PATENTS FOR COMPUTER-IMPLEMENTED INVENTIONS AND BUSINESS METHODS

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4.1 Patent Law Primer

4.1.1 Introduction

Patents protect inventions, that is, the functionality of a machine, a composition of matter, or a process. In Canada, patent law is governed by the *Patent Act*.[1]

The federal government grants patents to inventors or assignees of inventors. Every patent grants to the patentee for the term of the patent,[2] beginning at the grant of the patent, the exclusive right, privilege, and liberty of making, constructing, and using the invention and selling it to others to be used.[3]

A patent is sometimes described as a contract between the inventor and the government. In consideration for the inventor disclosing the invention in the patent and making it available to the public for use after the expiration of the patent, the government grants to the inventor the right to exclude others from making, using, or selling the invention during the term of the patent.

4.1.2 The Patent Specification

Every patent has a similar structure. The two main parts of the patent are the "description" (sometimes called the "disclosure") and the "claims", and together they are called the "specification".

The description and the claims serve two very different purposes:

(a) the description tells the public how to make or use the invention when the patent expires; and

(b) the claims describe what it is that is not to be made or used during the term of the patent.

4.1.2.1 The Claims

The claims define the monopoly in words. A patent may have many claims, each defining the invention in different words and in broad or narrow functional language.

In Canada an invention may be defined by a process claim, or as an apparatus which carries out the process, or both.

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1 R.S.C. 1985, c. P-4, as amended.
2 20 years for patents filed after October 1, 1989 per s. 44 of the *Patent Act*.
3 *Patent Act*, s. 42.

4.1.2.2 The Description (or Disclosure)

The nature of the invention, together with how to carry out the invention, must be defined in the description. It must be clear, accurate, simple and easy to understand by the person or persons to whom the patent is directed, namely the skilled workers in the relevant field (see “Claim Construction,” below).

In the case of a machine (for example, a computer), the best mode of operation must be described. In the case of a process (for example, the implementation of an algorithm by a computer), the necessary sequence of steps must be explained to distinguish the invention from prior publications, including patents (the “prior art”).[4]

4.1.2.3 Statutory Subject Matter

The *Patent Act* provides that patent protection may be acquired for any “invention” defined under section 2 as follows:

> “invention” means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter;

subject to the prohibition of subsection 27(8) that:

> No patent shall be granted for any mere scientific principle or abstract theorem.

In the United States, 35 U.S.C § 101 defines patentable subject matter in similar terms:

> 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.

Similarly, in the United States, certain things are excluded from patentability:

> ... laws of nature, physical phenomena and abstract ideas. An idea of itself is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.[5]

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4 *Patent Act*, subs. 27(3).

5 *Diamond v. Diehr*, 450 U.S. 175, (U.S.S.C., 1981)

The U.S. Supreme Court held that the following were non-patentable subject matter as being abstract ideas:

- an algorithm to convert binary-coded decimal numerals into pure binary code[1] which, if patented would have wholly pre-empted the mathematical formula and, in practical effect, would have been a patent on the algorithm itself.[2]

- a procedure for monitoring the conditions during the catalytic conversion process in the petrochemical and oil-refining industries.[3] The application's only innovation was reliance on a mathematical algorithm.[4] Once the algorithm was assumed to be within the prior art, the application, considered as a whole, contained no patentable invention.[5] The prohibition against patenting abstract ideas "cannot be circumvented by attempting to limit the use of the formula to a particular technological environment" or adding "insignificant post solution activity."[6]

In contrast, a previously unknown method for "molding raw, uncured synthetic rubber into cured precision products," using a mathematical formula to complete some of its several steps by way of a computer[7] was an industrial process and was proper subject matter.[8]

The U.S. Supreme Court in *Chakrabarty* considered that the choice of the term "any" to define patentable subject matter meant that Congress intended that patent laws would receive wide scope and that patentable subject matter should include "anything under the sun that is made by man".[6]

By signing NAFTA and the Uruguay Round of GATT, Canada imposed upon itself an obligation to make patents available for "any inventions... in all fields of technology".[57] There is to be no discrimination as to the field of technology unless it is a field of technology that fits under a specific exclusion. Software-related inventions are not so excluded.

4.1.3 Other Pre-requisites to Patentability

Besides statutory subject matter, there are three other pre-requisites to patentability:

(a) novelty;

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1 *Gottschalk v. Benson*, 409 U. S. 63, 70 (1972)
2 *Ibid*, at p. 72
3 *Parker* v. *Flook*, 437 U. S. 584 (1978).
4 *Ibid*, at pp. 585-586.
5 *Ibid*, at p. 594.
6 *Diamond v. Diehr*, 450 U.S. 175, (U.S.S.C., 1981).at pp. 191-192.
7 *Diamond v. Diehr*, 450 U.S. 175, (U.S.S.C., 1981) at p. 177.
8 Ibid, at p. 192-193
6 *Diamond v. Chakrabarty*, 447 U.S. 303, 206 U.S.P.Q. 193 (U.S. Sup. Ct., 1980) at 197 [U.S.P.Q.].
57 R.S.C. (1985) c. C-42, as amended.

(b) utility; and

(c) non-obviousness.[7]

In order for there to be an invention, there must be both a concept and an implementation (a way of putting the concept into practical form).[8] The inventor must have at least reduced his or her idea to a definite and practical shape before it can be said that an invention has been made.[9] The date an invention is made is established by showing that the invention was either described in enabling writing (or drawing) or built. While the machine does not have to be built, it is one way of establishing a date of invention.[10]

4.1.3.1 Novelty (New)

For an invention to be patentable, it must be "new"[11] and must not have been previously made available to the public.[12] In other words, the invention must not have been built before or described in a single document which contained sufficient information to allow someone to make the invention.[13]

The invention may comprise a novel combination of old things,[14] so long as it is not merely the `side-by-side' placement of old devices.[15]

4.1.3.2 Utility (Useful)

In order to be protectable by a patent, an invention must also be "useful"[16] for the purpose for which it was designed.[17] An invention has utility if it:

(a) gives a benefit to the public;

(b) is useful in achieving a particular purpose;

(c) makes a process better or cheaper;

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7 *Patent Act*, s. 2 definition of "invention" and s. 28.3.

8 *Reynolds v. Herbert Smith* & Co. (1903), 20 R.P.C. 123 (Eng. C.A.) at 127; *Diversified Products Corp. v. Tye-Sil Corp.* (1991), 35 C.P.R. (3d) 350 (Fed. C.A.) per Décarry J. at 364-5.

9 *Penmutit Co. v. Borrowman*, [1926] 4 D.L.R. 285, 43 R.P.C. 356 (Canada P.C.).

10 *Owens-Illinois Inc. v. Koehring Waterous Ltd* (1980), 52 C.P.R. (2d) 1 (Fed. C.A.) at 2, leave to appeal refused (1980), 35 N.R. 625n (S.C.C.).

11 *Patent Act*, s. 2.

12 *Patent Act*, s. 28.2.

13 Sometimes called an enabling disclosure.

14 *Thermionics Ltd. v. Philco Products Ltd.*, [1943] S.C.R. 396 (S.C.C.) at 412-413; *Canadian General Electric Co. v. Fada Radio Ltd.* (1930), 47 R.P.C. 69 (Canada P.C.) at 90.

15 *British Celanese v. Courtaulds* (1935), 2 R.P.C. 171 at 193 (U.K. H.L.). See also *Lester v. Canada (Commissioner of Patents)* (1946), 6 C.P.R. 2 (Can. Ex. Ct.) and *Domtar Ltd v. MacMillan Bloedel Packaging Ltd.* (1977), 33 C.P.R. (2d) 182 (Fed. T.D.), aff'd (1978), 1978 CarswellNat 554 (Fed. C.A.) at 189-90 [C.P.R.].

16 *Patent Act*, s. 2.

17 *Mullard Radio Valve Co. v. Philco Radio & Television Corp. of Great Britain Ltd.* (1935), 52 R.P.C. 261 (per Maugham O.J.) at 287.

(d) is advantageous under certain circumstances; and

(e) works.

Older case law held that an invention had to result in a “vendible product” in order for it to be patentable. The trend in other jurisdictions, and in Canada, requires that the invention produce a “technical result” or “practical application”. It appears that commercial utility in Canada is also established by a method of earning licensing fees.[18]

4.1.3.3 Non-obviousness (Inventive)

Through the case law, and now by statute,[19] the Courts added the requirement of non-obviousness or inventive ingenuity. This arose out of a desire by the Courts not to allow a patent to cover any routine improvement. The test for inventiveness in Canada asks whether the invention would have been obvious to a hypothetical individual, possessed of the relevant prior art but lacking any inventive abilities.[20]

4.1.4 The Application Process

A patent application, in the form of the draft patent, is filed with the appropriate governmental department.

In order to obtain a patent, three things are required:

(a) an inventor;

(b) an invention described in an application; and

(c) money.

4.1.4.1 An Inventor

In Canada, the inventor or his or her “legal representative” can apply for a patent.[21] A “legal representative” is anyone who has assumed ownership of the patent by operation or law or by assignment.[22] In the United States, by contrast, only the inventor can apply for a patent.

Patents can be assigned, in whole or in part, by a written document.[23] The co-owner of a patent cannot subdivide his part ownership into two or more parts without the

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18 *Progressive Games Inc. v. Canada (Commissioner of Patents)* (1999), 3 C.P.R. (4th) 517 (Fed. T.D.) per Denault, J., aff'd (2000), 9 C.P.R. (4th) 479 (Fed. C.A.): the method was a commercially useful improvement to playing poker.

