

June 2006

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Recommended Citation

Rumala, Zainabu (2006) "Interpretation Spawns Rethinking of Patent Law: A Jurisprudential Review of the Courts' Treatment of Software Patents," *Journal of Technology Law & Policy*. Vol. 11: Iss. 1, Article 7. Available at: <https://scholarship.law.ufl.edu/jtlp/vol11/iss1/7>

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INTERPRETATION SPAWNS RETHINKING OF PATENT LAW: A JURISPRUDENTIAL REVIEW OF THE COURTS' TREATMENT OF SOFTWARE PATENTS

*Zainabu Rumala**

I. INTRODUCTION

The United States has long prided itself on its societal ingenuity. In fostering such ingenuity, courts have implemented a patenting system whereby inventors can prevent others from unlawfully profiting from their discoveries. However, there are limitations to the patentability of certain innovations. With the technological boom in the latter part of the twentieth century, courts have had to continually revisit the area of subject matter patentability. Specifically, the judiciary has been wary of patenting software. Although the Supreme Court has stated that Congress intended “anything under the sun that is made by man to be patentable,”¹ courts have struggled with the issue of software patentability beginning with the seminal case of *Gottschalk v. Benson*.²

II. DEVELOPMENTS IN SOFTWARE PATENTABILITY

A. *Early Precedent*

In *Gottschalk*, the Supreme Court addressed the issue of whether a computer program was a patentable process.³ Respondents filed an application with the United States Patent and Trademark Office (USPTO) claiming a method for converting binary-coded decimal numerals into pure binary numerals.⁴ Under the Patent Act, “process” is defined as a “process,

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1. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

2. 409 U.S. 63 (1972).

3. *Id.* at 64.

4. *Id.* at 71-72. The claims were broad in scope, implicating any use of the method in a general-purpose digital computer of any kind. *Id.* The USPTO rejected claims 8 and 31 of the application. *Id.* Subsequently, both claims were upheld by the Court of Customs and Patent Appeals. *Id.*

art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.”⁵ According to the Court, accepting respondent’s method as patentable subject matter would contradict the well-settled precedent that an idea may not be patented.⁶ The Court stated, “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 preempt the mathematical formula and in practical effect would be a patent on the algorithm itself.”⁷ However, the Court bypassed discussion on whether the patent laws should be revised to include programs such as respondent’s program, citing incompetence on the matter.⁸ The Court did note that although patent protection for programs was not available at present, there still existed a substantial increase in the rate of the creation of programs.⁹ Additionally, the programs could receive protection under current copyright law.¹⁰ As one final observation, the Court stated, “Uncertainty now exists as to whether the statute permits a valid patent to be granted on programs.”¹¹

In *Parker v. Flook*, the Court reiterated its finding from *Gottschalk*: the discovery of a novel and useful mathematical algorithm is not patentable.¹² Respondent submitted an application purporting to provide a “Method for Updating Alarm Limits.”¹³ The method was comprised of three steps: first, measuring the present value of a process variable, such as pressure or temperature; second, using an algorithm to compute an updated alarm-limit value; and third, altering the existing alarm limit to the new value.¹⁴ Reminiscent of *Gottschalk*, the Court again reversed the decision of the Court of Customs and Patent Appeals (CCPA), finding that the disputed claims did not describe patentable subject matter.¹⁵

5. 35 U.S.C. § 100 (b) (1999).

6. *Gottschalk*, 409 U.S. at 71.

7. *Id.* at 71-72.

8. *Id.* at 72. The Supreme Court acknowledged that the President’s Commission on the Patent System rejected the proposition that these programs be patentable. *Id.*

9. *Id.*

10. *Id.*

11. *Gottschalk*, 409 U.S. at 72.

12. *Parker v. Flook*, 437 U.S. 584, 586 (1978).

13. *Id.* at 595 n.18.

