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Diamond v. Diehr, 101 S. Ct. 1048 (1981)

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Patent Law—PROCESS PATENTS—SUBJECT MATTER PATENTABIL-
ITY—A PATENT CLAIM BASED PRIMARILY ON A COMPUTER PROGRAM
CAN COMPRISE PATENTABLE SUBJECT MATTER—*Diamond v. Diehr,*
101 S. Ct. 1048 (1981).

I. INTRODUCTION

Can a computer program be patented?[1] The computer software
industry has been awaiting an answer to this question.[2] In *Dia-
mond v. Diehr,*[3] the United States Supreme Court declined the
opportunity to give a definitive answer.[4]

Instead, the Court in *Diehr* approved a test for determining pat-
entable subject matter in computer program related claim applica-
tions which is relatively liberal in favor of patentability. Specifi-
cally, the Court approved a claim, filed by respondents Diehr and
Lutton,[5] in which a digital computer program figured prominently,
on the basis that it constituted patentable subject matter under 35

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1. This area of the law has been much commented on over the last decade. *See, e.g.,*
Blumenthal & Riter, *Statutory or Non-Statutory?: An Analysis of the Patentability of
Computer Related Inventions,* 62 J. PAT. OFF. SOC'Y 454 (1980); Davis, *Computer Programs
and Subject Matter Patentability,* 6 RUT. J. COMPUTERS L. 1 (1977); Gemignani, *Legal Pro-
tection for Computer Software; The View from '79,* 7 RUT. J. COMPUTERS TECH. L. 269
(1980); Nimtz, *Development of the Law of Computer Software Protection,* 61 J. PAT. OFF.
SOC'Y 3 (1979); Novick & Wallenstein, *The Algorithm and Computer Software Patentabil-
ity: A Scientific View of a Legal Problem,* 7 RUT. J. COMPUTERS TECH. L. 313 (1980); Pfeifer,
Legal Protection of Computer Software: An Update, 5 ORANGE COUNTY B.J. 226 (1978);
Pope & Pope, *Protection of Proprietary Interests in Computer Software,* 30 ALA. L. REV.
527 (1979); Ross, *The Patentability of Computer "Firmware",* 59 J. PAT. OFF. SOC'Y 731
(1977); Upchurch, *A Template for Judicial Resolution of Computer Program Patentability,*
9 GA. L. REV. 855 (1975); 26 CATH. U.L. REV. 835 (1977); 26 DRAKE L. REV. 180 (1976-77); 58
N.C.L. REV. 319 (1980).

2. The term software is generic and can be thought of as synonymous with the term
computer program for purposes of this note.

> A traditional dichotomy has been drawn in computer science between "hard-
> ware" and "software." Hardware can be defined as the collection of physical com-
> ponents and apparatus that make up a computer system, whereas software con-
> sists of the information (data) and instructions for processing this data (programs)
> fed into the computer, on which it operates.

Ross, *supra* note 1 at 736 (footnote omitted).

3. 101 S. Ct. 1048 (1981). Petitioner, Sidney A. Diamond, is Commissioner of Patents
and Trademarks.

4. The Court has had three previous opportunities to decide this issue but in each case
the Court kept its holding more narrow. *See* Parker v. Flook, 437 U.S. 584 (1978); Dann v.
Johnston, 425 U.S. 219 (1976); Gottschalk v. Benson, 409 U.S. 63 (1972). *Johnston* was de-
cided on grounds other than subject matter patentability. *Benson* and *Flook* are discussed
at the text accompanying notes 53-73, *infra.*

5. James R. Diehr, II and Theodore A. Lutton filed the patent application involved in
this case. 101 S. Ct. at 1048.

U.S.C. § 101 (section 101).[6] In taking this step towards favoring patentability for software, the Court reverses the position it took in *Parker v. Flook*[7] only three years ago. Although *Diehr* purports to distinguish *Flook*,[8] the rationales of the two cases are irreconcilable.[9]

This note will discuss the evolution of the *Diehr* case, review the historical background of the decision, and finally will focus on an analysis of the majority and dissenting opinions in *Diehr* and the effect this decision may have.

II. EVOLUTION OF THE CASE

Diehr and Lutton filed a patent application on August 6, 1975 claiming the invention of a new process for curing synthetic rubber.[10] Simply stated, "[t]he process uses a mold for precisely shaping the uncured material under heat and pressure and then curing the synthetic rubber in the mold so that the product will retain its shape and be functionally operative after the molding is completed."[11] Curing rubber in this way is common in the industry and the chemistry and physics of this process are governed by the Arrhenius equation.[12] The more accurately the variables in this equa-

6. (1976). Section 101 defines what *subject matter* is patentable. It states: "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 therefor, subject to the conditions and requirements of this title."
Once a patent application is determined to define patentable subject matter under section 101 it must still pass the hurdles imposed by other sections of Title 35 in order to be granted a patent. Primary among these other hurdles are sections 102 and 103 which deal with questions of whether the claimed invention or discovery is novel and nonobvious. *See* note 30 *infra*. The questions posed by sections 102 and 103, however, are to be considered separately from the question of whether the subject matter is patentable under section 101. In *Diehr* the Court is concerned *only* with the section 101 inquiry, *i.e.*, whether the patent application defines patentable *subject matter*. It is unclear whether Diehr and Lutton's application has already passed these other hurdles or must still face them before a patent will issue. *See* 101 S. Ct. at 1068 n.33 (Stevens, J., dissenting).
7. 437 U.S. 584 (1978).
8. 101 S. Ct. at 1056 & 1059 n.14.
9. Justice Stewart wrote the dissent in *Flook* and was joined by Chief Justice Burger and Justice Rehnquist. 437 U.S. at 584. The *Diehr* majority opinion was written by Justice Rehnquist and joined by Chief Justice Burger and Justices Stewart, White, and Powell. 101 S. Ct. at 1048.
10. 101 S. Ct. at 1051.
11. *Id.* (footnote omitted).
12. *In re* Diehr, 620 F.2d 982, 983 (C.C.P.A. 1979), *aff'd sub nom.* Diamond v. Diehr, 101 S. Ct. 1048 (1981). Diamond v. Diehr explains:
    The equation is named after its discoverer Svante Arrhenius and has long been used to calculate the cure time in rubber molding presses. The equation can be