19 *Patent Act*, s. 28.3.

20 *Free World Trust c. Électro Santé Inc.*, [2000] 2 S.C.R. 1024, 194 D.L.R. (4th) 232, 263 N.R. 150, 9 C.P.R. (4th) 168 (S.C.C.) at para. 44.

21 *Patent Act*, s. 27.

22 *Patent Act*, s. 2.

23 *Patent Act*, subs. 50(1).

concurrence of all the owners of the patent.[24] It is important to register any assignment with the Patent Office as the first assignment filed governs.[25]

4.1.4.1.1 First-to-file versus First-to-invent

Since 1989, Canada has had a “first-to-file” system, which awards the patent to the first inventor to file a patent application for the invention.[26]

Previously, Canada followed the model of awarding patents to the first person or persons to have invented the invention. This policy can result in disputes arising within the Patent Office between inventors, requiring them to prove who invented what first (called “conflicts” in Canada and “interferences” in the United States).

4.1.4.2 The Application

The invention is described and claimed in a patent application. The patent application is accompanied by the documentation requesting the grant of a patent (called the “petition”) and material evidencing the authority of the person applying for the patent. Patents are usually prosecuted by patent agents on behalf of the applicant.

4.1.4.2.1 Prosecution

Once a patent application is filed, the applicant has five years to request that the patent application be examined.[27]

The examiner then reviews other patent applications or patents on file in the Canadian Patent Office in the same or related areas. Any other literature publicly available is also available to the examiner. There is no obligation to disclose prior art to the Canadian Patent Office, absent a request from the office to do so. In the United States, however, there is a positive obligation to present relevant art to the U.S. Patent Office. Failure to do so may result in the issuance of an invalid patent.

4.1.4.2.2 The “Office Action”

After reviewing an application, the examiner may conclude that the applicant needs to amend the application and will issue a letter to the applicant setting out the objections. The letter is referred to as an “office action”.[28] Time limits are imposed within which a response must be filed to the office action.

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[24] *Forget v. Specialty Tools of Canada Inc.* (1993), 48 C.P.R. (3d) 323 (B.C. S.C.), aff'd (1995), 62 C.P.R. (3d) 517 (B.C. C.A.) per Rowan J.
[25] *Patent Act*, subs. 50(2).
[26] *Patent Act*, s. 27.
[27] Patent Rules, SOR/96-423 as am., subs. 96(1).
[28] Patent Rules, s. 30.

4.1.4.2.3 Laying Open of the Application

Under first-to-file systems, patent applications are laid open for public inspection or published no later than 18 months from the filing of the first patent application for the invention. The applicant can request earlier publication if desired.[29] The publication of a patent application, in effect, warns the public that a patent may issue for the technology. If a patent subsequently issues, the patent owner is entitled thereafter to "reasonable compensation" for any "infringements" done between the date of the publication of the patent application and the issue date of the patent and to profits or damages in addition to an injunction.[30]

4.1.4.2.4 Money

In addition to filing fees, periodic fees must be paid in order to maintain a patent or patent application.[31] Small entities may pay reduced filing fees and maintenance fees.

4.1.5 Claim Construction

It was said more than 60 years ago that multi-million dollar lawsuits can be won or lost depending on the meaning of a word or two in a patent claim.[32] The process of giving meaning to the various terms in the claims of a patent is called "claim construction." It is a function performed by the Court, reading the claim in an informed and purposive way through the eyes of a person skilled in the art to which the patent pertains, as of the date of its publication.[33] Construction will "show that some elements of the claimed invention are essential, while others are non-essential."[34]

The construction of a patent is a legal exercise.[35] Likewise, in the United States, the construction of the claims is the job of a judge, and not the jury. The job of the Court is to interpret the claims. It cannot redraft them.[36]

4.1.6 The Addressee

The Court is to construe a patent as would a person skilled in the art to which the patent is directed because the claims are addressed to the skilled worker, not to the lay person or persons.[37]

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29 *Patent Act*, subs. 10(2).
30 *Patent Act*, subs. 55(2).
31 *Patent Act*, subs. 27.1(1).
32 *Electrical & Musical Industries, Ltd. v. Lissen Ltd.* (1938), 56 R.P.C. 23 (U.K. H.L.) at 39, per Lord Russell of Killowen.
33 *Whirlpool Corp. v. Camco Inc.*, [2000] 2 S.C.R. 1067, 9 C.P.R. (4th) 129, 194 D.L.R. (4th) 193, 263 N.R. 88, 186 F.T.R. 268 (S.C.C.), reconsideration refused (2001), 2001 CarswellNat 283 (S.C.C.).
34 *Ibid.* at para. 51.
35 *Whirlpool*, *supra* note 33, at para. 61.
36 *Free World*, *supra* note 20, at para. 59, referring to *Eli Lilly & Co. v. O'Hara Manufacturing Ltd.* (1989), 26 C.P.R. (3d) 1 (Fed. C.A.) per Pratte J.A., at 7.

4.1.7 File Wrapper Estoppel

The “file wrapper” is the name given to the file in the Patent Office containing the correspondence between the inventor's patent agent and the Patent Office examiner during the prosecution of the patent. It sometimes contains statements made on behalf of the inventor as to what the inventor considers the invention to be and how it differs from the prior art.

In Canada, extrinsic evidence in the form of the file wrapper is not admissible for construing a patent. Even comments made on behalf of the inventor during the prosecution of the patent cannot be used in Canadian courts to interpret the words in the claim.[38]

In the United States, however, the file wrapper can be used, and patent owners can be estopped from asserting facts as different than as represented during the prosecution process. Moreover, any narrowing amendment made to the claims during prosecution creates a risk of limiting the construction of the amended element to its literal meaning — that is, one cannot look to substitute the amended claim element under what is known in U.S. law as the “doctrine of equivalents”.[39]

4.2 Infringement

Infringement is any act that interferes with the full enjoyment of the monopoly granted.[40] Infringement of a patent occurs when a defendant's product or process is aptly described by the words of a claim, as construed by the Court.

4.2.1 Intent to Infringe

In Canada, it does not matter whether a defendant intended to infringe the patent; the defendant will still be liable for damages or profits.[41]

In the United States, however, a defendant will be penalized for willfully infringing a patent or carrying on with reckless disregard to infringement, and treble damages may be awarded.[42]

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37 *Free World, supra* note 20, at para. 44. See also *Burton Parsons Chemicals Inc. v. Hewlett Packard (Canada) Ltd.* (1974),17 C.P.R. (2d) 97 (S.C.C.) per Pigeon J. at 104; and *American Cyanamid Co. v. Ethicon Limited*, [1979] R.P.C. 215 (Eng. Ch. Div.) per Graham J. at 245-246.

38 *Ibid.* at pages. 64-66, referring to *Lovell Manufacturing Co. v. Beatty Bros. Ltd.* (1962), 41 C.P.R. 18 (Can. Ex. Ct.) per Thorson P.

39 *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722 (2002).

40 *Skelding v. Daly* (1940), 1 Fox Pat. C. 1 (B.C. C.A.), aff'd (1940), 1940 CarswellBC 2 (S.C.C.) per O'Halloran J.A. at 68.

41 *Ibid.*

42 *Corning Glass v. Sumitomo Electric*, 5 U.S.P.Q. 2d. 1545 at 1570-71.

4.2.2 Approach to Infringement

In 2000, the Supreme Court of Canada approved an approach to infringement which tests whether all the essential elements set out in a patent claim are present in the defendant's device or process; there is no infringement if an essential element is different or omitted.[43] This inquiry relies on a construction of the claims interpreted in an informed and purposive way.

4.2.3 Cross-Border Activities and Infringement of US patents

Generally speaking, patent infringement is limited territorially to the country of the patent. Activities outside the country do not usually amount to domestic patent infringement.

4.2.4 Infringement of System Claims in the USA

In *Decca*,[9] the claimed invention was a radio navigation system requiring stations transmitting signals that were received by a receiver, which then calculated a vehicle's position by the time difference in the signals. One of the U.S. Government's receiving stations was located in Norway and thus was outside the territorial limits of the United States. The court considered the extraterritorial reach of U.S. patent laws to a system in which a component was located outside the United States. The court found it difficult to conclude that the system had been made within the United States but concluded that the system had been used in the United States even though one of the claim limitations was only met by including a component located in Norway. The Court concluded that:

> "it is obvious that, although the Norwegian station is located on Norwegian soil, a navigator employing signals from that station is, in fact, 'using' that station and such use occurs wherever the signals are received and used in the manner claimed."[10]

The Court found the following factors to be significant: "the ownership of the equipment by the United States, the control of the equipment from the United States and . . . the actual beneficial use of the system within the United States."[11]

In *NTP v. RIM*,[12] the CAFC decided that the use of a claimed cell phone and email system under *U.S. Patent Act* section 271(a) is the place at which the system as a whole is put into service, i.e., the place where control of the system is exercised and beneficial use of the system obtained. RIM's customers located within the United States controlled the transmission of the originated information and also benefited from such an exchange of information. The location of the RIM's Relay in Canada (which processed each email message) did not, as a matter of law, preclude infringement of

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43 *Free World*, *supra* note 20.
9 *Decca Ltd. v. United States*, 210 Ct.Cl. 546, 544 F.2d 1070 (1976),
10 *Decca Ltd. v. United States*, 210 Ct.Cl. 546, 544 F.2d 1070 (1976), at p. 1083.
11 *Decca Ltd. v. United States*, 210 Ct.Cl. 546, 544 F.2d 1070 (1976), at p. 1083.
12 *NTP, Inc. v. Research in Motion, Ltd*., 418 F.3d 1282 - CAFC 2005, at p. 1317.

the asserted system claims. The RIM system was found to be an infringement of the system claims.