14. *Id.*

15. *Id.* at 587, 596. Initially, the Patent Office rejected respondent’s application, finding that the mathematical formula was the only novel addition to the prior art. *Id.* at 587. Hence, a patent on the method “would in practical effect be a patent on the formula or mathematics itself.” *Id.* The Court of Customs and Patent Appeals reversed, reasoning that since the mere solution of the

On certiorari, the Court appropriately noted that the outcome of the case hinged upon proper interpretation of section 101 of the Patent Act.¹⁶ At issue was whether discovery of a novel formula causes an otherwise commonplace method to become patentable subject matter.¹⁷ In deciding the question, the Court looked to the analysis from *Mackay Radio & Telegraph Co. v. Radio Corp. of America*¹⁸ and *Funk Bros. Seed Co. v. Kalo Co.*¹⁹ Precedent mandated that the process itself be novel and exhibit utility, in order to be eligible for patent protection.²⁰ Whether the mathematical formula was newly discovered should not be taken into account.²¹ Ultimately, the Court ruled that a claim for an enhanced method of calculation, even when linked to a particular end use, may not be patented under section 101.²²

In the dissent, Justice Stewart, joined by Justice Rehnquist, firmly criticized the majority's conclusion.²³ The majority abandoned long-standing precedent by fusing the criteria of novelty and inventiveness under sections 102 and 103 of the Patent Act with section 101 concerns of subject-matter patentability.²⁴ Although they agreed that abstract ideas could not be patented, the dissenters emphasized that the mere existence of unpatentable subject matter in the process does not quash patent protection for the process as a whole.²⁵

Subsequently, in *Diamond v. Diehr*,²⁶ the U.S. Supreme Court questioned whether a machine that physically transformed materials using a mathematical formula and a programmed computer is patentable subject matter.²⁷ Respondents claimed a process for molding uncured synthetic rubber into cured, usable products.²⁸ The patent examiner rejected the claim, finding that the invention consisted of a computer program, determined to be unpatentable in *Gottschalk*, and a conventional rubber-

formula would not be tantamount to infringement of respondent's claims, a patent on the method would not preempt the algorithm. *Id.*

16. *Id.* at 588.

17. *Parker*, 437 U.S. at 591.

18. 306 U.S. 86 (1939).

19. 333 U.S. 127 (1948).

20. *Parker*, 437 U.S. at 591.

21. *Id.*

22. *Id.* at 595.

23. *See id.* at 598-600 (Stewart, J., dissenting).

24. *See id.* at 600 (Stewart, J., dissenting).

25. *Parker*, 437 U.S. at 598-99 (Stewart, J., dissenting).

26. 450 U.S. 175 (1981).

27. *Id.* at 177.

28. *Id.*

molding press.²⁹ The Court of Customs and Patent Appeals reversed, noting that a claim involving statutory subject matter does not become unpatentable simply because it engages the use of a computer.³⁰ The Commission of Patents and Trademarks then petitioned for certiorari, arguing that the CCPA's decision conflicted with precedent from the Supreme Court.³¹ The Court subsequently held that the rubber curing process was indeed patentable, citing the prior decision of *Tilghman v. Proctor*.³² The Court went further, determining that the process' patentability was not altered by the fact that the process utilized a mathematical equation and a programmed computer.³³

To assist in identifying unpatentable mathematical algorithms, the Court of Customs and Patent Appeals developed the "Freeman-Walter-Abele" test. The test consists of two prongs: first, whether the claim directly or indirectly recites a mathematical algorithm³⁴ and if so, whether the algorithm is "applied in any manner to physical elements or process steps."³⁵ If a claim consisted simply of an algorithm that was not employed by a physical process, then the subject matter was non-statutory.³⁶

B. Shifts in Perceptions of Software Patentability

The 1990s ushered in a wave of claims brought before the Federal Circuit regarding software patentability. In *In re Alappat*,³⁷ the disputed claims involved a means for creating a smooth waveform display in a digital oscilloscope.³⁸ The patent examiner had rejected the application, stating that the invention was non-statutory subject matter.³⁹ The Board of Patent Appeals and Interferences (Board) reversed, finding the claim, as a whole, was directed to a machine, and thus patentable under section 101.⁴⁰

29. *Id.* at 179-81.

30. *Id.* at 181.

31. *Diamond*, 450 U.S. at 181.

32. *Id.* at 184 n.8. "That a patent can be granted for a process, there can be no doubt. The patent law is not confined to new machines and new compositions of matter, but extends to any new and useful art or manufacture. A manufacturing process is clearly an art, within the meaning of the law." *Id.* (quoting *Tilghman v. Proctor*, 102 U.S. 707, 722 (1880)).

33. *Id.* at 185.

34. *In re Freeman*, 573 F.2d 1237, 1245 (C.C.P.A. 1978).

35. *In re Abele*, 684 F.2d 902, 906 (C.C.P.A. 1982).

