stalking the Elusive Patentable Software: Are there still Diehr or was it just a Flook?, 6 HARV. J.L. & TECH. 363, 377 (1993), supra note 58, at 377 as stating that "[a] computer program is nothing more than a series of mathematical steps conducted by a machine composed of electronic switches and storage sites").
  \item \textsuperscript{133} 927 F. Supp. at 513.
  \item \textsuperscript{134} \textit{Id.}
  \item \textsuperscript{135} \textit{Id.}
  \item \textsuperscript{136} \textit{Id.} (noting that the patent claim clearly contemplated a solution to a mathematical problem).
  \item \textsuperscript{137} State Street, 927 F. Supp. at 513. The court analogized its analysis to In re Schrader, where the court held that the method for grouping bids at an auction using linear mathematical programming to maximize the seller's revenue constituted "the solving of a mathematical problem: determining the optimal combination of bids." In re Schrader, 22 F.3d 290, 293, 30 U.S.P.Q.2d (BNA) 1455, 1457 (Fed. Cir. 1994)).
\end{itemize}
and thus satisfies the first prong of the Freeman-Walter-Abele test. \[138\]

Once the mathematical algorithm prong is satisfied, the Freeman-Walter-Abele test dictates that the inquiry should proceed to the “physicality test,” which determines whether “the claim would be ‘otherwise statutory’ . . . albeit inoperative or less useful without the algorithm.” \[139\] Should the response to this inquiry be in the affirmative, then the claim likewise presents statutory subject matter when the algorithm is included. \[140\]

The court in State Street held that Signature’s Hub and Spoke patent did not satisfy this test, because “like other accounting methods, it is designed to manipulate and record numbers.” \[141\] The court distinguished the case at hand from Arrhythmia by the fact that “[u]nlike the electrocardiograph in Arrhythmia . . ., Signature’s data processing system does not ‘involve the transformation or conversion of subject matter representative of or constituting physical activity or objects.’” \[142\] While the court acknowledged the fact that mathematical calculations were, indeed, part of the patent claim in Arrhythmia, the court emphasized that the invention rather ought to be viewed as a method of analyzing EKG signals for the purpose of determining a specified heart activity. \[143\] The distinction between the two systems, the court concluded, was that in Arrhythmia, “the number obtained [was] not a mathematical abstraction; it [was] a measure in microvolts of a specified heart activity, an indicator of the risk of ventricular tachycardia.’” \[144\]

Similarly, the court distinguished Alappat by the fact that Signature’s patent does “nothing other than present and solve a

\[\text{List of footnotes:}\]

138 State Street, 927 F. Supp. at 513.
139 Id.
141 Id.
142 State Street, 927 F. Supp. at 514.
143 Id. (citing Schrader, 22 F.3d at 294). Specifically, the court declared that the patent in Arrhythmia “enabled a certain type of human heart activity to be measured, processed, and displayed electronically.” Id.
144 Id.
145 Id. (citing Arrhythmia Research Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1060, 22 U.S.P.Q.2d (BNA) 1033 (Fed. Cir. 1992)).
mathematical algorithm and, therefore, is not patentable."\textsuperscript{146} Rather, Alappat’s invention that would manipulate signal waveform displays “physically converted the input data into a new and totally different form.”\textsuperscript{147} Again, the court noted that the Alappat invention concededly \textit{did} employ a computer-implemented mathematical algorithm,\textsuperscript{148} but relied on the Alappat court’s conclusion that the rasteriser invention constituted a \textit{physical transformation},\textsuperscript{149} which went beyond a mere manipulation of mathematical abstractions.\textsuperscript{150}

In summary, as the court found neither a transformation of subject matter representative of physical activities or objects nor a conversion of data into a different form, it concluded that the invention merely recited a change of one set of numbers into another, which it held insufficient to confer patent protection.\textsuperscript{151} Indeed, “[t]he same functions could be performed, albeit less efficiently, by an accountant armed with pencil, paper, calculator, and a filing system.”\textsuperscript{152}

