

Current Practice Concerning Patents on Computer Software
in the United States PTO and Courts

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Introduction

It is no secret that patent protection for computer-related inventions, including computer software, is now broader in the United States than in most other jurisdictions. The U.S. patent statute (unlike patent statutes in many other jurisdictions) neither contains nor has it ever contained express exclusions of categories of subject matter (such as “computer programs”).¹ According to the United States Supreme Court, “Congress [in enacting the Patent Act of 1952] intended statutory subject matter to ‘include anything under the sun that is made by man.’”² Certain subject matter exclusions from the patent law have been implied by the courts interpreting the patent law in actual cases. Among the general subject matter exclusions from patent eligibility the United States Supreme Court has found inherent in the patent law are “laws of

¹ The language of the Patent Act of 1952 is: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.” 35 U.S.C. §101. Thus it is the burden of the government to demonstrate the unpatentability of the invention, not of the applicant to demonstrate its patentability. The language of the Patent act of 1790, Section 1, was “art, manufacture, engine, machine, or device, or any improvement therein.” In the Act of 1793, Section 1, “art, machine, manufacture, or composition of matter,” or an improvement therein. Act of 1836, Section 6, “art, machine, manufacture, or composition of matter, or improvement therein.” *ibid.* Act of 1870, Section 24, Rev. Stat. 1874 Section 4886. *see* William C. Robinson, I The Law of Patents for Invention 102 Section 67 (1890)

² *Diamond v. Diehr* 450 U.S. 175, 182, (1981) quoting language of the Congressional Reports to the 82d Congress, 2d Session (1952)

nature,” “natural phenomena,” and “abstract ideas.”³ Beyond those very general and logically derived categories, seemingly anything goes.

Since its establishment in 1982, the Court of Appeals for the Federal Circuit has been the primary source of statutory interpretation of United States patent law. That court, in a recent decision concerning the patent on a computer software invention, observed, “The sea-changes in both law and technology stand as a testament to the ability of law to adapt to new and innovative concepts while remaining true to basic principles.”⁴ The reticence of the United States Congress to establish any exclusions from patent eligible subject matter is testament to the tacit but pervasive belief in the United States that the courts of law answering patent questions in the context of specific cases may be in a more agile and informed position to adapt the law to rapid technological changes in society than the legislature.⁵ Increasingly, the CAFC’s jurisprudence has not only informed but been informed by the administrative practices of the U.S. Patent and Trademark Office. A review of the interplay in decision-making between the USPTO and the courts in the area of patents on computer software is helpful for understanding current U.S. practice.

Subject Matter Limitations and Other Limitations on the Patent Grant

³ *Diamond v. Diehr*, *supra* at 185, (1981) Judge Rich of the Court of Customs and Patent Appeals (“CCPA”, predecessor court to the Court of Appeals for the Federal Circuit) developed a somewhat longer list: “principles, laws of nature, mental processes, intellectual concepts, ideas, natural phenomena, mathematical formulae, methods of calculation, fundamental truths, original causes, motives, [and] the Pythagorean theorem.” *In re Bergy*, 596 F.2d 952, 965 (C.C.P.A. 1979)

⁴ *AT&T v. Excel Communications* 172 F.3d 1352, 1356 (Fed. Cir. 1999) (clarifying that a finding of physical transformation of matter by the invention may be a factor in determining patentability, but that such a finding is not required for an invention to be patentable) Of course, it is testament to the ability of courts as well to adapt to rapid changes, perhaps more responsively than the legislature.

⁵ This is not a new phenomenon. Much of the Patent Act of 1952 is a codification of prior case law. The role of Congress in patent policy is that it “often proposes, less often disposes.”

It is well known but worthy of repetition that subject matter limitations on inventions which *may be* patentable do not answer the question of what inventions *are* patentable.