36. See *Freeman*, 573 F.2d at 1237; *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980); *Abele*, 684 F.2d at 902.

37. 33 F.3d 1526 (Fed. Cir. 1994) (en banc).

38. *Id.* at 1537.

39. *Id.* at 1539.

40. *Id.*

However, upon further reconsideration, the Board affirmed the examiner's rejection.⁴¹

The Federal Circuit questioned whether the entire claim was truly directed to a non-patentable mathematical concept.⁴² The court agreed with the Board, holding that the claim was directed to a machine that produced a "useful, concrete, and tangible result"⁴³ and thus patentable. Ultimately, the court determined that a "computer operating pursuant to software" may receive patent protection.⁴⁴

Subsequently, in *In re Warmerdam*,⁴⁵ the court again struggled with the issue of what constituted statutory subject matter.⁴⁶ Appellants filed an application for a method and device which directed the motion of objects and machines to avoid impact with other movable or non-movable objects.⁴⁷ The Board affirmed the rejection of the patent examiner citing lack of statutory subject matter and indefiniteness under sections 101 and 112(2), respectively.⁴⁸ On appeal, the court advocated a return to fundamental principles outlined in *Diehr* and the language of the statute in defining what is included as patentable subject matter under section 101.⁴⁹ Therefore, the court upheld the Board's decision on subject matter patentability, stating that appellants' claim was merely the manipulation of an abstract idea.⁵⁰

Two weeks later, in *In re Lowry*,⁵¹ the Federal Circuit again reviewed a claim rejection administered by the Board.⁵² The patent application pertained to the "storage, use, and management of information residing in

41. *Id.*

42. *Alappat*, 33 F.3d at 1544.

43. *Id.*

44. *Id.* at 1545.

45. 33 F.3d 1354 (Fed. Cir. 1994).

46. *Id.*

47. *Id.* at 1355.

48. *Id.* at 1355, 1358.

49. *Id.* at 1359. The court also suggested that efforts to describe non-statutory subject matter in different language be avoided. *Id.*

50. *Warmerdam*, 33 F.3d at 1360. Consequently, the court looked to a 120-year-old ruling: "An idea of itself is not patentable." *Id.* (citing *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498, 507 (1874)).

51. 32 F.3d 1579 (Fed. Cir. 1994).

52. *Id.*

a memory.”⁵³ The Board based its decision on the “printed matter doctrine,”⁵⁴ a judicially created doctrine that provides,

The mere arrangement of printed matter on a sheet or sheets of paper, in book form or otherwise, does not constitute “any new and useful art, machine, manufacture, or composition of matter,” or “any new and useful improvements thereof,” as provided in section 4886 of the Revised Statutes, 35 USCA § 31.⁵⁵

The court limited the use of the printed matter doctrine, holding that the printed matter cases had no factual relevance to claims where the invention required that the information be processed by a machine.⁵⁶ The circuit court further stretched the boundaries of precedent from *Warmerdam*, by giving the data structure limitations patentable weight, even though they were not embodied in a physical structure per se.⁵⁷ Interestingly enough, the court awarded patent protection to the data structures for their improved efficiency in computer operation, although prior cases held this was not enough to garner patent protection.

That same year, the Federal Circuit handed down a decision in *In re Trovato*,⁵⁸ performing a legal one hundred and eighty degrees by holding that data structures did not meet the patentability standards of the Freeman-Walter-Abele test.⁵⁹ Applying the first part of the test, the judicial panel found that the method claims indirectly recited a mathematical formula by describing a methodical system of examining data which included “arithmetic operations manipulating numbers.”⁶⁰ Turning to the second part of the Freeman-Walter-Abele protocol, the court held that the claims

53. *Id.* at 1580.

54. *Id.* at 1582; *see also* 69 C.J.S. *Patents* § 16 (2005) (“Printed matter, or the mere arrangement of printed matter, is not patentable, but patentability may reside in some physical structure of printed matter.”).

55. *In re Russell*, 48 F.2d 668, 669 (C.C.P.A. 1931); *see also* *Guthrie v. Curlett*, 10 F.2d 725 (2d Cir. 1926); *Flint v. Leonard & Co.*, 27 F.2d 215 (7th Cir. 1928); *In re Dixon*, 44 F.2d 881 (C.C.P.A. 1930).

56. *Lowry*, 32 F.3d at 1583.