The court found support for its conclusion in the Schrader decision, which held nonstatutory an algorithm to maximize auction revenues. Schrader’s computer implemented method to compile, process, and store business data failed to secure patent protection because, consistently with Arrhythmia, the court was unable to find any physical aspect related to bids. Thus, the Schrader court concluded, “the grouping or regrouping of bids cannot constitute a \textit{physical} change, effect, or result.”\textsuperscript{153} In summary, with respect to the mathematical algorithm exception, the district court simply applied clear and well-known precedent to the facts, which yielded

\textsuperscript{146} Id. at 514.
\textsuperscript{147} \textit{State Street}, 927 F. Supp. at 514 (emphasis added).
\textsuperscript{148} Id.
\textsuperscript{149} Id. “[That is,] discrete waveform data samples into anti-aliased pixel illumination data to be displayed on a display means.” \textit{Id.}
\textsuperscript{150} Id. at 514 (noting the dissent of Archer, C.J., arguing that “‘rasterizer is simply the mathematical conversion of data’ which should not be patentable.” \textit{In re Alappat}, 33 F.3d 1526, 1564, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994)).
\textsuperscript{151} \textit{State Street}, 927 F. Supp. at 514. “Quite simply, it involves no further physical transformation or reduction than inputting numbers, calculating numbers, outputting numbers, and storing numbers.” \textit{Id.}
\textsuperscript{152} Id. at 515.
\textsuperscript{153} Id. at 514 (quoting Schrader, 22 F.3d at 293-94) (emphasis added).
an unsurprising result.

2. The Business Method Exception. The district court proceeded by subjecting Signature's claim to the patentable subject matter analysis under the business method exception. The opinion cited Loew's Drive-In Theatres for one of the early statements that "business methods are unpatentable abstract ideas" as well as some of the later cases supporting this doctrine. While the court noted Judge Newman's vigorous dissent in Schrader, where she argued that the method of doing business exception ought to be "described as error-prone, redundant and obsolete," the court proceeded to apply the doctrine as if business were as usual. The court focused on the preclusive effect that exclusive ownership resulting from a patent on the invention would have:

If Signature's invention were patentable, any financial institution desirous of implementing a multi-tiered funding complex modelled on a Hub and Spoke configuration would be required to seek Signature's permission before embarking on such a project. . . . In effect, the '056 Patent grants Signature a monopoly on its idea of a multi-tiered partnership portfolio investment structure; patenting an accounting system necessary to carry on a certain type of busi-

154 Id. at 515.
155 Loew's Drive-In Theatres, Inc. v. Park-In Theatres, Inc., 174 F.2d 547, 81 U.S.P.Q. (BNA) 149 (1st Cir. 1934).
156 State Street, 927 F. Supp. at 515. The Loew's Drive-In Theatres court equated the method of doing business doctrine with the abstract idea doctrine: Thus a system for the transaction of business, such, for example, as the cafeteria system for transacting the restaurant business, or similarly the open-air drive-in system for conducting the motion picture theatre business, however novel, useful, or commercially successful is not patentable apart from the means for making the system practically useful, or carrying it out. 174 F.2d at 552.
158 State Street, 927 F. Supp. at 516 (quoting Schrader, 22 F.3d at 297) (Newman, J. dissenting).
ness is tantamount to a patent on the business itself.  

As a result, the district court held that Signature's '056 patent was directed to non-statutory subject matter, because both methods of doing business and mathematical algorithms constitute unpatentable abstract ideas. The district court probably overreacted somewhat in its articulation of an overprotective concern for the market effects of a potential patent on Signature's invention. This response may very well have been the spark that ignited the conflagration which resulted in the reversal by the Federal Circuit that would jettison the business method exception altogether. In so doing, however, the Federal Circuit would become equally guilty of overreaction—both in kind and in degree.

C. THE FEDERAL CIRCUIT OPINION: A DOCTRINAL UPROOTING

As expected, Signature appealed the district court's grant of summary judgment and the parties were back in the courtroom within two years at the Federal Circuit, which has jurisdiction over patent appeals. Judge Giles S. Rich wrote the opinion, holding that Signature's claim was not unpatentable under the mathematical algorithm exception and, furthermore, that there is no such thing as a business method exception to patentability.