[E]ven if patentable subject matter is present in a given invention, the availability of a corresponding patent will often be far from certain. Tests for patentable subject matter serve a "gatekeeper" function, identifying the range of innovations for which other fundamental considerations leading to the granting or withholding of a patent need to be assessed.⁶

Is the patent applicant the first and original inventor?⁷ Was the subject matter of the invention known to or in open use by others in the United States prior to her invention thereof?⁸ Was it patented or described in a printed publication prior to its invention by the applicant?⁹ Would the differences between the subject matter of the invention have been such that the invention as a whole would have obvious to one skilled in the art to which the invention pertains at the time the invention was made?¹⁰ Has she described her invention in a manner permitting any others skilled in the art to practice the invention?¹¹ Has she claimed what she has invented, or more?¹² Has she revealed the best mode for carrying out her invention in the patent application?¹³ The applicant must meet each and every one of the above requirements in order to be granted a patent on an invention.

While occasional reference will be made to these various additional requirements in this paper, the primary focus is the requirement of patentable subject matter and exclusions therefrom.

⁶ Richard S. Gruner, Intangible Inventions: Patentable Subject Matter, 35 Loy.L.A. L.Rev. 355, 365-66 (2002)

⁷ For example, the applicant cannot have derived the invention from another. 35 U.S.C. Section 102(f)

⁸ 35 U.S.C. Section 102(a)

⁹ 35 U.S.C. Section 102(b)

¹⁰ 35 U.S.C. Section 103

¹¹ 35 U.S.C. Section 112, para. 1[A]

¹² 35 U.S.C. Section 112, para. 2

¹³ 35 U.S.C. Section 112, para. 1[B]

Is a Computer Program a “Process”? What if a Computer Program is *part* of a Process?

As has been the case with the evolving law of patent protection for biotechnology, articulating standards of patent eligibility at the inception of a “leading edge” technological phenomenon such as computer programs has been fraught with difficulty and controversy. The President’s Commission on the Patent System issued a Report in 1966 which questioned whether computer programs could ever be patented.

'Uncertainty now exists as to whether the statute permits a valid patent to be granted on programs. Direct attempts to patent programs have been rejected on the ground of nonstatutory subject matter. Indirect attempts to obtain patents and avoid the rejection, by drafting claims as a process, or a machine or components thereof programmed in a given manner, rather than as a program itself, have confused the issue further and should not be permitted. 'The Patent Office now cannot examine applications for programs because of a lack of a classification technique and the requisite search files. Even if these were available, reliable searches would not be feasible or economic because of the tremendous volume of prior art being generated. Without this search, the patenting of programs would be tantamount to mere registration and the presumption of validity would be all but nonexistent. 'It is noted that the creation of programs has undergone substantial and satisfactory growth in the absence of patent protection and that copyright protection for programs is presently available.¹⁴

Congress failed to act upon the Commission’s 1966 recommendations, but the USPTO enacted Guidelines for Examination which reflect its findings in 1968.¹⁵ Citing those findings in 1972, the Supreme Court addressed the issue of whether a method for “converting signals from binary coded decimal form into binary [form]” and a method for

¹⁴ quoted in *Gottschalk v. Benson* 409 U.S. 63, 72 (1972) The concerns of the Commission sound quite familiar to those we hear almost four decades later.

¹⁵ “In 1968, the USPTO published guidelines essentially rejecting the notion that computer programs could be patented.” R. Lewis Gable and Morey B. Wildes, U.S. Law: The Ability to Adapt to New Technology, paper presented at the Annual Meeting of the American Branch of the International Law Association, 25 October 2001. p.1, fn 2, citing 33 Fed. Reg. 15581, 15609-10 (1968)

“converting binary coded decimal number representations into binary number representations” could be considered “processes” under the patent law.¹⁶ The claims had been rejected by the USPTO (under the 1968 guidelines). Neither method claim had a limitation as to machinery or a particular end use, other than to any use within a general-use computer. The Court, in sustaining the USPTO’s rejection of the claims against a reversal by the Court of Customs and Patent Appeals [“CCPA”], held that as a “process”, the claim was “so abstract as to cover both known and unknown uses.”¹⁷ It cited the 1854 case in which Samuel F.B. Morse had claimed the use of “electromagnetism, however developed for marking or printing intelligible characters, signs, or letters at any distance.”¹⁸ The Court concluded:

It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself. If these programs are to be patentable, considerable problems are raised which only committees of Congress can manage, for broad powers of investigation are needed, including hearings which canvass the wide variety of views which those operating in this field entertain. The technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed.¹⁹

Even while calling for action from Congress on the Commission Report, the Court qualified its decision considerably, refusing to admit that it (in lieu of Congress) was making patent policy or establishing a “computer programs exception” in the patent law:

¹⁶ *Gottschalk v. Benson* 409 U.S. 63, 68 (1972)

¹⁷ *id.* at 68

¹⁸ *O’Reilly v. Morse* 56 U.S. 62 (1854) It has been suggested *Benson* should have been treated as a case of overbroad claiming under Section 112 rather than patentable subject matter under Section 101. *see, e.g.* Martin J. Adelman et al., *Cases and Materials on Patent Law* (1998) p. 112

¹⁹ *Gottschalk v. Benson* 409 U.S. 63, 72 (1972)

“It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents. It is said that the decision precludes a patent for any program servicing a computer. We do not so hold.”

Even at that early date (1972), the Supreme Court rejected categorical propositions that a process *must* be tied to a particular machine or that a physical transformation of the processed materials *must* take place in order for the claimed subject matter to be patentable.

Are Algorithms “Processes” or “Abstract Ideas”?

But what did the *Benson* Court mean by “a patent *on the algorithm itself*”? (Congress again failed to respond.) Essentialist arguments about whether patent claims which *recite* an “algorithm” per se , which *include* an “algorithm”, or whether in a claim including a mathematical formula as an element, it or some other claim element must be novel, continued to occupy the Court. This issue was confronted again in *Parker v. Flook* in 1978.²⁰ That case involved the use of a mathematical formula in a computer program in which the operation of the formula was followed by the recalibration of alarm limits in a catalytic conversion process (a “post-solution activity” of a sort). The C.C.P.A. had reversed the Patent Office decision of non-eligibility , observing that mere use of the mathematical formula without the post-solution activity would not have infringed a claim of the patent. The Acting Commissioner of Patents and Trademarks then filed a petition to the Supreme Court, urging that the C.C.P.A.’s decision would have a debilitating effect

²⁰ *Parker v. Flook* 437 U.S. 584 (1978)

on the rapidly expanding computer "software" industry and would require the PTO to process thousands of additional patent applications. The Supreme Court, in a split decision, held that the subject matter was not eligible for patent protection. The majority admitted that the invention was a process "in the ordinary sense of the word" and that the plain language of Section 101 of the statute did not answer the question of whether an invention where the only "novel feature" was the mathematical formula was "eligible" for patent protection.²¹ Yet pushing onward, it held that where the non-mathematical (i.e., "post-solution") activity was totally conventional, the invention not eligible for patent protection. "The process *itself*, not *merely* the mathematical algorithm, must be new and useful.... [A]s one of the 'basic tools of scientific and technological work' [the algorithm] is treated as though it were a familiar part of the prior art." (*emphasis added*)²² The dissenting opinion (joined by Justice Rehnquist) countered that "the issue here is whether a claimed process loses its status of subject-matter patentability simply because one step in the process would not be patentable subject matter if considered in isolation." It asserted that the majority had imported into its patentability inquiry the criteria of novelty and inventiveness – questions directed to the "subject to the conditions and requirements of this title" language of Section 101 and not to Section 101 itself.

Three years later, Justice Rehnquist led the court to reconsider *Parker's* holding in ruling on a patent claim involving a mathematical formula and "post-solution activity" (of a more "industrial" sort) in *Diamond v. Diehr*.²³ In that case, the question was the patent eligibility of a claimed method for operating a molding press during the curing of rubber articles, using a computer program employing the Arrhenius equation. As in

²¹ *id.* at 588

²² *id.* at 591

²³ *supra*, note 2

Benson, the examiner and Board of Patent Appeals had rejected the claim, but the C.C.P.A had reversed. Again, the Commissioner of the PTO petitioned the Supreme Court to reverse the C.C.P.A.'s holding that the claimed process was eligible for patent protection. This time, the Supreme Court affirmed the C.C.P.A.. According to the Supreme Court majority in *Diehr*, not all "algorithms" are created equal.