tion can be controlled, the better the cure, and hence, the better the product.[13] One important variable in the equation which, according to Diehr and Lutton, was not adequately controlled in the traditional method was temperature.[14] In the traditional method the temperature of the mold press, which is apparently set at a fixed temperature and is controlled by thermostat,[15] fluctuates due to the opening and closing of the press.[16] Because the Arrhenius equation is calculated using an average *anticipated* temperature, and the calculated time for the mold to open varies with the temperature approximation, the rubber is overcured or undercured when the actual temperature of the mold press varies.[17]

Diehr and Lutton had developed a different method:

> Respondents characterize their contribution to the art to reside in the process of constantly measuring the actual temperature inside the mold. These temperature measurements are then automatically fed into a computer which repeatedly recalculates the cure time by use of the Arrhenius equation. When the recalculated time equals the actual time that has elapsed since the press was closed, the computer signals a device to open the press. According to the respondents, the continuous measuring of the temperature inside the mold cavity, the feeding of this information to a digital computer which constantly recalculates the cure time, and the signaling by the computer to open the press, are all new in the art.[18]

Although Diehr and Lutton claimed only the above process to be new to the art, at least one of their claims recited the entire process of curing rubber, *i.e.,* from putting uncured rubber in a heated

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expressed as follows:
$$\ln v = CZ + x$$
where ln v is the natural logarithm of v, the total required cure time; C is the activation constant, a unique figure for each batch of each compound being molded, determined in accordance with rheometer measurements of each batch; Z is the temperature in the mold; and x is a constant dependent on the geometry of the particular mold in the press. A rheometer is an instrument to measure flow of viscous substances.

101 S. Ct. at 1052 n.2.

  13. 101 S. Ct. at 1052.

  14. *Id.*

  15. 602 F.2d at 983.

  16. 101 S. Ct. at 1052 n.3.

  17. *Id.* at 1052. 602 F.2d at 983.

  18. 101 S. Ct. at 1052.

mold to taking out the cured product.[19]

The patent examiner rejected the claims because *"the only non-conventional claim steps* 'define a computer program for taking repeated temperature measurements from the mold and calculating cure time in response to said measurement data.' "[20] Therefore, the patent examiner "decided that appellants were *claiming* a computer program, 'subject matter [to] which the Supreme Court has declined to extend patent protection absent a considered action by Congress.' "[21]

The Patent and Trademark Office Board of Appeals (PTO Board) agreed with the patent examiner,[22] but the Court of Customs and Patent Appeals (CCPA) reversed.[23] The CCPA found that the Supreme Court had never held computer programs unpatentable subject matter per se, and furthermore, that the PTO Board erred in dissecting the claim into old and new elements.[24] The CCPA held that for purposes of section 101 "[t]he focus of the inquiry should be whether the claim, as a whole, is directed essentially to a method of calculation or mathematical formula."[25]

The United States Supreme Court affirmed the CCPA in a five to four decision.[26] The Court agreed with the CCPA that when reviewing a computer program related claim to determine whether the claim defines statutory subject matter under section 101, the claim must be viewed as a whole, not dissected and analyzed by parts, and that no consideration of novelty or obviousness[27] is appropriate in section 101 analysis.[28]

III. HISTORICAL BACKGROUND

Congressional authority to legislate a patent system is specifi-

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19.   Claim 11 recites the entire process of curing rubber. *See* 101 S. Ct. at 1053 n.5. In comparison, claims 1 and 2 recite only parts of the process. *Id.* at 1052-53 n.5.

20.   602 F.2d at 984 (emphasis in original).

21.   *Id.* at 984 (emphasis in original).

22.   101 S. Ct. at 1053.

23.   *In re* Diehr, 602 F.2d at 982 (1979), *aff'd sub nom.* Diamond v. Diehr, 101 S. Ct. 1048 (1981).

24.   602 F.2d at 986-87. The PTO Board dissected the claim by looking at non-conventional, *i.e.*, new claim steps. *See* text accompanying note 20, *supra.*

25.   *Id.* at 987 (emphasis in original).

26.   101 S. Ct. 1048. As noted previously, Justice Rehnquist wrote for the Court. *See* note 9 *supra.* Justice Stevens wrote the dissent and was joined by Justices Brennan, Marshall, and Blackmun. *Id.*

27.   *See* note 6 *supra,* for discussion of novelty and obviousness requirements of sections 102 and 103.

28.   101 S. Ct. at 1057.

cally granted in the Constitution.[29] Current statutory legislation relating to patents is contained in Title 35 of the United States Code.[30] The philosophy behind the patent law is that "[t]he productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens."[31]

Sections 102 and 103 of Title 35 address the novelty and nonobviousness of patent claims. These sections define different statutory criteria from section 101. Therefore, analysis to determine whether a claim is statutory *subject matter* under section 101 must be distinguished from analysis to determine whether a claim is novel under section 102, or obvious under section 103.[32]

Furthermore, although the definition of what is patentable subject matter under section 101 is broad and includes a "process"[33] as well as a "machine", there are some things which do not fall within section 101 and therefore cannot be patented regardless of their novelty and nonobviousness.[34] Scientific principles,[35] mathe-

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29. U.S. CONST. art. I, § 8, cl. 8 which states: "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive right to their respective Writings and Discoveries."