As a preliminary matter, the court noted that § 101 of the Patent Act states that "[w]hoever invents or discovers any new and useful

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159 State Street, 927 F. Supp. at 516. The court stated that the '056 Patent is claimed sufficiently broadly to foreclose virtually any computer-implemented accounting method necessary to manage this type of financial structure. Indeed, during licensing negotiations, Signature informed State Street that any data processing system designed to perform book accounting for a multi-tiered fund based on a partnership portfolio configuration would infringe the '056 Patent. Id.

One may then wonder why the court did not dispose of the apparently pressing question of virtual business monopoly by rejecting the patent for simply being drafted overbroadly.

160 State Street, 927 F. Supp. at 516.


163 State Street, 149 F.3d at 1370. The Federal Circuit reviewed the statutory construction issue de novo. Id.
process, machine, manufacture, or composition of matter, or any new and useful improvements thereof, may obtain a patent therefor. . . .” 164 The plain and unambiguous meaning of § 101, the court stated, “is that any invention falling within one of the four stated categories of statutory subject matter [that is, process, machine, manufacture, or composition of matter] may be patented provided it meets [the requirements of sections] 102, 103, and 112.” 165 The court interpreted the congressional intent behind the twice appearing use of “any” in § 101 as simply placing no further restrictions on patentable subject matter beyond those specifically recited in § 101. 166 With this mindset, the court set out to reverse history.

1. Mathematical Algorithm Exception Revisited. The court declared that the district court had erroneously applied the Freeman-Walter-Abele test to seek out an unpatentable abstract idea in Signature’s claim. 167 For purposes of determining patentable subject matter, the court stated that the Freeman-Walter-Abele test has “little, if any, applicability.” 168 This is so, the court explained, because “a process, machine, manufacture, or composition of matter employing a law of nature, natural phenomenon, or abstract idea is patentable subject matter even though a law of nature, natural phenomenon, or abstract idea would not, by itself be entitled to such protection.” 169

Because the use of the Freeman-Walter-Abele test to sniff out mathematical algorithms tended to have the practical effect of precluding patents for lack of patentable subject matter under 164 35 U.S.C. § 101 (1996).
166 State Street, 149 F.3d at 1372 (emphasis added).
166 Id. at 1373. The court cited the famous quotation from the Supreme Court decision in Diamond v. Chakrabarty as support for this proposition: “Congress intended § 101 to extend to ‘anything under the sun that is made by man.’” Id. (citing Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980)). This quotation originated in the Committee Reports that accompanied the 1952 Patent Act. See S. Rep. No. 82-1979 at 5 (1952); H.R. Rep. No. 82-1923 at 6 (1952).
166 State Street, 149 F.3d at 1373.
166 Id. at 1374.
168 Id. “The dispositive inquiry is whether the claim as a whole is directed to statutory subject matter. It is irrelevant that a claim may contain, as part of the whole, subject matter which would not be patentable by itself.” Id. at 1374 n.6. In essence this is the equivalent of the Gottschalk trilogy analysis applied in reverse order. See supra pp. 18-25 (discussing the Gottschalk trilogy).
Gottschalk taken alone, the court emphasized that the complete Gottschalk trilogy should be used.\textsuperscript{170} Thus, the inclusion of a mathematical algorithm of some form in a patent claim would not automatically invalidate it for lack of statutory subject matter as long as its operation produces a "useful, concrete and tangible result."\textsuperscript{171} Finally, the court held that, for purposes of the statutory subject matter requirement mandated by § 101, Signature's claim "admittedly produces" such a useful, concrete, and tangible result.\textsuperscript{172} Thus, the court concluded, § 101 was satisfied even though the "useful result is expressed in numbers, such as price, profit, percentage, cost, or loss."\textsuperscript{173}

What, then, is the practical effect of this holding? While previous courts have long alluded to the fact that the Freeman-Walter-Abele inquiry is superfluous,\textsuperscript{174} the State Street court drove the last nail into its coffin by holding that "every step-by-step process, be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term."\textsuperscript{175}

2. The Business Method Exception Annihilated. The Federal Circuit Court also revisited the district court's alternative ground for invalidating Signature's '056 patent—the business method exception. In addressing the doctrine, the court exerted no effort whatsoever to cloak its intentions in obscure language: "We take this opportunity to lay this ill-conceived exception to rest."\textsuperscript{176} In so doing, the State Street court echoed the very words Judge Newman had articulated in her pointed dissent in Schrader.\textsuperscript{177}

In the place of a business method analysis after the Patent Act

\textsuperscript{170} \textit{State Street}, 149 F.3d at 1374.