The term "algorithm" is subject to a variety of definitions. The petitioner defines the term to mean:

" '1. A fixed step-by-step procedure for accomplishing a given result; usually a simplified procedure for solving a complex problem, also a full statement of a finite number of steps.

2. A defined process or set of rules that leads [*sic*] and assures development of a desired output from a given input. A sequence of formulas and/or algebraic/logical steps to calculate or determine a given task; processing rules.' "

This definition is significantly broader than the definition this Court employed in *Benson* Our previous decisions regarding the patentability of "algorithms" are necessarily limited to the more narrow definition employed by the Court, and we do not pass judgment on whether processes falling outside the definition previously used by this Court, but within the definition offered by the petitioner, would be patentable subject matter.²⁴

Justice Rehnquist also forwards the notion adumbrated in the dissent in *Parker v. Flook* that the novelty of a particular element of a claim cannot be "dissected" from the claim as a whole.

It is argued that the procedure of dissecting a claim into old and new elements is mandated by our decision in *Flook* which noted that a mathematical algorithm must be assumed to be within the "prior art." It is from this language that the petitioner premises his argument that if everything other than the algorithm is determined to be old in the art, then the claim cannot recite statutory subject matter. The fallacy in this argument is that we did not hold in *Flook* that the mathematical algorithm could not be considered at all when making the § 101 determination. To accept the analysis proffered by the petitioner would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious.²⁵

²⁴ *Diamond v. Diehr* 450 U.S. 175, 182, (1981)

²⁵ *id.* at 189 footnote 12 The *Flook* dissent had commonsensically observed: "*Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45 (1923) is a case in point. There the Court upheld the validity of an improvement patent that made use of the law of gravity, which by itself was clearly

In hindsight, the claimed invention in *Diehr* was a relatively simple case, because in addition to the application of the equation the claim recited significant and physically transformative “post-solution activity”. The Court had said, “insignificant post-solution activity will not transform an unpatentable principle into a patentable process. To hold otherwise would allow a competent draftsman to evade the recognized limitations on the type of subject matter eligible for patent protection.”²⁶ But “a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer.”²⁷

Diehr is also useful to the extent that it clarifies the relationship between the patentable subject matter requirement and the novelty requirement. The fact that certain elements in the claimed invention which are the most statutory are old, and the combination of those elements with other more abstract or mathematical elements is what is “new” does not render the invention non-patent eligible. (It may however render the invention not novel and thus unpatentable.)

“ The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.”²⁸

Diehr is the last case involving a patent on a computer program to be considered by the Supreme Court. Following *Diehr*, the lower courts (primarily the CAFC reviewing decisions of the USPTO) labored for over a dozen years to find a test which

unpatentable. cf. the comments of Judge Rich above in *In re Bergy* and those of Judge Newman in from *In re Alappat*.

²⁶ *Diamond v. Diehr* 450 U.S. 175, 192 (1981)

²⁷ *Diamond v. Diehr* 450 U.S. 175, 187 (1981)

²⁸ *Diamond v. Diehr* 450 U.S. 175, 189 (1981) “ The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.”

was consistent in application and grounded in the language of the patent statute. In 1992, the CAFC identified one such test in its holdings. The case involved an invention directed to a computer program with “pre-computer ” input -- analyzing electrocardiograph signals from a heart patient in order to determine certain heart function characteristics.²⁹ The CAFC held that if a mathematical algorithm is recited directly or indirectly in a claim, “when the mathematical algorithm is applied in one or more steps of an otherwise statutory process claim, or one or more elements of an otherwise statutory apparatus claim, the requirements of Section 101 are met.”³⁰ This suggests that a computer program involving a mathematical formula could be patentable as either a “process” or a “machine.” Concurring in the result, Judge Rader added:

Courts should give “process” its literal and predictable meaning, without conjecturing about the policy implications of that literal reading. If Congress wishes to remove some processes from patent protection, it can enact such an exclusion. Again, in the absence of legislated limits on the meaning of the Act, courts should not presume to construct limits. ... When determining whether claims disclosing computer art or any other art describe patentable subject matter, this court must follow the terms of the statute. The Supreme Court has focused this court’s inquiry on the statute, not on special rules for computer art or mathematical art or any other art....To me, the Supreme Court’s most recent message is clear: when all else fails (and the algorithm rule clearly has) consult the statute.³¹

Is a Computer Program a “Machine”?

