Patentability of Computer Software

Gottschalk v. Benson (1972)

8. The method of converting signals from binary coded decimal form into binary which comprises the steps of:

(1) storing the binary coded decimal signals in a reentrant shift register,
(2) shifting the signals to the right by at least three places, until there is a binary '1' in the second position of said register,
(3) masking out said binary '1' in said second position of said register,
(4) adding a binary '1' to the first position of said register,
(5) shifting the signals to the left by two positions,
(6) adding a '1' to said first position, and
(7) shifting the signals to the right by at least three positions in preparation for a succeeding binary '1' in the second position of said register.

Gottschalk v. Benson

13. A data processing method for converting binary coded decimal number representations into binary number representations comprising the steps of:

(1) testing each binary digit position '1,' beginning with the least significant binary digit position, of the most significant decimal digit representation for a binary '0' or a binary '1';

(2) if a binary '0' is detected, repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;

(3) if a binary '1' is detected, adding a binary '1' at the (i + 1)th and (i + 3)th least significant binary digit positions of the next lesser significant decimal digit representation, and repeating step (1) for the next least significant binary digit position of said most significant decimal digit representation;

(4) upon exhausting the binary digit positions of said most significant decimal digit representation, repeating steps (1) through (3) for the next lesser significant decimal digit representation as modified by the previous execution of steps (1) through (3); and

(5) repeating steps (1) through (4) until the second least significant decimal digit representation has been so processed.

Parker v. Flook (1978)

1. A method for updating the value of at least one alarm limit on at least one process variable involved in a process comprising the catalytic chemical conversion of hydrocarbons wherein said alarm limit has a current value of Bo+K wherein Bo is the current alarm base and K is a predetermined alarm offset which comprises:

(1) Determining the present value of said process variable, said present value being defined as PVL;

(2) Determining a new alarm base B1, using the following equation: $B[1]=Bo(1.0<v1>minF)+PVL(F)$ where F is a predetermined number greater than zero and less than 1.0;

(3) Determining an updated alarm limit which is defined as B1+GK; and thereafter

(4) Adjusting said alarm limit to said updated alarm limit value.

Diamond v. Diehr (1981)

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:

providing said computer with a data base for said press including at least, natural logarithm conversion data (ln), the activation energy constant (C) unique to each batch of said compound being molded, and a constant (x) dependent upon the geometry of the particular mold of the press,

initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,

constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,

constantly providing the computer with the temperature (Z),

repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is ln v=CZ+x where v is the total required cure time,

repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and

opening the press automatically when a said comparison indicates equivalence.

In Re Alappat (Fed. Cir. 1994)

A rasterizer for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination intensity data to be displayed on a display means comprising:

(a) means for determining the vertical distance between the endpoints of each of the vectors in the data list;

(b) means for determining the elevation of a row of pixels that is spanned by the vector;

(c) means for normalizing the vertical distance and elevation; and

(d) means for outputting illumination intensity data as a predetermined function of the normalized vertical distance and elevation.

In Re Alappat

- Given the foregoing, the proper inquiry in dealing with the so called mathematical subject matter exception to Section 101 alleged herein is to see whether the claimed subject matter *as a whole* is a disembodied mathematical concept, whether categorized as a mathematical formula, mathematical equation, mathematical algorithm, or the like, which in essence represents nothing more than a "law of nature," "natural phenomenon," or "abstract idea." If so, *Diehr* precludes the patenting of that subject matter. That is not the case here.

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In Re Alappat

- Indeed, claim 15 as written is not "so abstract and sweeping" that it would "wholly pre-empt" the use of any apparatus employing the combination of mathematical calculations recited therein. Rather, claim 15 is limited to the use of a particularly claimed combination of elements performing the particularly claimed combination of calculations to transform, i.e., rasterize, digitized waveforms (data) into anti-aliased, pixel illumination data to produce a smooth waveform.
- We have held that such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.

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In re Bilski

A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;

(b) identifying market participants for said commodity having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

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Bilski Rulings

- In *Bilski*, Federal Circuit enunciated the "machine-or-transformation" test: a claimed process is directed to patentable subject matter if:
  - It is tied to a particular machine OR
  - Transforms a particular article into a different state or thing

- Supreme Court: There may be other tests (but the above is a "safe harbor")

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Tying a claim to a machine

- At least one step has to be performed by a machine:

  A method for adding numbers, comprising:

  receiving a first and second value; and

  determining a third value that is the sum of the first and second values.

Becomes:

  A method for adding numbers, comprising:

  in a computer, receiving a first and second value; and

  determining a third value that is the sum of the first and second values.

Form over function?

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Mayo v. Prometheus (2012)

A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:

(a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointesti-nal disorder; and

(b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointesti-nal disorder,

wherein the level of 6-thioguanine less than about 230 pmol per 8×108 red blood cells indicates a need to increase the amount of said drug subsequently admin-istered to said subject and

wherein the level of 6-thioguanine greater than about 400 pmol per 8×108 red blood cells indicates a need to decrease the amount of said drug subsequently ad- ministered to said subject.

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CLS v. Alice (Method claim)

33. A method of exchanging obligations as between parties, each party holding a credit record and a debit record with an exchange institution, the credit records and debit records for exchange of predetermined obligations, the method comprising the steps of:

(a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;

(b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;

(c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and

(d) at the end-of-day, the supervisory institution instructing ones of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.

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CLS v. Alice (CRM claim)

39. A computer program product comprising *a computer readable storage medium having computer readable program code embodied in the medium* for use by a party to exchange an obligation between a first party and a second party, the computer program product comprising: program code for causing a computer to send a transaction from said first party relating to an exchange obligation arising from a currency exchange transaction between said first party and said second party; and program code for causing a computer to allow viewing of information relating to processing, by a supervisory institution, of said exchange obligation, wherein said processing includes …

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CLS v. Alice Discussion

- Concern with "preemption"
- What does it mean for a claim to add "significantly more"?
- What is an "inventive concept" expressed in the claim – "a genuine human contribution to the claimed subject matter"

At its most basic, a computer is just a calculator capable of performing mental steps faster than a human could. Unless the claims require a computer to perform operations that are not merely accelerated calculations, a computer does not itself confer patent eligibility. In short, the requirement for computer participation in these claims fails to supply an "inventive concept" that represents a nontrivial, non-conventional human contribution or materially narrows the claims relative to the abstract idea they embrace.

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