30. For purposes of this note the relevant sections are 35 U.S.C. §§ 100, 101, 102, and 103. Section 101 is quoted at note 6 *supra.* Section 100(b) states: "The term 'process' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material." Section 102 contains the criterion of novelty essential for patentability, and section 103 contains the criterion of non-obviousness essential for patentability. *See* note 6 *supra.*

31. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974).

32. *See* notes 6 & 30 *supra.*

33. *See* note 30 *supra.* The Court in *Diehr* stated:
Although the term "process" was not added to 35 U.S.C. § 101 until 1952, a process has historically enjoyed patent protection because it was considered a form of "art" as that term was used in the 1793 Act. In defining the nature of a patentable process, the Court stated:
That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. . . . A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.
101 S. Ct. at 1054-55 (quoting from Cochrane v. Deener, 94 U.S. 780, 787-88 (1876)) (footnotes omitted).

34. 101 S. Ct. at 1055.

matic equations,[36] ideas,[37] phenomena of nature,[38] and generally any naturally occurring event or abstract human thought are not patentable subject matter.[39] This is because they are the "basic tools of scientific and technological work"[40] and it would be unfair and contrary to the goals of the patent system to grant anyone a monopoly on them. If, however, the idea or phenomenon is *incorporated* in a machine, or *applied* in a process, then the machine or process can be patentable subject matter.[41]

Prior to the arrival of computer programs on the patent scene, the courts had developed a test to determine whether a patent claim defined an unpatentable abstract concept or whether it defined a potentially patentable process or apparatus which applied or used the concept. The test incorporated the "mental steps" doctrine with a "point of novelty" approach.[42] The essence was to first determine which steps were "mental steps" or "physical steps" in a process or apparatus.[43] Then a determination was made of whether the point of novelty was in the mental or physical steps. If the point of novelty was in physical steps then the subject matter was patentable. Likewise, if the point of novelty was in the mental steps then the subject matter was unpatentable.[44] Thus, it appears

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35.   Mackay Radio & Tel. Co. v. Radio Corp., 306 U.S. 86 (1939).

36.   *Id.*

37.   Rubber-Tip Pencil Co. v. Howard, 87 U.S. 498 (1874); Le Roy v. Tatham, 55 U.S. 156 (1852).

38.   Funk Bros. Seed Co. v. Kalo Inoc. Co., 333 U.S. 127 (1948).

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

40.   *Id.* at 67.

41.   "While a scientific truth, or the mathematical expression of it, is not a patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be." Mackay Radio & Tel. Co. v. Radio Corp., 306 U.S. 86, 94 (1939). "He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end." Funk Bros. Seed Co. v. Kalo Inoc. Co., 333 U.S. 127, 130 (1948).

42.   *See, e.g., In re* Yuan, 188 F.2d 377, 380 (C.C.P.A. 1951). The court determined that a mathematical procedure for construction of airfoil consists of mental steps which are not patentable subject matter.

43.   "Mental steps" are those which are normally thought of as being performed by a human mind. *See In re* Abrams, 188 F.2d 165, 166-67 (C.C.P.A. 1951).

44.   *In re* Abrams, 188 F.2d 165 (C.C.P.A. 1951) is a classic case demonstrating the use of the mental steps doctrine. In *Abrams,* the appellant's brief proposed three "rules" for the court to follow. Although the court did not expressly adopt the "rules" it did say that "[f]rom such examination of the decisions as we have been able to make, the suggested rules appear to accord with them." 188 F.2d at 167.

Rule 2 stated:
    If a method claim embodies both positive and physical steps as well as so-called mental steps, yet the alleged novelty or advance over the art resides in one or

that by using the mental steps and point of novelty approach to determine the patentability of subject matter defining a computer program, the program would be unpatentable because it is unlikely that any steps in a program would be considered "physical" in the sense of this test.[45]

The mental steps doctrine, however, was rejected by the CCPA in *In re Musgrave*.[46] Thus, its application to computer programs never became an issue. *Musgrave* replaced mental steps with the "technological arts" test.[47] "All that is necessary . . . to. make a sequence of operational steps a statutory 'process' within 35 U.S.C. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of 'useful arts.' "[48]

It was during the mid-sixties that legal protection for computer programs had become an issue. In 1966, the President's Commission on the Patent System recommended that computer programs not be afforded patent protection.[49] The CCPA, however, did not agree and in the first significant computer program related case, *In re Prater*,[50] said that it saw no reason why computer program related claims were necessarily unpatentable.[51]

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more of the so-called mental steps, then the claim is considered unpatentable for the same reason that it would be if all the steps were purely mental in character.
Id. at 166.

45. "Prior to 1968, well-established principles of patent law probably would have prevented the issuance of a valid patent on almost any conceivable computer program. Under the mental steps doctrine, processes involving mental operations were considered unpatentable." 101 S. Ct. at 1060 (Stevens, J., dissenting).

46. 431 F.2d 882, 889 (C.C.P.A. 1970). The Supreme Court had never explicitly approved the mental steps doctrine. *Diehr* is the only Supreme Court case to mention the mental steps doctrine by name, although both *Benson* and *Flook* arguably alluded to it.

47. *Id.* at 893.

48. *Id.* (citation omitted).

49. The Commission recommended:
   A series of instructions which control or condition the operation of a data processing machine, generally referred to as a "program," shall not be considered patentable regardless of whether the program is claimed as: (a) an article, (b) a process described in terms of the operations performed by a machine pursuant to the program, or (c) one or more machine configurations established by a program.
Gemignani, *supra* note 1, at 295 (quoting from *The Report of the President's Commission on the Patent System, to Promote the Progress of . . . Useful Arts in an Age of Exploding Technology* at 12 (1966)).