4.2.5 Infringement of Method Claims in the USA

In the United States, a patent for a method or process is not infringed unless all steps or stages of the claimed process are utilized in the United States.[13]

In *NTP v. RIM*, the CAFC held that a process cannot be used "within" the United States as required by section 271(a) unless each of the steps is performed within the United States. In the RIM case, each of the asserted method claims recited a step that utilized an "interface" or "interface switch," which was only satisfied by the use of RIM's Relay located in Canada. Therefore, as a matter of law, these claimed methods were held not to infringe NTP's method claims by use of RIM's system's process.[14]

4.2.5.1 Joint or Divided Infringement of Method Claims

Under U.S. law, when the different steps of a claimed method are performed by different entities, rather than by one individual, there is said to be joint or divided infringement.

In the United States, liability for direct infringement requires the defendant to "commit all the acts necessary to infringe the patent, either personally or vicariously".[15]

The U.S. *Patent Act*, 35 U.S.C. § 271(b), provides that "[w]hoever actively induces infringement of a patent shall be liable as an infringer." Inducement requires that the alleged infringer knowingly induced infringement and possessed specific intent to encourage another's infringement.[16] Inducement does not require that the induced party be an agent of the inducer or be acting under the inducer's direction or control to such an extent that the act of the induced party can be attributed to the inducer as a direct infringer. It is enough that the inducer "cause[s], urge[s], encourage[s], or aid[s]" the infringing conduct and that the induced conduct is carried out.[17]

On June 2, 2014, in *Limelight Networks, Inc*. v. *Akamai Techologies, Inc*.,[18] the U.S. Supreme Court reversed the CAFC decision and held that there can be no inducement of infringement without direct infringement, which requires all steps of a

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13 *Roberts Dairy Co. v. United States,* 208 Ct.Cl. 830, 530 F.2d 1342, 1354 (1976), quoted in *NTP, Inc. v. Research in Motion, Ltd*., 418 F.3d 1282 - CAFC 2005, at p. 1318.

14 *NTP, Inc. v. Research in Motion, Ltd.,* 418 F.3d 1282 - CAFC 2005, at para. 144.

15 *Cross Medical Products, Inc. v. Medtronic Sofamor Danek, Inc*., 424 F.3d 1293 (Fed. Cir. 2005) at 1311.

16 *DSU Med. Corp*. v. *JMS Co*., 471 F.3d 1293, 1306 (Fed. Cir. 2006).

17 *Arris Grp., Inc. v. British Tele-comms*. PLC, 639 F.3d 1368, 1379 n.13 (Fed. Cir. 2011); see also *Tegal Corp. v. Tokyo Electron Co*., 248 F.3d 1376, 1379 (Fed. Cir. 2001*); Nat'l Presto Indus., Inc. v. West Bend Co*., 76 F.3d 1185, 1196 (Fed. Cir. 1996)

18 *Limelight Networks, Inc. v. Akamai Technologies, Inc.,* 134 S. Ct. 2111 (2014).

method claim be performed by a single party. The decision affirmed the cases of *BMC Resources* v. *Paymentech*[19] and *Muniauction Inc*. v. *Thomson Corp*.[20]

4.3 Remedies

The *Patent Act* provides that an infringer will be liable for damages and profits[44] and can be ordered to no longer make, use, or sell the infringing device or process.[45]

4.4 International Agreements Affecting Patents

Canada is a signatory to several international Agreements or Conventions.

4.4.1 The Paris Convention - 1883

In 1883, under the Paris Convention, several countries agreed to provide equal treatment under their intellectual property statutes to nationals of other countries. The Paris Convention also provided for what is known as “convention priority”; filing a patent application in one country affords a certain period of time (usually one year) within which to file an application in other member countries. The subsequently filed applications are treated as if they were filed on the same day as the first-filed application. In effect, the subsequent applications are back-dated to the priority filing date.

The ability to file only one application and to subsequently file further applications based upon it is of critical importance to planning a patent filing strategy for obtaining patent protection around the world.

There are over 120 countries that have ratified the Paris Convention. The Paris Convention is administered by the World Intellectual Property Organization (WIPO), based in Geneva, Switzerland.

4.4.2 World Trade Organization

The World Trade Organization was created during the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The GATT was intended to decrease trade barriers between countries.

Under the North American Free Trade Agreement (NAFTA) and the GATT, Canada imposed upon itself (as did other signatory countries) an obligation to make patents available for “any inventions ... in all fields of technology”.[46] There is to be no discrimination as to the field of technology, unless it is a type of technology that fits under a specific exclusion. Computer-related inventions are not excluded.

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19 498 F. 3d 1373 - Court of Appeals, Federal Circuit 2007
20 532 F. 3d 1318 - Court of Appeals, Federal Circuit 2008
44 *Patent Act*, s. 55.
45 *Patent Act*, s. 57.
46 Title 17 excluded certain biotechnology, but did not affect computer-related inventions.

4.4.3 Patent Co-operation Treaty

The Patent Co-operation Treaty (PCT) is a multilateral treaty that came into force in 1978. It facilitates filing patent applications in the PCT-contracting states, and includes most developed and many developing countries.

The PCT allows for the filing of one patent application (an international application) in which the applicant expresses the intention to have national or regional patent applications filed in the indicated states or regions. The cost of translations and national filing fees is postponed until 20 or 30 months after the priority date. Examination of the application is available at the request of the applicant.

4.5 Computer-implemented Inventions

4.5.1 Statutory Subject Matter

As mentioned above, patents are granted only for inventions that claim subject matter defined in the *Patent Act*, namely, an 'art', 'process', 'machine' or 'composition of matter'.

This is subject to the prohibition of subsection 27(8) which states that, “...[n]o patent shall issue for... any mere scientific principle, or abstract theorem”.

What then, is “a mere scientific principle” or “abstract theorem”?

4.5.2 The Basic “Principles”

Although computer programs, in one sense, are a series of steps or instructions in a method, thirty years ago, Patent Offices around the world were uniformly reluctant to include software-related inventions as statutory subject matter. That reluctance has mostly vanished in the United States, Japan, and Korea, and is lessening in other countries.

The treatment of computer programs in different countries differs on the applicability of certain principles sometimes used to analyze the patentability of a computer software-related invention. Those principles are:

(1) You can't patent math or science. Therefore, is the invention math, science (and, therefore, not patentable), or applied math or applied science (and, therefore, patentable)?

(2) Computer programs “as such” are specifically prohibited as statutory subject matter in some jurisdictions (e.g., European Patent Convention) but, if the program achieves a further technical effect, then it is patentable.

(3) If the invention is more than just math or science, is the invention “as a whole” patentable? In some countries the question is, if it is a process, is there a “technical result”?

Examples of cases evidencing these principles in each of the United States, Canada, and the European Patent Convention are dealt with separately in greater detail below.

4.5.3 United States

Software-related inventions are now patentable in the United States and constitute a large portion of all patent applications. The firms being awarded the most patents by the USPTO in 2011 were information technology related firms — e.g., IBM, Samsung, Canon, Panasonic, Toshiba and Microsoft.[47] One of the most prominent patent infringement suits involved software patents.[48] By all accounts, the debate is settled in the United States in favour of granting software patents.

In terms of evaluating statutory subject matter, in *Diehr*, the U.S. Supreme Court emphasized the need to consider the invention as a whole, rather than "dissect[ing] the claims into old and new elements and then ignor[ing] the presence of the old elements in the analysis." [21]

4.5.3.1 U.S. Case Law

The case law has evolved from allowing patents on software-controlled industrial processes and signal processors, to software that improved the functionality of a general purpose computer, to data formats that did likewise, to signal formats, to software stored on a diskette, and most recently to computerized (and even non-computerized) business methods (discussed further below).

The leading US cases are discussed below.

4.5.3.1.1 Gottschalk v. Benson, 409 U.S. 63, 175 U.S.P.Q. 673 (1972)

In 1972, the Supreme Court refused to grant a patent for a computer program on the basis that the application was attempting to claim a mathematical formula and the analytical steps involved in solving the formula to convert binary-coded decimal form numbers into pure binary forms. The Court noted that the claims "purported to cover any use of the claimed method in a general-purpose digital computer"[22] and were not limited to any particular embodiment.[23]

Although expressed as an "abstract idea" case, the case was decided on the basis of pre-emption. The Court concluded that the invention was not eligible subject matter due to the abstract idea exception: the algorithm or generalized formulation to convert binary-coded decimal to pure binary was the abstract idea. Even though the

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47 http://www.uspto.gov/web/offices/ac/ido/oeip/taf/topo_11.htm

48 For a chronology of events concerning the *NTP v. Research in Motion* dispute over wireless email technology, see <http://news.com.com/BlackBerry+saved/2100-1047_3-6045880.html>. The dispute ended in a highly-publicized $600M settlement.