\textsuperscript{171} Id. at 1374 (quoting \textit{In re Alappat}, 33 F.3d 1526, 1544, 31 U.S.P.Q.2d (BNA) 1545, 1557 (Fed. Cir. 1994)) (emphasis added).

\textsuperscript{172} Id. at 1375.

\textsuperscript{173} Id.

\textsuperscript{174} Judge Rich stated that "[a]s the Supreme Court expressly stated in Diehr, its own holdings in Benson and Flook 'stand for no more than these long-established principles' that abstract ideas and natural phenomena are not patentable." Id. at 1374 n.7 (citing Diamond v. Diehr, 450 U.S. 175, 185, 209 U.S.P.Q. (BNA) 1, 7-8 (1981)).


\textsuperscript{176} Id. at 1375.

\textsuperscript{177} \textit{In re Schrader}, 22 F.3d 290, 298, 30 U.S.P.Q.2d (BNA) 1455, 1461-62 (Fed. Cir. 1994).
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of 1952, the court declared, claims should be, and should have been, subject to the "same legal requirements for patentability as applied to any other process or method." In fact, the court went as far as declaring that "[t]he business method exception has never been invoked by this court, or the CCPA to deem an invention unpatentable." The court explained, as did Judge Newman in Schrader, that the decisions commonly thought to have applied the business method exception actually applied "some clearer concept of Title 35 or, more commonly, application of the abstract idea exception based on finding a mathematical algorithm." The decision should not have caught those in the intellectual property circles by surprise. After all, subsequent to the figurative u-turn that the PTO made in its policy towards business methods as stated in the revised guidelines of 1996, courts had little reason not to follow the PTO's lead.

V. THE AFTERMATH

Prior to the State Street decision, various business organizations in the financial and insurance sectors may have declined to consider patent protection for their innovations as traditional analysis under the mathematical algorithm and business method exception would have deemed such a venture as highly unlikely to succeed. In lieu of a patent protection scheme, companies have relied on trade secret protection for business methods, because trade secrets can encompass any formula, method, or process that

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178 State Street, 149 F.3d at 1375. As Judge Newman has previously stated, [The business method exception] is ... an unwarranted encumbrance to the definition of statutory subject matter in section 101. ... Patentability [turns on] whether the method, viewed as a whole, meets the requirements of patentability as set forth in Sections 102, 103, and 112 of the Patent Act. Id. at 1375 n.10 (citing Schrader, 22 F.3d at 298).

179 State Street, 149 F.3d at 1375; see also Del Gallo, supra note 36, at 435 (dubbing the business method exception "a robe without substance").

180 State Street, 149 F.3d at 1375; see also Schrader, 22 F.3d at 298 (Newman, J., dissenting) (stating that "[a]ll of the 'doing business' cases could have been decided using the clearer concepts of Title 35").

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 derives economic value from not being already known to the public. However, by employing business methods online as many electronic commerce businesses do, protection for trade secrets may not be available because secrecy, which is the essential element of trade secret protection, may be lost when computer code is observable by the public. Thus, patent protection would be the only practical means of guarding such inventions from infringement.

In the aftermath of the Federal Circuit's adjudication of State Street, however, the industry might reconsider pursuing patent protection for their innovations and developments. In fact, notwithstanding uncertainty about the long-term effects of the decision, the PTO already experienced a significant increase in the number of applications for business method patent applications in the six months pending the Supreme Court's denial of a petition for writ of certiorari.