50. 415 F.2d 1393 (C.C.P.A. 1969). The claim involved a process for analyzing spectographic data to produce a quantitative spectographic analysis *and* an *apparatus* for producing the analysis. The apparatus was an analog computer, although the claimants admitted that a digital computer could be used. *Id.* at 1397.

51. *Id.* at 1403 n.29. The CCPA stated that when a program is introduced into a general purpose digital computer that a special purpose digital computer is created and that the

It was not until 1972 that the Supreme Court first addressed the subject of computer program patentability. In *Gottschalk v. Benson*,[52] the CCPA had used the new technological arts test to hold that the patent application in question defined patentable subject matter under section 101.[53] The process claimed used a computer program to convert binary coded decimal numerals into pure binary numbers. The Supreme Court called the program an "algorithm"[54] and analogized it to an idea or mathematic equation. In reversing the CCPA, the Court found that the patent "would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself,"[55] and was thus not patentable subject matter under section 101. The Court was careful to note, however, that its decision should not be construed to hold that all

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apparatus and the process by which it operates might not necessarily be unpatentable. *Id.* Although *Prater* was decided before the complete demise of the mental steps doctrine, prior "mental steps" cases were distinguished in *Prater*, thus foreshadowing the holding in *Musgrave. See* text *supra,* following note 46.

52.   409 U.S. 63 (1972).

53.   *In re* Benson, 441 F.2d 682, 688 (C.C.P.A. 1971), *rev'd sub nom.* Gottschalk v. Benson, 409 U.S. 63 (1972).

54.   *See* Novick & Wallenstein, *supra* note 1, for an excellent explanation of the term "algorithm." "Given the problem [to be solved] and the device [to be used in solving the problem], an *algorithm* is the precise characterization of a method of solving the problem, presented in a language comprehensible to the device." *Id.* at 333 (quoting from *Encyclopedia of Computer Science* 47-48 (A. Ralston & C. Meek eds. 1976)).

Although not all algorithms are mathematical, the Supreme Court has defined "algorithm" to mean mathematical algorithms only. "A procedure for solving a given type of mathematical problem is known as an 'algorithm.'" 409 U.S. at 65. A commentator explained:

> Algorithms may be created in all aspects of daily living. For example: An algorithm for a person to safely lift a cup of coffee off a saucer.
> (1) START;
> (2) Place hand lightly on cup;
> (3) If cup is not too hot to maintain contact, skip to step (7);
> (4) Remove hand from cup;
> (5) Cover hand with napkin—this unit is now the "hand";
> (6) Return to step (2);
> (7) Lift cup slightly off saucer;
> (8) If cup does not begin to slip, skip to step (14);
> (9) Replace cup on saucer;
> (10) Remove hand from cup;
> (11) Wipe clean outsides of both hand and cup;
> (12) Place hand on cup;
> (13) Return to step (7);
> (14) Lift cup to desired height;
> (15) FINISH.

Novick & Wallenstein, *supra* note 1, at 334 n.175.

55.   409 U.S. at 72.

computer programs were unpatentable.[56]

Because the Supreme Court had decided *Benson* so narrowly, and neither mentioned the mental steps doctrine nor specifically rejected the technological arts doctrine, the CCPA had no trouble accepting the *Benson* reversal. In several cases the CCPA narrowly construed *Benson* and continued to hold program related claims patentable subject matter.[57] The CCPA insisted that the mental steps doctrine was a dead letter and that the Patent Office practice of dissecting claims to determine the point of novelty was wrong.[58] One of the cases decided according to this reasoning was *In re Flook*,[59] which was reviewed by the Supreme Court as *Parker v. Flook*.[60]

Flook involved a claim that was amazingly similar to the claim in *Diehr*.[61] The claimed invention in *Flook* was a process for updating an "alarm limit" in the catalytic hydrocarbon conversion process. "In essence, the process involves an initial step which reads the parameters of the chemical process system, an intermediate step which uses an algorithm to calculate a desired new value for the alarm value, and a final step in which the actual alarm value is adjusted."[62] As in *Diehr*, the claim involved a programmed computer which was used to make rapid recalculations due to the input of changing variables, and the post-solution utilization of the recalculated equation solutions. In *Flook* the post-solution activity was the setting of a new "alarm limit" to trigger an alarm whereas

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56. *Id.* at 71.

57. *See, e.g., In re* Flook, 559 F.2d 21 (C.C.P.A. 1977), *rev'd sub nom.* Parker v. Flook, 437 U.S. 584 (1978); *In re* Deutsch, 553 F.2d 689 (C.C.P.A. 1977); *In re* Chatfield, 545 F.2d 152 (C.C.P.A. 1976), *cert. denied*, 434 U.S. 875 (1977); *In re* Johnston, 502 F.2d 765 (C.C.P.A. 1974), *rev'd on other grounds sub nom.* Dann v. Johnston, 425 U.S. 219 (1976).

58. Throughout this period the Patent Office held the view that if the point of novelty of a claim was a mathematical formula or algorithm it was unpatentable. An example of the CCPA response to this view is contained in *Chatfield*:

> Our reference . . . to the mathematical equation as being at the "point of novelty" does not equate to a holding that a claim may be dissected, the claim components searched in the prior art, and, if the only component found novel is outside the statutory classes of invention, the claim may be rejected under 35 U.S.C. § 101. That procedure is neither correct nor within the intent of Congress. . . .

545 F.2d at 158.

59. 559 F.2d 21 (C.C.P.A. 1977), *rev'd sub nom.* Parker v. Flook, 437 U.S. 584 (1978). *See generally* 30 HASTINGS L.J. 1627 (1979); 24 N.Y.L. SCH. L. REV. 975 (1979); 19 SANTA CLARA L. REV. 483 (1979); 56 U. DET. J. URB. L. 289 (1978); and 1979 WIS. L. REV. 867.

60. 437 U.S. 584 (1978).