Arrythmia had upheld the patentability of a computer program both as a process and as a machine – two separate categories of statutory subject matter. Two years later, the

²⁹ *Arrythmia Research Technology, Inc. v. Corazonix Corp.* 958 F.2d 1053 (Fed. Cir. 1992)

³⁰ *Arrythmia Research Technology, Inc. v. Corazonix Corp.* 958 F.2d 1053 (Fed. Cir. 1992) The Federal Circuit referred to this as the “Freeman-Walter-Abele test” as an analysis of patent eligibility previously adopted by the CCPA in *In re Freeman* 573 F.2d. (CCPA 1978), modified after *Parker* in *In re Walter* 618 F.2d 758 (CCPA 1980) and further modified after *Diehr* in *In re Abele* 684 F.2d 902 (CCPA 1982)

³¹ *Arrythmia Research Technology, Inc. v. Corazonix Corp.* 958 F.2d 1053, 1064 (Fed. Cir. 1992)

CAFC issued an *en banc* decision in *In re Alappat* to reconcile its precedents. The claimed invention as a whole was directed to a machine, *viz.*, a “rasterizer “ for improving the display of waveforms on a cathode ray tube screen. But *all* of the elements in the claim represented electronic circuitry that performed mathematical calculations. The Commissioner of Patents and Trademarks intervened in a decision of the Board of Patent Appeals to prevent the grant of a patent, which then rejected the claim as nothing but a combination of steps amounting to a "mathematical algorithm for computing pixel information."³² The applicant appealed, maintaining that “an input to a circuit or processing function was converted into a different thing at the output” and that to differentiate analog components, digital components, a computer program, or a combination thereof was to elevate form over substance.³³ The CAFC agreed.

[W]hereas abstract ideas constitute disembodied concepts or truths which are not "useful" from a practical standpoint standing alone, i.e., they are not "useful" until reduced to some practical application. Of course, a process, machine, manufacture, or composition of matter employing a law of nature, natural phenomenon, or abstract idea may be patentable even though the law of nature, natural phenomenon, or abstract idea employed would not, by itself, be entitled to such protection. A close analysis of *Diehr*, *Flook*, and *Benson* reveals that the Supreme Court never intended to create an overly broad, fourth category of subject matter excluded from § 101. Rather, at the core of the Court's analysis in each of these cases lies an attempt by the Court to explain a rather straightforward concept, namely, that certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.³⁴

In a concurring opinion , Judge Newman reiterated the need for a focus on the practical applicability of the claimed invention, stating:

³² *In re Alappat*, 33 F.3d 1526, 1539 (Fed. Cir. 1994)

³³ *In re Alappat*, 33 F.3d 1526, 1564 (Fed. Cir. 1994)

³⁴ *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994)

The Board's historical practice of giving § 101 the narrowest possible reading--even were that ever a valid administrative policy--is out of place in a world that has become totally dependent on technology, and in which the laws governing technological innovation have direct consequences for industrial growth. Governmental timidity in the face of scientific and technologic change is not only unnecessary: it is unsupportable. The boundary between patentable and unpatentable subject matter is not always a bright line. A good example is the function of mathematics in modern technology. Mathematics is not only a set of abstract principles, but a powerful vehicle of applied technology--just as chemistry is both a set of scientific principles and a vehicle of applied technology. The Board's underlying error in its *Alappat* decision arose from failure to distinguish between abstract mathematical principles and their practical applications.... Principles of mathematics, like principles of chemistry, are "basic tools of scientific and technological work". Such principles are indeed the subject matter of pure science. But they are also the subject matter of applied technology.... Digital electronic devices implement mathematical manipulations of electronic signals, as chemical structures and reactions implement principles of molecular behavior. An apparatus that is configured to perform specific electronic procedures in accordance with instructions that require numerical measurements and mathematical calculations is no less statutory than any other combination of steps and components. A combination of mechanical or chemical components, structured to operate in accordance with the principles of mechanics or chemistry, does not become nonstatutory because those interactions and reactions follow basic scientific principles. Mathematics is not a monster to be struck down or out of the patent system, but simply another resource whereby technological advance is achieved.³⁵