The invalidation of the business method doctrine is not the only aspect of the State Street decision that will have significant effects on future patent claims. In holding that the Freeman-Walter-Abele test was antiquated and deserved to be retired, the Federal Circuit opened significantly broader avenues for the financial industry to pursue patent protection for their inventions. As explained earlier, once a mathematical algorithm was identified under the old Freeman-Walter-Abele test, the algorithm had to be applied to

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182 See, e.g., ROSENBERG, supra note 14, § 2.03, at p. 2-8 (stating that "[a] trade secret may reside in any formula, pattern, device, or compilation of information which is used in one's business.").

183 Some forecasts predict that revenue from electronic commerce may reach $3.2 trillion by the year 2003. Linda Himelstein et al., Why they're nuts about the net, BUS. Wk. 51, Nov. 23, 1998.

184 See, e.g., ROSENBERG, supra note 14, § 2.05, at p. 2-10 (stating that while most courts do not require absolute secrecy, a substantial element of secrecy is required).

185 Glen B. Choi, Patents offer real value to businesses in cyberspace, 3 NO. 7 CYBERSPACE LAW, 5 Oct. 1998. For example, where a business method includes a web page embedded with a self-executing subroutine, secrecy may be lost when the subroutine is observable through a user interface. Id.

186 Carol B. Oberdorfer, Patents: 'Boom' in Business Method Patent Filings Has Followed 'State Street' Ruling, PTO Says, BNA PAT., TRADEMARK & COPYRIGHT L. DAILY NEWS, Dec. 10, 1998 (stating that the PTO projects an excess of 300 business method patent applications to be filed within one year).
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physical elements or process steps in order to be patentable. After the Federal Circuit ruling, however, the focus is merely on whether the algorithm produces a useful, concrete, and tangible result.

But why strive towards patent protection in the first place? If a company holds patents covering business methods that others want to use, patent licensing offers vast advantages over licensing business methods that are only protected as trade secrets. In a patent license, the patent holder is in a position of strength because the patent holder may assert the patent against a potential licensee. In contrast, a potential licensee of a trade secret may be unwilling to pay royalties for use of a business method because prior to an enforcement action in court, there is no conclusive showing that the business method is a protected trade secret. The potential licensee may demand lower royalties because of the risk that others may use the business method for free! Thus, under the unanimous State Street holding, the future of patent protection for e-commerce is already here with its obvious potential advantages to a patent holder. While some companies in the financial sector may already have amassed significant patents on their software-implemented financial innovations, the Federal Circuit's very recent change in its doctrinal standpoint may very well have caught Wall Street by surprise. Perhaps it will simply take gargantuan damage awards for infringement, not uncommon in other areas of the law, to wake the financial industry up.

VI. WAS THE STATE STREET DECISION EVEN NECESSARY?

While the rejection of the Freeman-Walter-Abele test results in a removal of obstacles to patent protection for inventions that incorporate mathematical algorithms, the actual change in the overall analysis is minimal. Prior to State Street, the test sought

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187 See supra notes 58-63 and accompanying text (discussing the necessity of satisfying the transformation inquiry).
188 Choi, supra note 185.
189 Id.
to determine first whether a mathematical algorithm was expressed in some form in the invention. If so, the second inquiry would save the invention from being deemed nonpatentable subject matter if the invention performed a transformation of some sort. All that State Street accomplished was a simple reversal of the inquiry: if a transformation of some sort occurs, then the invention is patentable.¹⁹¹ Thus, the holding may only stand for a shift to a presumption of validity, provided that some transformation takes place (a minimal requirement indeed, considering that the calculation of dollar amounts now can satisfy a finding of a “concrete result”). Such a minuscule shift in presumption should, however, not be ignored—after all, it may mean the difference between a finding of patent validity and nothing at all.