61. 101 S. Ct. at 1067 (Stevens, J., dissenting). Justice Stevens said that Diehr and Lutton's "method of updating the curing time calculation is strikingly reminiscent of the method of updating alarm limits that . . . Flook sought to patent." *Id.*

62. 559 F.2d at 22.

in *Diehr* it was the signaling of a device to open the press.[63]

Justice Stevens wrote for the Court in *Flook*. The Court said that regardless of the fact that respondent's claim did not "wholly pre-empt the mathematical formula," and that post-solution activity was present, the claim did not define patentable subject matter.[64] The Court agreed with the CCPA that the claim should be viewed as a whole,[65] but said that the proper test was quite different from the one which the CCPA had applied. The Court said that "[t]he process itself, not merely the mathematical algorithm, must be new and useful."[66] The way to determine this, said the Court, is to assume the algorithm (program) to be part of the "prior art"[67] and then see if the process describes a patentable invention.[68] The Court applied this test and found that Flook's invention was not patentable.[69]

Although never mentioning the mental steps doctrine and point of novelty approach, the Court in *Flook* apparently referred to these when it said, "[t]o a large extent our conclusion is based on reasoning derived from opinions written before the modern business of developing programs for computers was conceived."[70] A strong dissenting opinion in *Flook* took the majority to task for "importing into its inquiry under 35 U.S.C. § 101 the criteria of novelty and inventiveness."[71] The dissent felt that the test used by the majority had the effect of denying the patentability of the subject matter merely because *one step* in the process, considered in isolation, would be unpatentable.

The dissent needn't have worried, however, since the CCPA virtually ignored *Flook*. The CCPA continued to analyze computer program related claims using a two step approach it had previously

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63.   101 S. Ct. at 1067.

64.   437 U.S. at 589-90.

65.   *Id.* at 594.

66.   *Id.* at 591.

67.   The term "prior art" is a term of art which comes from 35 U.S.C. § 103. Under section 103 analysis, the subject matter sought to be patented must be compared with the "prior art" to determine whether or not the invention was obvious. It was, perhaps, unfortunate that the Court in *Flook* phrased its test in this way, *i.e.*, borrowing a term of art from section 103 analysis to use in section 101 analysis. By doing so the Court opened itself to criticism that it was importing section 103 considerations of obviousness into section 101 analysis.

68.   437 U.S. at 591-92, 594.

69.   *Id.* at 594.

70.   *Id.* at 595.

71.   *Id.* at 600 (Stewart, J., dissenting). *See* note 67 *supra*.

developed in *In re Freeman*.[72] In continuing to analyze claims using the *Freeman* test after the decision in *Flook,* the CCPA seemed to completely disregard the Supreme Court's reasoning. The CCPA admitted this explicitly in *In re Diehr*:

> Although in *Flook* the Supreme Court assumed the equation of the claim to be old in the art even though it was not, the holding of that case does not depend on that mode of analysis. . . . While the Supreme Court in that case may have found that analysis a convenient vehicle to highlight the fact that Flook's actual contribution to the useful arts was his new formula, we do not believe that the Court meant to establish that analysis as a general test in determining compliance with § 101. . . .[73]

The foregoing, then, was the state of the law before the Supreme Court decided *Diehr.* As one commentator has eloquently put it:

> [T]he state of program patents is utterly chaotic. The plot has all of the elements of a comic opera with four principle characters: the Patent Office, which steadfastly turns down every application for a patent on a computer program; the Court of Customs and Patent Appeals, which has fought for program patents in the face of increasing opposition from the Supreme Court; the Supreme Court, itself confused and trying to apply 'nineteenth century legal notions to computer technology without understanding the technology,' which keeps reversing the Court of Customs and Patent Appeals without directly confronting the issue of program patentability; and Congress, which despite anxious pleas from the Supreme Court to resolve the issue by statute, does nothing.[74]

IV. ANALYSIS OF *Diehr* OPINIONS

The rationale of the majority opinion in *Diehr* is a complete reversal of the majority rationale in *Flook*.[75] This is, of course, understandable since the *Flook* dissenters became the majority in

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72. 573 F.2d 1237 (C.C.P.A. 1978). *Freeman* was decided before *Parker v. Flook.* The *Freeman* analysis is a two step procedure which reflects the CCPA interpretation of the holding in *Benson.* Basically the test is (1) determine whether the claim recites an algorithm and (2) if it does, then determine if it "wholly preempts" that algorithm. If not, it is patentable. *Id.* at 1245. For a case applying this test even after *Parker v. Flook,* see *In re* Diehr, 602 F.2d 982, 988 (C.C.P.A. 1979), *aff'd sub nom.* Diamond v. Diehr, 101 S. Ct. 1048 (1981).

73. *In re* Diehr, 602 F.2d at 987 n.6.

74. Gemignani, *supra* note 1, at 292.

75. *Compare* Diamond v. Diehr, 101 S. Ct. 1048 (1981) *with* Parker v. Flook, 437 U.S. 584 (1978) (Stewart, J., dissenting).

Diehr through the defection of Justices White and Powell.[76] The majority in *Diehr* begin their dismemberment of *Flook* by defining the term "process" as used in section 101. This is important because whatever the Court determines to be the "process" is what the Court will analyze for proper subject matter.