57. *See id.*

58. 42 F.3d 1376 (Fed. Cir. 1994), *vacated by* 60 F.3d 807 (Fed. Cir. 1995) (*per curiam*).

59. *Id.* at 1378. Appellants submitted an application directed to finding the shortest distance between two points. *Id.* at 1377.

60. *Id.* at 1380. The panel noted, “Words used in a claim operating on data to solve a problem can serve the same purpose as a formula.” *Id.* at 1379 (quoting *In re Grams*, 888 F.2d 835, 837 n.1 (Fed. Cir. 1989) (citing *In re Freeman*, 573 F.2d 1237, 1246 (C.C.P.A. 1978))).

only covered the process of executing a numerical calculation, thereby leaving the claims without statutory subject matter.⁶¹

Moreover, the claims failed to provide a physical link between the software and a tangible embodiment of the invention.⁶² In calling for this “physical link” requirement, the court abruptly changed its position since the *Lowry* decision. Ultimately, the court reasoned that the claims were too abstract to warrant patent protection.⁶³

In spite of this, reevaluating under en banc, the Federal Circuit vacated its initial *Trovato* decision.⁶⁴ According to the per curiam order, the recent ruling from *Alappat* and the proposed new guidelines from the Patent and Trademark Office for examining computer-implemented inventions, warranted reexamination of *Trovato*.⁶⁵ In a strongly worded dissent, Judge Nies, author of the original opinion in *Trovato*, joined by Judge Michel, criticized the majority’s conclusion.⁶⁶ The dissenters noted that the new guidelines had not yet been adopted⁶⁷ and, if approved, were still subject to precedent from the Federal Circuit and the U.S. Supreme Court.⁶⁸

Finally, the court of appeals handed down its decision in *In re Beauregard*,⁶⁹ where an inventor appealed an order from the Board rejecting computer program product claims.⁷⁰ In an interesting appellate twist, the Commissioner of Patents and Trademarks stated that computer programs embodied in a tangible medium could receive section 101 patent

61. *Trovato*, 42 F.3d at 1380.

62. *Id.* at 1380-81. During oral argument, appellants’ counsel conceded that neither specification contained a hardware enablement of the process. *Id.* at 1380.

63. *See id.* at 1381.

64. *In re Trovato*, 60 F.3d 807, 807 (Fed. Cir. 1995).

65. *Id.*

66. *Id.* at 808 (Nies, J., dissenting). According to Judge Nies, “The majority’s action is unconventional . . . This Order does a disservice to the Board, the Bar, and this court.” *Id.* (Nies, J., dissenting).

67. *Id.* (Nies, J., dissenting).

Although guidelines have been proposed, the process has barely begun. Adoption of the guidelines is not on the immediate horizon. Is the majority ordering a stay of *Trovato*’s application indefinitely until the new guidelines are issued, or can the Board proceed without them? What if the PTO decides to revise or not to adopt the guidelines?

Id. (Nies, J., dissenting).

68. *Id.* (Nies, J., dissenting).

69. 53 F.3d 1583 (Fed. Cir. 1995).

70. *Id.* at 1584.

protection.⁷¹ In addition, the Commissioner conceded that the “printed matter doctrine” was not applicable to the product claims.⁷² In doing so, the circuit court yet again affirmed its finding in *Lowry*.

C. Current Developments in Software Patentability

More recent jurisprudence indicates that the Federal Circuit has become more accepting of the idea of software patentability. Take for instance the case of *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*⁷³ The disputed patent, issued to Signature, involved a data processing system that utilized an investment structure to assist Signature in functioning as an administrator and accounting agent for mutual funds.⁷⁴ Although the system machines made use of mathematical calculations to transform the data, the court found this represented “a practical application of a mathematical algorithm.”⁷⁵ Hence, the court determined that the claim met the section 101 patentability criterion.⁷⁶

Additionally, the court took a no-nonsense approach by permanently laying to rest the business method exception to patentability.⁷⁷ The court indicated that it had never before used this exception to deny patent protection for an invention.⁷⁸ The 1996 edition of the Manual of Patent Examining Procedures no longer contained a paragraph from prior editions endorsing business methods as the basis for a statutory rejection.⁷⁹ Furthermore, the U.S. Patent and Trademark 1996 Examination Guidelines for Computer Related Inventions now read that claims should no longer be categorized as methods of doing business.⁸⁰ Ultimately, the court reversed the decision of the district court.⁸¹

71. *Id.*

72. *Id.*

73. 149 F.3d 1368 (Fed. Cir. 1998).