21 *Diamond v. Diehr*, 450 U.S. 175, (U.S.S.C., 1981) at p. 188.

22 *Gottschalk v. Benson*, 409 U.S. 63 at pp. 73-74.

23 *Gottschalk* v. *Benson,* 175 U.S.P.Q. at 675.

claims required a computer, that was not a meaningful limitation, as the formula had no substantial practical application except in connection with a computer. The patent would wholly preempt the mathematical formula and, in practical effect, would be a patent on the formula itself.

Although the Court specifically stated that its decision did not preclude a patent for any program, it created that effect.[24]

4.5.3.1.2 Parker v. Flook, 437 US. 584, 198 U.S.P.Q. 193 (1978)

Flook attempted to patent a method for updating an alarm limit of at least one variable involved in a process for the catalytic conversion of hydrocarbons: industrial process variables were measured, a mathematical formula was used to calculate a new alarm limit and the previous alarm limit was adjusted to the newly calculated limit.

Instead of analyzing the invention "as a whole" (as it should have at the time, and now correctly does), the Court in *Flook* applied a "point of novelty test". The only thing "new" in the Flook claims was the mathematical formula for calculating the updated alarm limit. The court considered the other steps in the process to be well-known. The claim did not wholly pre-empt the mathematical formula.

The Court viewed the process as an abstract idea: "if a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory".[25]

4.5.3.1.3 Diamond v. Diehr, 450 U.S. 175, 209 U.S.P.Q. 1 (1981)

Diamond v. *Diehr* was the first decision of the U.S. Supreme Court that held that a computer-controlled process was statutory subject matter. The Supreme Court restated the commonplace principle that "an application of a law of nature or mathematical formula to a known structure … may well be deserving of patent protection."[26]

The patent claimed a method of operating a rubber-moulding press by using a well-known thermodynamic equation (Arrhenius) to control the curing time of synthetic rubber. The invention continuously measured the temperature in the press by using of a thermocouple and calculated continuously the predicted time when the cure would be completed using the Arrhenius equation and opening the press when the cure time had elapsed.

In passing, the Court stated that an algorithm for execution by general purpose digital computer was like a law of nature, which could not be the subject of a patent. (This makes little, if any sense. A law of nature is a description of nature. An applied algorithm is a practical application of something.)

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[24] *Ibid*, 175 U.S.P.Q at 676.
[25] *Parker v. Flook*, 437 US. 584 at pp. 594-595.
[26] *Diamond v. Diehr*, 450 U.S. 175 at p.187.

The Supreme Court emphasized that, in determining eligibility under §101, claims must be considered as a whole and that it is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis.[27] The Court distanced itself from the "point of novelty" analytical technique and held that the claims must be considered as a whole.[28]

Evidence of statutory subject matter included the transforming or reducing of an article to a different state or thing. The Court warned that merely limiting a mathematical formula to a particular technological environment or reciting insignificant post-solution activity will not render patentable what was an unpatentable principle. At the same time, the Court held that statutory subject matter does not become non-statutory merely due to the existence of a mathematical formula or computer program in the claim language.

The key in the allowance of the patent in the *Diehr* case appeared to be that the claims were only attempting to foreclose the use of the mathematical equation in conjunction with all the other steps in the claimed process and "did not seek to pre-empt the use of that equation."

4.5.3.2 The Mathematical Loop: Freeman-Walter-Abele29

Beginning with *Freeman*, the U.S. Courts entered a many-yeared excursion (from1978 until *Allapat* in 1994) into creating a category of non-statutory subject matter: the mathematical algorithm. This excursion prevented or delayed the allowance of many software-related patents.

4.5.3.2.1 In Re: Freeman, F.2d 1237, 197 U.S.P.Q. 464 (C.C.P.A. 1978).

In 1978 in *Freeman*, the C.C.P.A. formulated a two-step process determining whether a claim preempted non-statutory subject matter: first, does the claim directly or indirectly recite an algorithm; second, does the claim, in its entirety, wholly preempt that algorithm[30].

Freeman's invention related to a typesetting system which retrieved mathematical characters or symbols from a font library and oriented them with respect to each other in order to be displayed and printed. The claimed process assigned concatenation points to each character and generated position signals specifying the relative position of the characters to the concatenation points in light of a local positioning algorithm that was described in the Freeman specification.

Freeman's invention was held not to be an algorithm in the *Benson* sense and, therefore, the second part of the test was not considered.

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27 *Diehr,* 450 U.S. at 188.
28 *Diamond* v. *Diehr*, 209 U.S.P.Q. at 9
29 *In Re: Freeman*, F.2d 1237, 197 U.S.P.Q. 464 (C.C.P.A. 1978).
30 *Ibid* 197 U.S.P.Q. at 471.

4.5.3.2.2 In re Walter, 618 F.2d 758m 205 U.S.P.Q. 397 (C.C.P.A. 1980)

In *Walter,* the scope of the second part of the Freeman step was restricted. Walter had invented a method of correlating signals from seismic prospecting using "partial product signals". (The method merely created new numbers calculated from collected real data.)

In *Walter*, the C.C.P.A. held that to be statutory subject matter, the mathematical algorithm must either define structural relationships between physical elements of the claim in an apparatus claim or refine or limit claim steps in a process claim. Field of use limitations in the preamble and post-solution activity of a calculation would not render the claim statutory. The algorithm had to be applied in some manner to physical elements or process steps.[31]

The method claims in the Walter application contained data-gathering steps, a mathematical method of correlation and post-solution activity consisting of outputting partial product signals. The Court concluded that Walter's "partial product signals" did not relate to a physical structure.

In the *Walter* case, there were apparatus claims that essentially recited the language of the method claims but used the language "means for" to describe the apparatus carrying out the specific function. The Court concluded that Walter had not demonstrated that his apparatus was drawn to a specific apparatus. Under s. 112(6), the "means for" were to be limited to what was disclosed. If the "means" are defined functionally in the disclosure and their equivalents are so broad (i.e. a general purpose computer) that they encompass any and every means for performing the functions, the apparatus claim is really attempting to monopolize the functions themselves.

4.5.3.2.3 In re Abele, 684 F.2d 902, 214 U.S.P.Q. 682 (C.C.P.A. 1982)

In *Abele*, the invention related to a method of displaying an x-ray image. A weighting function was used to eliminate artifacts.

Abele modified the second step of the *Freeman-Walter* test by requiring that the algorithm merely be applied in any manner to physical elements or process steps. If the claim was "otherwise statutory" without the algorithm, the claim would still present statutory subject matter when the algorithm was included.[32]

In examining one of the claims in the *Abele* application, the Court noted that the claim presented production, detection and display steps of a conventional CAT-scan process. The mathematical algorithm acted on real data (x-ray attenuation data). Claim 6 in the *Abele* application adequately recited an application of an algorithm to process steps which were themselves part of an overall process which was statutory.[33]

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[31] *In re Walter*, 205 U.S. P.Q. at 407.
[32] *In re Abele*, 214 U.S.P.Q. at 686.
[33] *Ibid* at 688

4.5.3.3 Arrhythmia Research Technology v.Corazonix Corp., 958 F.2d 1053, U.S.P.Q. 2d 1033 (Fed. Cir. 1992)

In the *Arrhythmia* case, the patent related to an invention to monitor a patient's electrocardiograph signals for the presence of high-frequency energy in a trailing portion of the QRS complexes. This allowed doctors to predict the patient's susceptibility to ventricular tachycardia. (The system was processing real data – data collected from a physical phenomenon: electrical signals from the human heart.)

The plaintiff ("ART") argued that the electrocardiograph signals were physical electrical signals, and the recited method steps redefined those electrical signals. The defendant argued that the patent merely related to comparing one number to another and that the claimed output was much like the binary numbers of the *Benson* case, or the alarm limit of *Flook*. The only "structure" disclosed in the plaintiff's patent was a computer. Thus, the defendant argued that there was no limit to the scope of the claims.

The Court applied the *Freeman-Walter-Abele* standard, holding that the steps of converting, applying, determining and comparing were physical process steps that transformed one physical electrical signal into another. The product in the ART patent was not a mathematical abstraction. It was a measure in microvolts of a specified heart activity.

In a preview of decisions to come, the Court recognized that in *Diehr*, the Supreme Court had indicated that a subject matter determination could be expressed in terms of being "abstract" or not:

> "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."[34]

Thus a claim to a specific process or apparatus that is implemented in accordance with a mathematical algorithm will generally satisfy s. 101 as statutory subject matter.[35]

4.5.3.4 In Re Alappat, 33 F.3d 1526 (Fed. Cir. 1994)- Back to the Primary Authorities

Alappat reflected a return to the primary authorities and effectively put an end to the *Freeman-Walter-Abele* test.

The invention of Alappat was a rasterizer. It processed a digitally-sampled input waveform to provide anti-aliased pixel illumination intensity data for display on a cathode ray tube. The specification in the Alappat application described well-known digital circuits which correlated to each of the "means plus function" elements of the

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[34] *Arrhythmia Research Technology* v. *Corazonix Corp., 22 U.S.P.Q. 2d 1033* at 1036.
[35] *Ibid* at 1037.

claims. The patent was directed to a machine, one of the four categories of statutory subject matter.

Physical elements beyond a programmed general-purpose computer was not necessary. If mathematical algorithm produced a "useful, concrete and tangible result" it was statutory subject matter.