The *Diehr* majority opinion first observes that in statutory construction "words will be interpreted as taking their ordinary, contemporary, common meaning."[77] The Court then examines the word "process" as used in section 101 and discusses its history and significance.[78] The Court concludes that the process involved in Diehr and Lutton's claim is "a physical and chemical process for molding precision synthetic rubber products" and therefore "falls within the § 101 categories."[79]

The Court's analysis of the word "process" as used in section 101 is broader than the analysis of the same word in *Flook* and *Benson*. In *Benson* the Court said that "[t]he question is whether the method described and claimed is a 'process' within the meaning of the Patent Act."[80] And in *Flook* the Court said:

> The plain language of § 101 does not answer the question. It is true, as respondent argues, that his method is a "process" in the ordinary sense of the word. But that was also true of the algorithm . . . in *Gottschalk v. Benson*. The holding that the discovery of that method could not be patented as a "process" forecloses a purely literal reading of § 101.[81]

The Court next reaffirms the unpatentable nature of physical phenomena and abstract ideas, stating that *Benson* and *Flook* stand for this principle.[82] In attempting to contrast Diehr and Lutton's claim with these cases, the Court is careful to include in its analysis the *entire* process of curing rubber, beginning with placing uncured rubber in the mold and ending with opening the press.[83] Here lies the main point of conflict between the majority and the dissent.

The majority, in analyzing Diehr and Lutton's "process," looks

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76. See notes 9 & 26 *supra*.
77. 101 S. Ct. at 1054 (quoting Perrin v. United States, 100 S. Ct. 311, 314 (1979)).
78. 101 S. Ct. at 1054-55.
79. *Id.* at 1055.
80. 409 U.S. at 64 (footnote omitted).
81. 437 U.S. at 588-89 (footnotes omitted).
82. 101 S. Ct. at 1055.
83. *Id.* at 1056.

at the entire process of curing rubber although it is aware that the *entire* process is not the "invention."[84] While the claim application *recites* the entire process of curing rubber,[85] this is merely the result of a decision on the part of the draftsman of the claim. The true claim is the *part* of the process of curing rubber that Diehr and Lutton "invented," *i.e.,* the constant measurement and input of temperature, the constant recalculation of the Arrhenius equation, and the use of the constantly updated solution.[86]

The above point forms the heart of the dissent argument. "The starting point in the proper adjudication of patent litigation is an understanding of what the inventor *claims* to have *discovered.*"[87] The essence of the dissent's argument is that unless some way is found to distinguish what an applicant's invention truly is from what an applicant recites in his claim application, then whatever the applicant recites in his application will be analyzed for purposes of section 101. If this were the case, the section 101 analysis would hinge entirely on the draftsman's skill.[88]

The majority respond to this argument by saying that to analyze a claim by looking to what is new in the claim rather than what the whole claim recites would inject considerations of novelty and obviousness into section 101. According to the majority, these considerations belong in sections 102 and 103 analysis only. Therefore, the Court opined:

> In determining the eligibility of respondents' claimed process

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84. The majority appears to have no greater problem than the dissent in distinguishing the process Diehr and Lutton claim as novel from the process recited in their application. "According to the respondents, the continuous measuring of the temperature inside the mold cavity, the feeding of this information to a digital computer which constantly recalculates the cure time, and the signaling by the computer to open the press, are all new in the art." *Id.* at 1052. Although the majority makes this distinction, it is irrelevant in view of their holding that this distinction (between old and new elements in a claim) should not be used in analysis of subject matter patentability.

85. *Id.* at 1052-53 n.5.

86. *Id.* at 1052.

87. *Id.* at 1060 (Stevens, J., dissenting) (emphasis added). Justice Stevens went on to state:

> The patent application filed by Diehr and Lutton, however, teaches nothing about the chemistry of the synthetic rubber-curing process, nothing about the raw materials to be used in curing synthetic rubber, nothing about the equipment to be used in the process, and nothing about the significance or effect of any process variable such as temperature, curing time, particular compositions of material, or mold configurations. In short, Diehr and Lutton do not claim to have discovered anything new about the process for curing synthetic rubber.

Id. at 1066.

88. *Id.* at 1070 n.39.

for patent protection under § 101, their claims must be consid-
ered as a whole. It is inappropriate to dissect the claims into old
and new elements and then to ignore the presence of the old ele-
ments in the analysis. . . . 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.[89]

This is completely inconsistent with the reasoning of *Flook.*[90] The
Diehr majority reads the words "new and useful" out of section
101, utilizing legislative history in support of this reasoning.[91]
Thus, the majority appears satisfied that since section 102 deals
explicitly with considerations of novelty, no novelty consideration
is appropriate in section 101 analysis.

The dissent in *Diehr* contends that on one level novelty *is* an
appropriate consideration under section 101 analysis. The superior
logic of this response is inescapable. There are two completely dif-
ferent and distinguishable novelty considerations under discus-
sion.[92] The major novelty question is the section 102 issue: whether
the claim is *in fact novel.* This is a question which can only be
answered by a court. The other novelty question, the section 101
issue, is: what does the applicant *claim to be new.* This question
can only be answered by the applicant.[93] According to the dissent,
"the Court has compounded its error by ignoring the critical dis-

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89. *Id.* at 1057 (footnotes omitted).

90. In *Flook* the Court said, "We think this case must . . . be considered as if the princi-
ple or mathematical formula were well known." 437 U.S. at 592.

91. 101 S. Ct. at 1057-58. The Court stated:
    The legislative history of the 1952 Patent Act is in accord with this reasoning. The
    Senate Report provided:
        "Section 101 sets forth the subject matter that can be patented, 'subject to
        the conditions and requirement of this title.' The conditions under which a
        patent may be obtained follow, and *Section 102 covers the conditions relat-*
        ing to novelty."
    It is later stated in the same report:
        "Section 102, in general, may be said to describe the statutory novelty re-
        quired for patentability, and includes, in effect, the amplification and defi-
        nition of 'new' in Section 101."
    Finally, it is stated in the "Revision Notes":
        "The corresponding section of [the] existing statute is split into two sec-
        tions, Section 101 relating to the subject matter for which patents may be
        obtained, and Section 102 defining statutory novelty and stating other con-
        ditions for patentability."
Id. at 1058 (emphasis supplied) (citations omitted).

92. *Id.* at 1060 (Stevens, J., dissenting).