74. *Id.* at 1373-74.

75. *Id.* at 1373.

76. *Id.* at 1375.

77. *Id.* The court apparently took a cue from Judge Newman’s dissent in *In re Schrader*: “[The business method exception] is . . . an unwarranted encumbrance to the definition of statutory subject matter in section 101, that [should] be discarded as error-prone, redundant, and obsolete.” *Id.* at 1375 n.10 (quoting *In re Schrader*, 22 F.3d 290, 298 (Fed. Cir. 1994) (Newman, J., dissenting)).

78. *State Street*, 149 F.3d at 1375.

79. *Id.* at 1377.

80. *Id.*

81. *Id.*

In *AT&T v. Excel Communications*, the court questioned whether the claims of a patent entitled “Call Message Recording for Telephone Systems” recited a mathematical algorithm.⁸² The process applied Boolean algebra to primary interexchange carrier (PIC) data to determine the value of the PIC indicator and apply that value to create a signal useful for billing purposes.⁸³ The process utilized the Boolean principle to generate a “useful, concrete, tangible result without [obstructing] other uses of the mathematical principle.”⁸⁴ As a result, following the principle from *Alappat* and *State Street*, the court held that all of the asserted claims were patentable subject matter under section 101.⁸⁵

Finally, on the forefront of the issue of software patentability is the case of *Metabolite Laboratories, Inc. v. Laboratory Corp. of American Holdings*.⁸⁶ University Patents Inc. (UPI) patented a method for detecting B vitamin deficiencies.⁸⁷ The method comprised of “assaying a body fluid for an elevated level of total homocysteine; and correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate.”⁸⁸ The patent was licensed to Metabolite, which then sublicensed the patent to Roche Biomedical Laboratories (LabCorp).⁸⁹ Initially, LabCorp performed assays under the sublicense.⁹⁰ However, LabCorp replaced UPI’s assays with an assay from Abbott Laboratories and ceased paying royalties to Metabolite.⁹¹ Metabolite brought suit for patent infringement.⁹²

LabCorp argued that the patent was invalid, stating, in part, that the patent lacked a written description and enablement and was indefinite.⁹³ However, the United States District Court for the District of Colorado and the Federal Circuit found that LabCorp had indirectly infringed Metabolite’s valid patent.⁹⁴ The U.S. Supreme Court has granted certiorari.

The Court must decide if the patent falls under the well-settled principle that laws of nature, natural phenomena, and abstract ideas are unpatentable.

82. *Id.* at 1353-54.

83. *State Street*, 149 F.3d at 1358.

84. *Id.*

85. *Id.* at 1361.

86. 370 F.3d 1354 (Fed. Cir. 2004).

87. *Id.* at 1358.

88. *Id.* at 1358-59.

89. *Id.* at 1359.

90. *Id.*

91. *Metabolite Labs.*, 370 F.3d at 1359.

92. *Id.*

93. *Id.* at 1365.

94. *Id.* at 1358.

A ruling in favor of LabCorp would have drastic implications on software patents – calling into question older patents and restricting new patents.⁹⁵

III. CONCLUSION

The inability to bring a claim against patent infringers jeopardizes millions of dollars for software companies.⁹⁶ Absent a patent and licensing system, companies will suffer a massive loss of profit as competitors duplicate inventions without fear of infringement. Inventors will be unable to recoup their research and development costs, which, in turn, could stifle research, innovation, and technological advancement. Consequently, courts must review the subject of software patentability intensely and come up with a viable solution that prevents the exploitation of intellectual property rights while also providing incentive for inventors to contribute to the societal good. The question remains as to whether the judiciary will be able to strike such a delicate balance.

95. Andrew Bridges, *Update 1: Justices Take On Question of Patents*, FORBES (Mar. 21, 2006), available at <http://www.forbes.com/feeds/ap/2006/03/21/ap2609264.html> (last visited Apr. 30, 2006).

96. The Associated Press, *Microsoft a Loser in Patent Suit*, N.Y. TIMES (Apr. 20, 2006), available at <http://www.nytimes.com/2006/04/20/technology/20soft.html> (last visited Apr. 30, 2006). Microsoft and Autodesk were ordered to pay \$133 million to Z4 Technologies for patent infringement. The argument that the Z4 patents were invalid was unsuccessful.