The majority held that claim 15 (the claim to a rasterizer) was patentable. The preamble specifically recited the claimed rasterizer converted waveform data into output illumination data for display. The means elements recited in the body of the claim made reference not only to the inputted waveform data recited in the preamble, but also to the output illumination data recited in the preamble. The claim therefore defined a combination of elements constituting a machine for producing an anti-aliased waveform.[36]

4.5.3.5 AT&T v. Excel Communications, CAFC, 1999

In *AT&T* v. *Excel Communications*[37], AT&T sued Excel Communications on a patent entitled “Call Message Recording for Telephone Systems”. The United States District Court for the District of Delaware granted summary judgment to Excel Communications, holding that the patent was invalid for failure to claim statutory subject matter. The U.S. Court of Appeals for the Federal Circuit reversed that decision, and remanded the case for further proceedings.

The invention related to a message record for long-distance telephone calls that was enhanced by adding a primary inter-exchange carrier (“PIC”) indicator. The indicator aids long-distance carriers in providing differential billing treatment for subscribers, depending upon whether a subscriber called someone with the same or a different long-distance carrier. The PIC carries the long-distance calls between local exchange carriers.

The court echoed their reasoning from the *State Street Bank & Trust Co.* v. *Signature Financial Group, Inc.* decision, where they held that “unpatentable mathematical algorithms are identifiable by showing that they are merely abstract ideas constituting disembodied concepts or truths that are not ‘useful’ ... [T]o be patentable, an algorithm must be applied in a ‘useful’ way”[38].

In analysing AT&T’s invention, it noted that AT&T was claiming only a process that used the principle in order to determine the value of the PIC indicator. Because the claim process applied the principle to produce a useful, concrete, tangible result without preempting other uses of the mathematical principle, on its face, the claimed process was statutory subject matter. The Court noted that “physical transformations” is not an

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36 *In Re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994)

37 172 F.3d 1352 (Fed. Cir. 1999)

38 149 F. 3d at 1374, 47 U.S.P.Q. 2d 1596 (Fed. Cir. 1998) at 1601 [hereinafter *State Street*]; cert denied by the U.S. Supreme Court, January 11, 1999.

invariable requirement of statutory subject matter, but is merely one example of how a mathematical algorithm may bring about a useful application.

The U.S. Court of Appeal for the Federal Circuit stated:

> "Whatever may be left of the earlier test [Freeman-Walter-Abele], if anything, this type of physical limitations analysis seems of little value because, after *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 non-statutory subject matter, unless, of course, its operation does not produce a 'useful, concrete and tangible result'."[39]

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4.5.3.6 Data Structures

With respect to data structures, the following are the leading cases.

4.5.3.6.1 In re Beauregard, Decision of Board of Appeals and Interferences, dated September 29, 1993, Appeal No. 93-0378

The invention in the Beauregard application was a computer program used in a computer system to fill polygons displayed on a graphics display device. The invention minimized the time taken to fill in the pixels in a polygon.

The "article of manufacture" and "product" claims recited a "computer-usable medium, having computer readable program code means embodied therein" followed by a functional description of the software. The Federal Circuit remanded Beauregard to the Patent Office in accordance with some concessions from the Commissioner of Patents, namely, that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter and, further, that the printed matter doctrine is not applicable.

4.5.3.6.2 In Re: Warmerdam, 33 F. 3d 1354, 31 U.S.P.Q. 2d 1754 (Fed. Cir. 1994)

Warmerdam claimed to have invented a data structure which was a hierarchy of spheres on the medial axis of a robot. The invention assisted the robot in avoiding collisions with other moving or stationary objects. The spheres approximated the envelope of the space occupied by the robot. Collisions could be predicted if the path of the robot's movement intersected with a sphere. Warmerdam claimed that the computation of the hierarchy of spheres on a medial axis was more efficient that what was disclosed in the prior art.

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[39] *Ibid* 149 F. 3d at 1368, 47 U.S.P.Q. 2d at 1602 quoting *Alappat,* 33 F.3d at 1544, 31 U.S.P.Q. 2d at 1557 as quoted in *AT&T* v. *Excel*.

The Court concluded that the proper test was not finding whether there was a mathematical algorithm, but rather in determining whether the claimed invention, considered as a whole, is in one of the three non-statutory categories as determined by *Diehr*, namely "laws of nature, natural phenomena and abstract ideas". Claim 5 (a machine having a memory which contains data representing a bubble hierarchy generated by the method of any of claims 1 through 4) was for a machine and was clearly patentable subject matter.

4.5.3.7 Programs stored on memory

4.5.3.7.1 1994 CAFCIn re Lowry, 32 U.S.P.Q. 2d 1031 (Fed. Cir. 1994)

In *Lowry*[40], the Federal Circuit held that a claim reciting essentially a memory with data stored thereon was patentable subject matter. The stored data was a data structure that organized information in the data base according to an attributive data model.

The Court rejected the "printed matter" cases for the claim data structures, because the Lowry invention required that the information be processed, not by the mind, but by a machine, the computer. Furthermore, the data structures in the Lowry application were not analogous to printed matter. The claimed data structure dictated how application programs managed information and, therefore, Lowry's claims defined the functional characteristics of the memory.[41] The court considered that Lowry's data structures imposed a physical organization on the data. The data structures are specific electrical or magnetic structural elements in a memory. The data structures provided tangible benefits. It was more easily accessed, stored and erased. The date elements allowed the computer to operate more efficiently.

More recently, however, in *Re Nuijten*[42], after the USPTO allowed claims to a method of embedding a digital watermark into an audio file to prevent or control copying, an arrangement for embedding supplemental data in a signal and a storage medium having stored thereon a signal with embedded supplemental data, the CAFC held that the signal itself – physical but transitory forms of signal transmission such as radio broadcasts, electrical signals through a wire, and light pulses through a fiber-optic cable – was not statutory subject matter.[43] While a transitory signal made of electrical or electromagnetic variances is physical and real, it is not a "machine" as that term is used in 35 U.S.C. §101 because it is not made of parts or devices in any mechanical sense[44] nor is it an article of manufacture as being tangible articles or commodities,[45] nor, as energy, a composition of matter.[46]

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40 *In re Lowry,* 32 F.3d 1579, 32 U.S.P.Q.2d 1031 (Fed. Cir. 1994)
41 *Ibid at 1034.*
42 500 F.3d 1346 (Fed. Cir. 2007).
43 *Ibid*, at p. 1353.
44 *Ibid*, at pp. 1355-56.
45 *Ibid*, at pp. 1356.
46 *Ibid*, at pp. 1357.

On February 23, 2010, a notice[47] was issued by the USPTO Director suggesting, because broadly worded claim to computer-readable media could include signals and would be rejected, that such claims be narrowed to be made statutory subject matter under 35 U.S.C. § 101 by adding the limitation "non-transitory" to the claim.

4.5.3.8 USPTO Guidelines

Examiners in the US Patent and Trademark Office ("USPTO") determine whether an invention is statutory subject matter with reference to the Manual of Patent Examining Procedure ("MPEP")[48] as modified by:

- 2014 Procedure For Subject Matter Eligibility Analysis Of Claims Reciting Or Involving Laws Of Nature/Natural Principles, Natural Phenomena, And/Or Natural Products (March 2014)[49]. This document is off topic here, because computer implemented inventions in general fall under the "abstract ideas" branch of the judicially recognized exceptions to statutory patentable subject matters, on which this document had no impact.

- The Preliminary Examination Instructions in view of the Supreme Court Decision in *Alice Corporation Pty. Ltd. v. CLS Bank International, et al*.[50] (the "June 2014 Preliminary Instructions"), which will be discussed in more detail below.

- Interim Guidance on Patent Subject Matter Eligibility on December 16, 2015[51] discussed further, below.

4.5.3.8.1 The June 2014 Preliminary Instructions

The Instructions differ from prior USPTO guidance in two ways[52]:

1) *Alice Corp. v CLS Bank*[53] establishes that the same analysis should be used for all types of judicial exceptions, whereas prior USPTO guidance applied a different analysis to claims with abstract ideas (*Bilski* guidance in MPEP 2106(II)(B)) than to claims with laws of nature (*Mayo* guidance in MPEP 2106.01).

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47 Subject Matter Eligibility of Computer Readable Media (2010) at http://www.uspto.gov/web/offices/com/sol/og/2010/week08/TOC.htm#ref20

48 Chapter 2106, Manual of Patent Examining Procedure, Ninth Edition (March 2014), http://mpep.uspto.gov/RDMS/detail/manual/MPEP/current/d0e18.xml#/manual/MPEP/current/d0e197244.xml

49 http://www.uspto.gov/patents/law/exam/myriad-mayo_guidance.pdf

50 http://www.uspto.gov/patents/announce/alice_pec_25jun2014.pdf

51 https://www.federalregister.gov/articles/2014/12/16/2014-29414/2014-interim-guidance-on-patent-subject-matter-eligibility

52 *June 2014 Preliminary Instructions*, at p. 2.

53 *Alice Corporation Pty. Ltd. v. CLS Bank International, et al.*, S. Ct. (June 19, 2014).

2) *Alice Corp. v CLS Bank* also establishes that the same analysis should be used for all categories of claims (*e.g.*, product and process claims), whereas prior guidance applied a different analysis to product claims involving abstract ideas (relying on tangibility in MPEP 2106(II)(A)) than to process claims (*Bilski* guidance).

Despite these changes, the basic inquires to determine subject matter eligibility remain the same as explained in MPEP 2106(I).