93. *Id.* at 1068-69 n.34-36 and accompanying text.

tinction between the character of the subject matter that the inventor claims to be novel—the § 101 issue—and the question whether that subject matter is in fact novel—the § 102 issue."[94]

It seems reasonable that a statute which applies only to "[w]hoever invents or discovers. . ."[95] should be analyzed in terms of the applicant's actual invention, *i.e.*, the novelty he claims, as opposed to what is recited in the application. The application is a product of the *draftsman's* art and, as was arguably done in *Diehr*, the draftsman can surround the claimed invention with parts of a larger, well-known process.[96] By lumping these two distinquishable concepts of "novelty" together and eliminating any consideration of novelty from section 101 analysis, the Court opens the door of patentable subject matter to many claims which would be unpatentable but for the drafting of the claim application.

Most interesting is the majority's futile effort to distinguish *Flook*. The Court attempts to distinguish *Flook* by describing the post-solution activity in *Flook* as "token."[97] It is unclear why the post-solution activity in *Flook* is more token than that in *Diehr*. Why is "adjusting said alarm limit to said updated alarm limit value"[98] considered more token than programming a computer to "[signal] a device to open the press"?[99] Perhaps the draftsman of the *Flook* claim would have done better by reciting something like "the sounding of said alarm upon the attainment of the adjusted alarm limit." Then, as in *Diehr*, the post-solution activity might not have been considered "token."[100]

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94. *Id.* at 1060 (Stevens, J., dissenting).

95. *See* 35 U.S.C. § 101, quoted in note 4 *supra*.

96. *Compare* claim 11, 101 S. Ct. at 1052-53 n.5 *with* the claim in *Flook*, 437 U.S. at 596-97. The *Flook* claim, rather than reciting the entire process of catalytic conversion, speaks only of *"A method . . . involved in* a process comprising the catalytic chemical conversion of hydrocarbons. . . ." 437 U.S. at 596-97 (emphasis added).

97. 101 S. Ct. at 1059.

98. 437 U.S. at 597.

99. 101 S. Ct. at 1052.

100. Blumenthal & Riter, *supra* note 1, provide an interesting example of how the claim in *Diehr* could be redrafted into a presumably non-statutory form:

   An improved method of calculating the cure time of a rubber molding process utilizing a digital computer comprising the steps of:

   a. inputting into said computer input values including

       1. natural logarithm conversion data (ln).

       2. an activation energy constant (C) unique to each batch of rubber being molded.

       3. a constant (X) dependent upon the geometry of the particular mold of the press, and

       4. continuous temperature values (Z) of the mold during molding;

Another reason offered by the majority to distinguish *Diehr* from *Flook* is that in *Flook* "[t]he application . . . did not purport to explain how these other variables were to be determined,[101] nor did it purport 'to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm system.' "[102] By contrast, the *Diehr* application recites where the variables of time and temperature come from and how the press is opened after the solution is found.[103] This is a classic example of a difference in drafting that is form over substance.

There is, however, one substantive difference between the *Flook* claim and the *Diehr* claim. This difference is the *Diehr* claim of constant temperature measurement.[104] In *Flook,* none of the claims could be regarded as a novel process for more accurately determining any of the computer input variables involved. In *Diehr,* however, "[r]espondents characterize their contribution to the art to reside in the process of constantly measuring the actual temperature inside the mold."[105]

Analyzing this claim from the dissent point of view, one would have to say that constant temperature measurement is, presumably, patentable subject matter since it is a physical process separate from the computer program. Therefore, even if one considered the program to be part of the prior art, as must be done for purposes of the *Flook* test,[106] there remains the patentable subject matter of constant temperature measurement. The dissent recognizes that if this constant temperature measurement is a novel part of the claim, then even under *Flook* analysis the claim de-

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b. operating said computer for
  1. counting the elapsed cure time,
  2. calculating the cure time from the input values using the Arrhenius equation
ln V = CZ + X, where V is the total cure time, and
c. providing output signals from said computer when said calculated cure time is
equal to said elapsed cure time.
101 S. Ct. at 1068 n.32 (Stevens, J., dissenting) (quoting from Blumenthal & Riter, *supra* note 1, at 505).

  101. The variables referred to are those in the formula which must comprise inputs to the computer in order for the computer to accomplish a solution.

  102. 101 S. Ct. at 1056 (footnotes omitted).

  103. *See* note 96 *supra.*

  104. *See* claim 11(f) and claim 1, at 101 S. Ct. at 1052-53 n.5.

  105. *Id.* at 1052.

  106. The test utilized by the Court in *Flook* and by the dissent in *Diehr* is basically to consider the algorithm (computer program) to be part of the prior art and then to determine if the process, considered as a whole, describes patentable subject matter. *See* 101 S. Ct. at 1070; 437 U.S. at 594.

scribes patentable subject matter.[107] The dissent avoids this result, however, by arguing that constant temperature measurement is *not* part of the claim.[108]

Amazingly, this point is ignored by the majority. This is apparently due to the fact that under the majority test this distinction between *Diehr* and *Flook* is irrelevant.[109] The majority must have been anxious, nonetheless, to replace the *Flook* test with its own because this point could easily have been resolved in favor of Diehr and Lutton, while reaffirming *Flook* analysis.[110]

Of course, whether *Flook* is distinguished or overruled is probably immaterial since the CCPA has resisted *Flook's* reasoning anyway.[111] Still, the *holding* of *Flook* remains alive after *Diehr;* a potential trap for the unwary draftsman who neither buries his computer program within some larger and obviously patentable process, nor includes more than "token" post-solution activity in his recitation of the claim.