The "sea-change" had occurred. The week after *Alappat* opinion was announced, the PTO Board of Patent Appeals rejected *Beauregard*'s computer program product claims on the basis of the "printed matter" doctrine (which holds that printed matter such as methods of depicting sheet music are not patent eligible.) *Beauregard* appealed.³⁶ The Commissioner, in a reversal of USPTO policy, announced that "that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under 35 U.S.C. § 101 and must be examined under 35 U.S.C. §§ 102 and 103."

In June 1995 (one month after the *Beauregard* decision), the PTO issued proposed

³⁵ *In re Alappat*, 33 F.3d 1526, 1569-70 (Fed. Cir. 1994)

³⁶ *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995) The PTO conceded the position after a test case decision in *In re Lowry* 32 F.3d 1579 (Fed. Cir. 1994). In current common parlance, claims directed to subject matter in a computer program on a floppy disk are referred to as "Beauregard claims."

Guidelines for Examination of Computer Implemented Inventions.³⁷ According to the Guidelines, when a computer program is recited in conjunction with a physical structure, such as a computer memory, the examiner should treat the claim as a product claim.³⁸ When a computer program is claimed in a process where the computer is executing the computer program's instructions, the examiner should treat the claim as a process claim.³⁹ A claimed process is clearly statutory if it results in a physical transformation outside the computer, i.e., falls into one or both of the so-called "safe harbors" – either pre-computer or post-computer process activity.⁴⁰ If a claim does not clearly fall into one or both of the safe harbors, the claim may still be statutory if it is limited by the language in the claim to a practical application in the technological arts. As an example, “a computer process that simply calculates a mathematical algorithm that models noise is non-statutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory.”⁴¹

Which Statutory Category Does Computer Software Fit Into?

³⁷ published in the Federal Register at 61 FR 7478 (February 28, 1996). The flowchart of the Guidelines is reproduced below as Appendix 1. As commentators have observed, “Both the Federal Circuit and the USPTO have played significant roles in the evolution of a statutory standard. Although subject to the appellate review of the Federal Circuit, the USPTO has played an amazing role in the definition and interpretation of the statutory standard. *Alappat* and the other decisions of the Federal Circuit that immediately followed caused havoc among the patent bar and the patent examining corps. In the framework of American jurisprudence the Federal Circuit can only speak to the issues of the particular case before it and is restrained in explaining how its decisions fit together in an integrated body of law. Stepping into this vacuum, the USPTO published its Examination Guidelines for Computer-Related Inventions...” R. Lewis Gable and Morey B. Wildes, *supra* Note 14, at p.3

³⁸ see Guidelines Section IV.B.2(a)

³⁹ see Guidelines Sections IV.B.2(b)-(e)

⁴⁰ see Guidelines Section IV.B.2(b)(i) and “Box 8” on the Flowchart

⁴¹ see Guidelines Section IV.B.2(b)(ii) and “Box 13” on the Flowchart

The 1998 *State Street Bank* decision of the CAFC is famous more for its reiteration of the non-existence of either an “algorithm exception” or of the so-called “business method exception” from patent eligibility than for its holdings.⁴² According to the court, the invention was directed to a machine, not a process. The claim at issue recited a series of means for performing certain functions. The court located a structure corresponding to each means recitation in the claim: a personal computer including a CPU, a data disk, and five arithmetic logic circuits.