Basic inquires plus two-part analysis for abstract ideas:

1. Determine whether the claim is directed to one of the four statutory categories of invention, *i.e.*, process, machine, manufacture, or composition of matter.

2. If the claim does fall within one of the statutory categories:

    a. Determine whether the claim is directed to a judicial exception (*i.e.*, law of nature, natural phenomenon, and abstract idea),

    examples of abstract ideas include[54]:

    - fundamental economic practices;
    - certain methods of organizing human activities;
    - an idea of itself; and
    - mathematical relationships/formulas.

    b. If an abstract idea is present in the claim, determine whether any element, or combination of elements, in the claim is sufficient to ensure that the claim amounts to **significantly more** than the abstract idea itself.

    Non-limiting or non-exclusive examples of limitations that may be enough to qualify as “significantly more” when recited in a claim with an abstract idea include[55]:

    - Improvements to another technology or technical field;
    - Improvements to the functioning of the computer itself;
    - Meaningful limitations beyond generally linking the use of an abstract idea to a particular technological environment.

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[54] *June 2014 Preliminary Instructions*, at p. 2-3.
[55] *June 2014 Preliminary Instructions*, at p. 3.

Non-limiting or non-exclusive examples of limitations that are NOT enough to qualify as "significantly more" include[56]:

- Adding the words "apply it" (or an equivalent) with an abstract idea, or mere instructions to implement an abstract idea on a computer;

- Requiring no more than a generic computer to perform generic computer functions that are well-understood, routine and conventional activities previously known to the industry.

4.5.4 Canada

In Canada, the Patent Office has looked favourably on patent applications directed toward computer hardware and cautiously on those directed to algorithms and computer software. In recent years, the Canadian Patent Office has eased its restrictions on patenting computer-related inventions. Patents are now rather routinely granted for inventions in the computer and information processing field.

In October 2010, the Canadian Patent Office amended Chapter 16 of its Manual of Patent Office Practice ("MPOP") regarding "Computer-Implemented Inventions".[57] The guidelines define the boundary between patentable and unpatentable software-related subject matter. Unfortunately, the chapter seizes upon jargon (such as "technological" and "contribution") and then uses such jargon in place of analysis.

4.5.4.1 Canadian Case Law

The reluctance on patenting computer software has, however, slowly been eroded: patents on computer software have since been found to be available so long as the computer software was coupled with a physical device and formed part of a system that was, as a whole, patentable.[58] Patents on computer software that displayed information in novel ways have also been granted.[59]

The subject matter of the *Schlumberger Canada Ltd. v. Canada (Commissioner of Patents*[58] case was a system that used a computer to analyze data concerning soil characteristic measurements for oil and gas exploration, described in more detail at page 205 of the reported decision:

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56 *Ibid*., at p. 3.

57 http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/vwapj/rpbb-mopop-eng.pdf/$file/rpbb-mopop-eng.pdf

58 *Application Number 961,392, Re* (1971), 5 C.P.R. (2d) 162 (Can. Pat. App. Bd. & Pat. Commr.), and *Motorola Inc. Patent Application No. 2,085,228, Re* (1998), 86 C.P.R. (3d) 71 (Can. Pat. App. Bd. & Pat. Commr.).

59 *Seiscom Delta Inc., Re* (1985), 7 C.P.R. (3d) 506 (Can. Pat. App. Bd. & Pat. Commr.).

58 (1981), 56 C.P.R. (2d) 204 (Fed. C.A.), leave to appeal refused (1981), 1981 CarswellNat 815 (S.C.C.).

> The appellant's application discloses a process whereby the measurements obtained in the boreholes are recorded on magnetic tapes, transmitted to a computer programmed according to the mathematical formulae set out in the specifications and converted by the computer into useful information produced in human readable form.

The Commissioner of Patents rejected the application on the ground that the applicant had claimed, in effect, a monopoly on a computer program, which was not the proper subject matter to be an "invention" under section 2 of the *Patent Act*.

The Federal Court of Appeal held that what was new in the applicant's system was the discovery of the mathematical formulae to be performed, which amounted to be a "mere scientific principle or abstract theorem" -— not patentable pursuant to the equivalent of subsection 27(8) of the *Patent Act*. The Court held that the addition of a computer to a system does not change the subject matter of the discovery so as to make it patentable. The Supreme Court of Canada refused leave to appeal the Federal Court of Appeal's decision on October 20, 1981.[59]

The case established the following two-step test to determine the patentability of computer-related inventions:

(1) According to the patent application, what has been discovered?

(2) Is that discovery patentable regardless of whether a computer is or should be used to implement the discovery?

The case is of questionable logic, in part, because the Federal Court of Appeal dissected the invention into its constituent parts and concluded that the only novel aspect of the claimed invention was the mathematical formula which, as a "mere scientific principle or abstract theorem", cannot be the subject of a patent because of the prohibition in subsection 27(8).[60] Instead, the proper approach arguably should

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[59] Reported at (1981), 40 N.R. 90n (S.C.C.).

[60] This analysis was repeated, apparently with approval, by Sharlow J. in *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at paras. 60-62. The Amazon.com patent was referred back to the Commissioner to determine whether the algorithm was the only point of invention or whether it was part of a patentable combination:

> "It is arguable that the patent claims in issue in this case could fail on the same reasoning, depending upon whether a purposive construction of the claims in issue leads to the conclusion that Schlumberger cannot be distinguished because the only inventive aspect of the claimed invention is the algorithm – a mathematical formula – that is programmed into the computer to cause it to take the necessary steps to accomplish a one-click online purchase. On the other hand, it is also arguable that a purposive construction of the claims may lead to the conclusion that Schlumberger is distinguishable because a new one-click method of completing an online purchase is not the whole invention but only one of a number of essential elements in a novel combination. In my view, the task of purposive construction of the claims in this case should be undertaken anew by the Commissioner, with a mind open to the possibility that a novel business method may be an essential element of a valid patent claim."

Without deciding the point expressly, the Amazon.com patent was subsequently granted.

have been to examine the invention as a whole and then to determine whether the whole invention was statutory subject matter.

4.5.4.2 Schlumberger, and Beyond

Immediately following the *Schlumberger* decision, the Canadian Patent Office took a noticeably "anti-computer patent" stance. At the time, the solution was to claim sufficient pre-computer and post-computer steps to create a novel process control system.

A 1984 directive from the Commissioner of Patents effectively swung the "patentability pendulum" towards permitting software-related inventions to be patented through the late 1980s and early 1990s. The Patent Appeal Board used reasoning similar to that used in the U.S. *Alappat*[60] decision. The Patent Appeal Board in *Motorola Inc. Patent Application No. 2,085,228, Re*,[61] and in *Motorola Inc. Patent Application No. 2,047,731, Re*,[62] withdrew an examiner's rejections of claims directed to a general purpose computer used to calculate the j^{th} roots and reciprocals of the j^{th} roots of a number to evaluate exponentials. The Board noted that the claims were for an apparatus and specifically referred to hardware (a ROM). It was thus "... a specific piece of computer hardware". As a result, the claim was limited "... to a specific configuration of at least one physical element ..."[63] as well as other elements of a digital computer. The claims did not exclude the use of the algorithm itself but sought to exclude others from using the claimed device.

4.5.4.3 Canadian Patent Office Practice

4.5.4.3.1 MPOP: Subject Matter

Chapter 16 of the Manual of Patent Office Practice ("MPOP") has much to say about patentable subject matter of computer-related inventions.

4.5.4.3.1.1 Art

"Art" is equated with methods. Chapter 16 states that a method that, on its own merits, would be considered non-statutory does not become statutory simply by virtue of some part of the method being carried out on or by a computer.

Chapter 16, written pre-*Amazon.com*, still, in some cases, demands that methods involve technology ("the method itself, as a whole, must … lie within a field of technology"[61]) or that a technological result will suffice for patentability ("A method of controlling a computer's operations so as to achieve a technological result [i.e., provide a technological solution to a technological problem] …" would be a patentable art.) Although the latter threshold may be sufficient, the former threshold was expressly

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60 *Alappat, In. Re*, 23 U.S.P.Q. 20 1340 (Bd. Pat. App. & Intf 1992).
61 (1998), 86 C.P.R. (3d) 71 (Can. Pat. App. Bd. & Pat. Commr.).
62 (1999), 86 C.P.R. (3d) 76 (Can. Pat. App. Bd. & Pat. Commr.).
63 *Ibid.* at 82, and *supra* note 60, at 75.
61 MPOP, Chapter 16.02.01.

rejected in *Amazon.com* where the Federal Court of Appeal (FCA) held that asking whether the subject matter is "scientific or technological in nature" is unclear and confusing[62] and that use of such a tag word may represent an unhelpful distraction.[63]

Likewise, this section of Chapter 16 appears to ignore the decision in *Progressive Games*[64], stating "Claims to computer-implemented methods for playing games or creating works of art do not define inventions that belong to a field of technology and do not come within the definition of invention in section 2 of the Patent Act [see sections 12.06.05 (Games) and 12.06.03 (Fine arts) of this manual]." The invention of the *Progressive Games* case was rejected on the basis of obviousness, not that it was not an "art".

Chapter 16 provides that, to be a patentable art, a method must include at least one act performed by a physical agent upon a physical object, producing in that object some change of condition.[65]

4.5.4.3.1.2 Process

Having defined a patentable process in Chapter 12.02.02 of MPOP as implying the application of a method to material or materials,[66] Chapter 16 does not further explain whether those materials may simply be electrons in a computer memory that are being acted upon.