Perhaps the real, although unexpressed, rationale of *Diehr* is that, notwithstanding precedent, computer programs should be patentable. Although programs have never been held to be unpatentable,[112] this decision will undoubtedly open wide the door to patentability.[113]

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107. "As the Court reads the claims in the Diehr and Lutton patent application, the inventors' discovery is a method of constantly measuring the actual temperature inside a rubber molding press. . . . If the Court's reading of the claims were correct, I would agree that they disclose patentable subject matter." 101 S. Ct. at 1066 (Stevens, J., dissenting).

108. *Id.* (Stevens, J., dissenting).

109. The majority looked to the *entire* process of curing rubber to analyze the claim. Therefore, the nature of any *part* of the claim, *i.e.*, whether a part of the claim is old or unpatentable for any reason, is irrelevant.

110. It would have been interesting if the majority had responded to this argument. Arguably, the constant temperature measurement was a novel part of Diehr and Lutton's claim. The CCPA opinion stated:

> [Diehr and Lutton] strenuously take issue with the factual conclusion made by both the examiner and the board that their step of continuously measuring the temperature in the mold cavity is old in the art. They attribute this error to a misreading of their specification and assert that they are the first to employ this step in the molding process.

602 F.2d at 985.

111. *See* text accompanying notes 72-74 *supra*.

112. *See Flook*, 437 U.S. at 595 (referring to the need for Congress to act); *Benson*, 409 U.S. at 71 (decision does not preclude patents for computer programs).

113. The dissent recognizes that there is much sentiment in favor of patentability, but feels that this question should not be addressed by the Court, thereby implying that Congress should act. 101 S. Ct. at 1071 (Stevens, J., dissenting).

V. IMPACT OF DECISION

There is no doubt that computer program related processes will be more patentable as a result of *Diehr*. Although the CCPA had allowed many computer related claims, the Patent Office may now be forced to take a more favorable view towards these claims. Although not specifically allowing claims based on computer programs, the *Diehr* test with its broad definition of "process" under section 101 and its prohibition against dissecting claims may keep the Patent Office from rejecting well drafted claims on the grounds of unpatentable subject matter. Unless the PTO Board finds a new basis on which to reject computer program related claims,[114] there will be more applications filed and more patents subsequently issued.

Thus, the major effect of *Diehr* may be on the Patent Office. The dissent in *Diehr* observed that the motivation of the Commissioner of Patents and Trademarks in pursuing computer program related suits may have been the Patent Office's anticipation of "the flood of applications that would inevitably flow from a decision that computer programs are patentable."[115] The magnitude of this "flood" and whether or not the Patent Office can absorb and handle it remain to be seen.

The computer software industry will almost certainly welcome this decision.[116] Although one might expect the greatest effect of *Diehr* to be on the industry, this may not be the case. Since patent protection has been largely unavailable, the software industry has utilized copyright and trade secret law in an effort to protect its wares.[117] Even though it appears that patents are a better protection than copyrights for programs,[118] at least one commentator feels that patent protection for programs is not a cure all and that dramatic effects on the industry cannot be expected to follow

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114. Even though a claim satisfies section 101 it can still be defeated under other sections. *See In re* Prater, 415 F.2d at 1399 (patent examiner had rejected applicant's claim partially on grounds relating to 35 U.S.C. § 112 (1976)).

115. 101 S. Ct. at 1072 (Stevens, J., dissenting) (footnote omitted).

116. *Id.* at 1071 n.42 and accompanying text.

117. Programs are being copyrighted under 17 U.S.C. § 117 (1976) even though they are not specifically mentioned in the copyright law. *See* Gemignani, *supra* note 1, at 281 n.61 and accompanying text.

Trade Secret law has been the major source of protection for the industry but like both copyright and patent protection it too has drawbacks. *See generally*, Gemignani, *supra* note 1, at 304-07; Nimtz, *supra* note 1, at 19-21; Pope & Pope, *supra* note 1, at 532-34.

118. *See* Mazer v. Stein, 347 U.S. 201 (1954).

patentability.[119]

VI. CONCLUSION

Like earlier Supreme Court decisions, *Diehr* says neither yea nor nay to the underlying question of whether computer programs are patentable. Unlike previous decisions, *Diehr* leans in favor of patentability. *Diehr* establishes a new test for determining patentable subject matter under 35 U.S.C. § 101 which is much broader and more liberal than previous Court approved tests. Although the Court did not overrule *Parker v. Flook, Diehr* torpedoes *Flook's* rationale, thereby leaving *Flook* afloat but dead in the water, a derelict trap for the unwary. Under *Diehr* the key to whether a computer program related patent application defines patentable subject matter appears to reside in the skill and competency of the draftsman. If the application recites a process larger than the program itself, then the application will define patentable subject matter regardless of old or obvious aspects of the process recited.

PAUL D. JESS

Taxation—DISREGARDING THE CORPORATE ENTITY—PARTNERS UNABLE TO IGNORE EXISTENCE OF CORPORATION USED FOR FINANCING PURPOSES—*Ogiony v. Commissioner*, 617 F.2d 14 (2d Cir. 1980).

The Ogionys joined a group of investors intending to develop rental apartment projects in Cheektowaga, New York.[1] In 1966, the investors formed Garden Village Partnership (Garden Partnership) for the purpose of constructing the apartment complex, Garden Village.[2] Three years later, the building of another apartment complex, Losson Gardens, was begun through a newly organized partnership, Losson Gardens Company (Losson Partnership).[3] Financing of the projects proved difficult. Because the market interest rate for nonresidential mortgages exceeded the maximum rate that

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119. *See* Gemignani, *supra* note 1, at 301-04.

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1. Ogiony v. Commissioner, 38 T.C.M. (CCH) 125,126, *aff'd*, 617 F.2d 14, 80-1 U.S.T.C. ¶ 9265 (2d Cir. 1980). The group of investors comprised other individuals besides the Ogionys. Their individual claims were consolidated in trial. 38 T.C.M. at 125, n.1.

2. *Id.* at 126.

3. *Id.* at 130.