Each claim component, recited as a "means" plus its function, is to be read, of course, pursuant to § 112, ¶ 6, as inclusive of the "equivalents" of the structures disclosed in the written description portion of the specification. Thus, claim 1, properly construed, claims a machine, namely, a data processing system for managing a financial services configuration of a portfolio established as a partnership, which machine is made up of, at the very least, the specific structures disclosed in the written description and corresponding to the means-plus-function elements (a)-(g) recited in the claim. A "machine" is proper statutory subject matter under § 101.⁴³

The lower court had found the claim ineligible as an “algorithm.” Reflecting the language of the Guidelines, the appeals court observed:

every step-by-step process, be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term. Since § 101 expressly includes processes as a category of inventions which may be patented and § 100(b) further defines the word "process" as meaning "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material," it follows that it is no ground for holding a claim is directed to nonstatutory subject matter to say it includes or is directed to an algorithm. This is why the proscription against patenting has been limited to mathematical algorithms...⁴⁴

The broadness of the court’s definition of algorithm evokes the language of the Supreme Court in *Diehr*. Clearly, not all “algorithms” are created equal for purposes of patent

⁴² *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* 149 F.3d 1368 (Fed. Cir. 1998) The Congress did react to this decision after a fashion, enacting a narrow “business method” prior user defense to infringement in Section 273 in the American Inventors’ Improvement Act of 1999.

⁴³ *id.* at 1372

⁴⁴ *id.* at 1375

eligibility. Also noteworthy is the decision's interpretation of the interrelationship of the statutory categories of Section 101.

The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to--process, machine, manufacture, or composition of matter--(of course, the subject matter must fall into at least one category of statutory subject matter) but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice. For purpose of our analysis, as noted above, claim 1 is directed to a machine programmed with the Hub and Spoke software and admittedly produces a "useful, concrete, and tangible result." This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.

The question of which statutory category the invention falls into is irrelevant, so long as it falls into one of the categories and the invention has "practical utility." The *State Street* decision was important, indeed, but a decision which did not so much make new law as it dispelled old myths. Its solidity was confirmed by the Federal Circuit in a case the following year built on the firmament of *Diehr* and *Alappat* .

In *AT&T v. Excel Communications*⁴⁵, the claims were directed to a message record for long-distance telephone calls that is enhanced by adding a primary interexchange carrier ("PIC") indicator. The addition of the PIC indicator could be used by long-distance carriers to provide differential billing treatment for subscribers, depending upon whether they called someone with the same or a different long-distance carrier. *State Street* had claims directed to a machine. In *AT&T*, a federal district court had ruled the invention ineligible for patent protection because it concluded that the method claims of the patent implicitly recited a mathematical algorithm. The trial court

⁴⁵ 172 F.3d 1352 (Fed. Cir. 1999)

found that the only physical step in the claims involves data-gathering for the algorithm, and although the claims required the use of switches and computers, the use of such facilities to perform a non-substantive change in the data's format could not serve to convert non-patentable subject matter into patentable subject matter. The Federal Circuit reversed. It reaffirmed the patent eligibility of computer programs which have a practical application as “processes” under the statute. It also reiterated that the physical transformation of matter may be a consideration in determining patent eligibility (e.g., the “safe harbors” of the Guidelines), but "the ultimate issue always has been whether the claim as a whole is drawn to statutory subject matter."

"[A]fter *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of course, its operation does not produce a 'useful, concrete and tangible result.' "⁴⁶

Conclusion

The interaction of the USPTO and the CAFC continues to be a significant factor in the evolution of U.S. practice concerning the patent protection for computer software. However, the focus is no longer directed at questions of patent eligibility under Section 101 but of novelty, nonobviousness, and disclosure. The patenting of “methods of doing business” which may or may not be computer-implemented is something of a noisy distraction. The flood of applications for computer-related inventions (particularly by large corporations), the difficulties encountered in searching for prior art, the shortage and turnover of experienced examiners, dislocations in the patent office caused by reorganization initiatives – all impact on the quality of issued patents. But we have already turned the philosophical corner: the patent system is as relevant to the

⁴⁶ 172 F.3d 1352, 1359 (Fed. Cir. 1999), citing *State Street* at 1374 and *Alappat* at 1544.

information age as it was (or wasn't) to the industrial age which preceded it. The patenting of computer software, as a proposition, does indeed "Promote the Progress of the Useful Arts."