Chapter 16 states that 'a computer program is not, by itself, statutory subject matter"[67] but suggests that a program that runs on a computer and provides a technological solution could be statutory subject matter.[68] The former statement appears to be an attempt to restate the *Patent Act*, which provides that "No patent be granted for any mere scientific principle or abstract theorem".[69] Arguably, mathematics is the language used to describe scientific or physical phenomena. It is the application of scientific principles in new and useful articles or processes that are patentable inventions. If this statement is merely an attempt to restate the prohibition in the *Patent Act*, then why doesn't the Patent Office merely stay with the statutory language?

Processes are usually a set of instructions to achieve a desired result. Ironically, the definition of "computer program" under section 2 of the *Copyright Act* sounds similar to how one would describe a "process":

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62 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 56.

63 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 56.

64 *Progressive Games Inc*. v. *Canada (Commissioner of Patents)* (1999), 3 C.P.R. (4th) 517 (Fed. T.D.), per Denault, J., affirmed (2000), 9 C.P.R. (4th) 479 (Fed. C.A.).

65 MPOP, Chapter 16.02.01.

66 MPOP, Chapter 16.02.02.

67 Chapter 16.03.02.

68 *Ibid*.

69 *Patent Act*, s. 27(8).

a set of instructions or statements, expressed, fixed, embodied or stored in any manner, that is to be used directly or indirectly in a computer in order to bring about a specific result.

4.5.4.3.1.3 Machine

As with an "art", Chapter 16.02.03 clings to a "technological solution to a technological problem" requiring any patentable device to provide that. The device must provide "a contribution in the claimed matter" and must be of a particular nature.[70] Where a computer does not provide a solution to a technological problem, the computer or device as a whole is not a "contributed practical form of an invention." This "contribution" reference springs from Chapter 13.05.03 citing the *Biolyse Pharma Corporation* v. *Bristol-Myers Squibb Company*[71] case as authority for the proposition that the contribution is what the inventor has contributed to human knowledge in the form of new and unobvious matter. In view of the *Amazon.com* case, this analysis too, appears flawed.

If the machine has been specifically adapted to implement a patentable method, the machine is considered to be a technological solution and is patentable.[72] Where the machine implements a non-statutory method, the inventive ingenuity necessary to make the machine patentable must arise in adapting the machine to implement the method.[73]

4.5.4.3.1.4 Manufacture

Chapter 16.02.04 states that "manufacture" encompasses both the processes for manufacturing and the products made by such processes. For computer-implemented inventions, there might be computers used to control a manufacturing operation or a non-machine computer product. Physical storage media are acceptable subject matter. Their patentability depends on "the[ir] contribution."

4.5.4.3.1.5 Utility

Chapter 16.04 provides that the subject matter must be operable to produce the promised result in a manner that is controllable and reproducible. The exercise of human judgment or interpretative reasoning is not considered to be reproducible.

4.5.4.3.1.6 Data structures

A data structure is a format for organizing and storing a collection of related data items for a specific purpose. The Patent Office considers a data structure to be an abstract idea or plan for organizing data items, disembodied and not patentable subject matter unless, in some way, it limits the technological nature of a statutory element in a claim.

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70 MPOP, Chapter 16.02.03.
71 [2005] SCC 26 at para. 1.
72 Chapter 16.03.
73 *Ibid*.

Although the Patent Office has been issuing patents which arguably are processes whose ultimate product is data,[56] the issue of the patentability of data structures will likely have to be resolved by the Federal Court of Canada either in an appeal from a rejection by the Patent Office or in a determination of the validity of such a patent in litigation.

4.5.4.3.1.7 Databases

A database is a collection of information organized so it can be stored, searched and retrieved easily. The Patent Office considers a database to be disembodied and not patentable subject matter unless it, in some way, limits the technological nature of a statutory element in a claim.[74]

4.5.5 European Patent Convention

The Convention on the Grant of European Patents, commonly known as the European Patent Convention (EPC), was set up by the Council of Europe and is open to European countries both inside and outside the European Economic Community (EEC). The EPC establishes a single procedure for granting patents for subsequent registration in the national Contracting States and establishes certain standard rules governing those patents. Available in English, French, and German, the EPC's provisions are to be included in the legislation of all contracting States.

4.5.5.1 The Governing Articles

Article 52 of the European Patent Convention excludes from patentable subject matter computer programs “as such”:

> (1) European patents shall be granted for any inventions which are susceptible of industrial application, are new, and involve an inventive step.
>
> (2) The following in particular shall not be regarded as inventions within the naming of paragraph 1:
>
> (i) discoveries, scientific theories and mathematical methods;
>
> (ii) aesthetic creations;
>
> (iii) schemes, rules and methods for performing mental acts, playing games or doing business, and program for computers;
>
> (3) The provisions of paragraph 2 shall exclude patentability of the subject matter or activities referred to in that provision only to the extent to which a

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[56] See, for example, *Application for Patent of Mobil Oil Corp. (Patent No. 1,254,297), Re* (1988), 24 C.P.R. (3d) 571 (Can. Pat. App. Bd. & Pat. Commr.).

[74] Chapter 16.09.03.

European patent application or European patent relates to such subject matter or activities as such.

The exclusions to patentability in Article 52 all refer to activities that do not aim at any direct technical result but are rather of an abstract and purely intellectual nature.[64] This view is reinforced by Rules 27(l)(b) and 29(l)(b), which respectively imply that an invention relates to a technical field, is concerned with a *technical* problem that is solved with a *technical* solution, and which requires the claims to state the *technical* features the inventor desires to protect.[65]

As a result, there has been considerable debate, and legal ambiguity regarding patentability of computer programs and included business methods - for subject matter to have *technical character* it need only include a *technical* feature. [75] Thus, computer programs that include a *technical* feature are patentable, including the methods, business or otherwise, that such programs implement.[76]

4.5.5.2 EPO Guidelines

The EPO publishes *Guidelines for Examination in the European Patent Office*. The original Guidelines of the EPO took the very restrictive position that if the computer program constituted the improvement to the prior art, then the claims were not allowable no matter how the invention was claimed.[66]

The Guidelines were liberalized in 1985[67] to recognize that the exclusion from patentable subject matter was for computer programs as such. Examiners were instructed to examine the subject matter of the claim “as a whole” to determine patentability. It was not appropriate to judge single features of the claim as being technical or not. Thus, any claimed subject matter considered as a whole can be regarded as an invention if, under Art. 52(1) the claimed subject-matter defines or uses technical means, and is therefore patentable. [77]

It had previously been held by the Boards of Appeal that if the claimed subject matter made a technical contribution to the known art, such subject-matter would be patentable. More recently, the Boards' decisions have held that patentability depends on whether an invention has *technical character.*

If the claimed subject-matter defines or uses technical means, it is an invention under Art. 52(1), and therefore patentable; the inclusion of a computer, network, disk, etc., in a patent claim, lends *technical character* to the claimed subject-matter. If the

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64 *IBM System for Abstracting Documents-Decision* 22/85. Reported OJ EPO 1-2/1990,12.
65 *EPO Guidelines for Examination*, Part C, Chapter IV, paragraphs 1, 2.
75 J Pila, "Software Patents, Separation of Powers, and Failed Syllogisms: A Cornucopia from the Englarged Board of Appeal of the European Patent Office" (2011) 70 Cambridge LJ 203 at 208.
76 See T_1616/08 (*Amazon/Gift Order*), unreported decision of the Technical Board of Appeal dated 11 November 2009.
66 [1978] OJ EPO.
67 *EPO Guidelines for Examination*, Part C, Chapter IV.
77 T 258/03 (*Auction method/Hitachi*) OJ EPO 2004, 575.

subject-matter claimed lacks *technical character*, it is not patentable. Conversely, where there is *prima facie* technicality, even by merely including "a computer" in the claim, Art. 52(2) and (3) are irrelevant, and the Examiner is to assume the invention qualifies under Article 52 and proceed to the novelty and inventive step analyses.[78] It is important to note that methods using technical means still must be new, non-obvious, and applicable in industry, in order to be patentable.[79]

The current Guidelines[68] and Board of Appeal decisions provide the basic rules for examiners to exclude the patentability of the following computer-related inventions:

(1) a computer program claimed by itself;

(3) a method of doing business, even where it implies the possibility of making use of unspecified technical means or has practical utility[80]but that the following may be patentable:

(1) a program-controlled machine or manufacturing and control processes;

(2) program-controlled internal working of a known computer (operating systems)

(3) a computer program stored on a readable medium or other carrier irrespective of content.[81]

Technical character is to be assessed without looking to the prior art, and the examiner should avoid trying to fit the subject-matter into a category; instead she should consider it as a whole for its technical character. Subject-matter with a mix of technical and non-technical features is patentable, where it still has technical character.[82]

4.5.5.3 Case Law

The *Vicom*[69] case is the authority for the meaning of “computer program as such” and what constitutes a “mathematical method”.

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78 *Guidelines for Examination in the European Patent Office*, Part G, Chapter II-5 (as of June 2012); *EPO Decision T 931/95,* OJ EPO 2001, 441; T 424/03 (*Clipboard formats I/Microsoft*), where "computer-related invention" was distinguished from a "computer program" for the purposes for claim analysis; *EPO Decision T 258/03,* OJ EPO 2004, 575.