The decision at hand might modestly be deemed at the forefront of the evolution of patent protection. The recent shifting tends to show that an ever increasing focus is placed on protection of the economic interests of a business. While this development may be difficult to control under the pressure of a gigantic cumulative mass of enterprise interest, it may be worthwhile to pause for a few moments in order to consider whether this is a proper course to strike. After all, can the protection of a Hub and Spoke configuration of a financial enterprise really be so malleable as to assume any shape or function that “promote[s] the progress of science?”¹⁹² Probably not. In the future, courts considering any expansion of patent protection into non-scientific arenas ought to consider the path upon which they embark, because the path may very well lead to a backfiring, economic self-destruction. After all, as patent prosecution is secret,¹⁹³ nobody can tell how many applications for patents covering e-commerce inventions currently are processed by the PTO. Thus, many e-commerce companies will inevitably have to face the choice of either paying royalties to competitors or defending themselves in expensive patent litigation suits. Furthermore, upstart companies may find it increasingly difficult to secure financing for their endeavors as venture capitalists undoubtedly will consider the possibility of conflicting patent protection held by

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¹⁹¹ Id. at 1374.
¹⁹² U.S. CONST. art. 1, § 8, cl. 8.
competitors as significant risks to their investments. The ironic result may, therefore, be that the very patent protection of anything under the sun made by man, commonly thought to protect and promote business methods, actually threatens to strangle any further development!

The federal circuit could easily have avoided the hazard of a future jurisprudential quagmire and yet obtained the result in *State Street* without rescinding the business method exception. Specifically, the court should have recognized the vast difference between a method of doing business and a method used in doing business. An example may shed light on this minute distinction.

Imagine a hypothetical parcel distribution company. In light of increased competition, the management strives to cut the package handling costs. One method devised by the company engineers entails consolidation of packages with common destination points into large containers, such that repeated and redundant sorting of the individual packages can be avoided at processing nodes in the distribution network. The use of bar-code scanning technology to separate packages to be consolidated clearly might be patentable (subject, of course, to a novelty analysis, etc.) notwithstanding it being a “method used in doing business”. On the other hand, the broad concept of consolidation of packages to minimize sorting costs would not qualify for patent protection because it merely constitutes a theory in the abstract, a “method of doing business”.

The constitutional grant of patent protection seeks, as Justice Story asserted in a very early case, to promote the development of science and the useful arts, whereby reward to individual inventors is merely a means to an end. The most fundamental purpose of a business method, however, is to reward individual businessmen for their industry. In other words, the nature of the progress in business is such that further development of business methods are stimulated by the market driven economy, whereby external incentives (such as patent protection) are superfluous.

195 See Fuller v. Yentzer, 94 U.S. 288, 288 (1876) (stating that a patent will not be held valid for a mere abstraction).
Consider the possibilities had the business method exception not existed when the drive-through concept was introduced to fast food restaurants. Quite possibly, in the absence of the business methods exception, enterprises such as McDonald's could have secured patent protection for that abstract business idea. With the benefit of hindsight, however, it seems quite clear that the market economy by itself fuelled the development and improvement of drive-through food establishments.

The concept of a business method exception has, however, rightfully been called "fuzzy." Courts and commentators striving to remove the doctrine have pointed out that no decisions have ever invalidated patents simply by constituting "business methods." Rather, the critics assert, those decisions could have been resolved by relying on the statutory requirements of patentability such as novelty and unobviousness. Unfortunately, the critics fail to take note that the statutory requirements do not take into consideration the self-propelling nature of the economic incentives inherent in business methods. Thus, a category of business methods should remain as a "suspect class" of patents which should be subject to extra careful scrutiny. After all, neither the "fuzziness" of the doctrine nor the fact that it has never been expressly relied upon to invalidate any patents invalidate its utility. To the contrary, the fact that courts have rejected nearly every patent claim for which the business method exception has been invoked, may very well support the idea that a business method classification subjects the claim to a higher degree of scrutiny.

Of course, considering the PTO's recent doctrinal turnaround, the Federal Circuit's holding in the State Street case, and last—but not least—the Supreme Court's denial of a petition for certiorari, it is highly unlikely that the business method exception will ever be seriously raised again. But this may become an issue that the legislature will have to consider, just as Congress recently chartered a new course with respect to patents for medical procedures by specifically prohibiting enforceability of patents for medical

198 Id.
procedures.\footnote{35 U.S.C. § 287(c) (1994 & Supp. II 1996).} In the meantime, the practitioner can rest assured that after the business method exception disappeared with State Street, business will never be as usual again.

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