79 T 258/03 OJ EPO 2004, 575; T 154/04 OJ EPO 2008, 46.

68 See The Chartered Institute of Patent Agents, *CIPA European Patents Handbook* 2nd Ed., vol. 2 (London: Sweet & Maxwell) especially chapter 56; Longman; at 295, 297.

80 See T 388/04.(*Undeliverable mail/Pitney Bowes*) [2007] EPOR 70.

81 See T 424/03.

82 See *EPO Decision T 109/90*; OJ EPO 1994, 14; *EPO Decision T 110/90*; OJ EPO 8/1994, 557; *T 641/00*, OJ EPO 2003, 352.

69 *EPO Decision T208/84M*; OJ EPO 1/1987,14.

The patent application in the *Vicom* case[70] related to a method and apparatus for digital image processing which involved a mathematical calculation carried out on a two-dimensional array of numbers representing points of an image. Algorithms were used for smoothing or sharpening the contrast between neighbouring data elements in the array. The initial claim format of “A method of digitally filtering data including scanning a data array with masks ...” was disallowed because the physical entity represented by the data was not mentioned in the claim at all. The EPO examiner considered this left the claims with an abstract notion indistinguishable from a mathematical method. On appeal, the Technical Board of Appeal at the EPO accepted an amended claim that defined the actual technical activity performed by the digital filtering. The allowed language was “A Method of digitally processing images in, the form of a 2D array having... ” The Board of Appeal felt this language defined a “real-world” application.

This is a very significant decision: although much of the patent includes a mathematical description, the EPO accepted claim language to render the claim patentable within the EPC statute. This will be compared below to the position taken by the U.K. national Courts. Unfortunately, the EPO later rejected these claims for lack of novelty and inventiveness.

The Board held that what is decisive in determining patentability is determining what technical contribution the claimed invention makes to the known art when considered as a whole. It is irrelevant whether the computer program takes the form of software or firmware.[71] Although "technical contribution" to the known prior art is no longer applicable to the patentability of an "invention" under Art. 52(1), it still plays an active role in the inventive step analysis.

the EPO Technical Board of Appeal shed some revealing light on how the EPO is examining software-related (and therefore e-commerce-related) inventions:

(1) The IBM Decision T 1173/97 related to a computer program product bearing computer software method for resource recovery in a computer system.[72]

(2) The IBM Decision T 0935/97 related to computer readable medium storing a computer program for a system NE window obscured the data in another window: the obscured information was relocated.[73]

Using identical logic in both cases, the EPO Technical Board of Appeal held both inventions to be patentable. This was due in part to the Board believing that the interpretation of "invention" in the E.U. should reflect that of other jurisdictions, particularly the U.S. [83] The subsequent decision of *Duns*[84], and the replacement of

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70 *EPO Decision T208/84*; OJ EPO 1/1987, 14.

71 *Ibid.* at 20.

72 *EPO Decision T1173/97*, “A Method for Resource Recovery”; OJ EPO 1999, 589-657, July 1, 1998.

73 *EPO Decision T0935/97*, “A Method for Displaying Information”; E.P.O.R. 1999, 301, February 4, 1999.

83 J Pila, "Software Patents, Separation of Powers, and Failed Syllogisms: A Cornucopia from the Enlarged Board of Appeal of the European Patent Office" (2011) 70 Cambridge LJ 203 at 209.

"technical contribution" with "technical character" in the assessment of whether the subject-matter is in fact an "invention", were meant to further this interpretation.[85]

The EPO Technical Board of Appeal recently held in *Amazon*[86] that a method "for placing a purchase order via a communications network" constituted an "invention" under Art. 52(1) of the EPC: "The invention relates to a computer method for ordering a gift from a gift giver (purchaser) to a recipient."[87]

The technical means associated with the claimed subject-matter were the computer system itself, and the use of email to communicate with the recipient of the purchase. Citing *Vicom*, the Board noted that Boards of Appeal have long acknowledged the patentability of inventions that include software "contributing to a technical effect"[88]. Computer-implemented business methods, the Board concluded, do not normally have such contributions.[89]

This conditional language and the EPO Technical Board of Appeal decisions in *Dun* and *Amazon* seem to indicate that patents may be granted for computer-based commercial transaction methods, and other computer-implemented methods, where an invention is found under Art. 52, and it passes the novelty and inventive step tests.

4.5.5.4 Computer-generated Software

A process for generating source code for computer programs from a specification was held not to be patentable subject matter; it was merely the automation of the mental acts of a computer programmer.[74]

4.5.5.5 Method of Doing Business

A method of using an automated teller machine by use of a machine-readable card was held to be a method of doing business and non-patentable subject matter.[75]

However, *Sohei*[76] may have extended what types of invention may be considered patentable by the EPO.

The invention related to a computer system for financial, inventory, personnel and construction management in shops and offices. Prior art systems required an

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84 T_0154/04 (D*uns Licensing Associates/Estimating Sales Activity*.)

85 J Pila, "Software Patents, Separation of Powers, and Failed Syllogisms: A Cornucopia from the Englarged Board of Appeal of the European Patent Office" (2011) 70 Cambridge LJ 203 at 210.

86 T_1616/08 (*Amazon/Gift Order*), unreported decision of the Technical Board of Appeal dated 11 November 2009.

87 T_1616/08 (*Amazon/Gift Order*), unreported decision of the Technical Board of Appeal dated 11 November 2009 at [1].

88 *EPO Decision T208/84M*; OJ EPO 1/1987,14.

89 T_1616/08 (*Amazon/Gift Order*), unreported decision of the Technical Board of Appeal dated 11 November 2009 at [4.4].

74 *AT&T Decision* (unreported October 29, 1993).

75 *IBM Card Reader Decision T854/90* [1994]; OJ EPO 11/1993, 669.

76 *Sohei/General Purpose Management Systems* T769/92: OJ EPO 8.1995, 525.

operator to perform input processing of the same data two or more times. The invention solved this problem by presenting a transfer slip in the form of a screen menu for entering items once, and this entered information is stored in datafiles which can be updated with subsequent operator input. All the hardware was conventional. The claims were upheld on appeal because the EPO considered that the invention solved the problem technically in that it provided for the processing of data relating to different management types in a single system. They concluded that technical subject matter was present and if the claims were limited to specific types of management, the technical character is still applied to the claims. The technical effect test is deemed to be met when technical considerations are made to implement details of an invention. These technical considerations imply a technical problem to be solved and the technical features required to solve the problem.

More recently, a claim related to a method to operate a pension benefits plan that performed calculations on a computer was rejected by both the Examining Division and Board of Appeal. The claim itself did not limit use of the method to a computer. The Examining Division held that the claimed invention was a business method as such and therefore lacked any *technical character*. The Board of Appeal also rejected the application, but cited the fact that the proffered claim failed to exceed a mere business method as such; it was therefore not patentable under Art. 52(3).[90] The Board also noted that "technical contribution" had no basis under the EPC to ground patentability.

In a decision regarding an automated auction method, the board agreed that the "technical contribution" is more appropriate for considerations of novelty and inventive step, rather than whether the claimed subject-matter is an invention under Art. 52.[91] The board found the method was not excluded under Art. 52(2), as it had distinct technical features, including a "network", and "client computers" and a "server computer". The method failed on inventive step, as the claimed subject-matter was merely automation of the non-technical activity of auction-bidding.

A system and method used to estimate distributions of products/sales based on sample sales and geographical data was held not to be patentable.[92] The only technical aspect of the system was a processor implementing the method and the algorithm associated with it. The contribution to the art was limited to the algorithm. Reaffirming that determining whether there is an "invention" under Art. 52(1) to (3) is a separate analysis from inventive step and novelty; the board noted that patentable inventions will always have inherent technical character.

In 2012, several Board of Appeal decisions also emphasis how difficult it is to take computer-related inventions that qualify as "inventions" under Art. 52, and consequently potentially patentable, and actually pass all three stages of the patentability analysis.[93]

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90 T 931/95 (OJ EPO 2001, 441).
91 T 258/03 (OJ EPO 2004, 575).
92 T 154/04 (OJ EPO 2008, 46).
93 T 528/07; T 1436/07; T 1438/07.

U.K. practitioner Keith Beresford has noted inconsistencies between the U.K. Patent Office and the Examining Division of the EPO with respect to the patentability of an algorithm-related system for making predictions (computer programs, for example relating to exchange rates),[77] with the EPO being considerably more favourable to applicants than the U.K. Patent Office in allowing such claims. Justine Pila, a lecturer in intellectual property law at the University of Oxford, has noted that the U.K. courts are skeptical as to the EPO's interpretation of Article 52(2) and (3), demonstrated by the vehemently negative reaction to the E.U.'s attempt at embedding the approach a recent Directive.[94]

Shortly after the Directive was defeated, Pumfrey J. and Mr. Prescott rejected the EPO approach to Article 52(2) and (3) in *Halliburton Energy Services Inc. v. Smith International Inc.*[95] and *CFPH's Application*[96] to affirm an interpretation proffered by Laddie J. in *Fujitsu Ltd.'s Application*[97]. This approach, which had previously been rejected by the Court of Appeal,[98] holds that Article 52(2) and (3) contains policy exclusions with different areas of application - it does not require a technical character for patentability. This was justified in part, by the lack of congruity in the EPO's decisions.[99]

4.6 Business Methods

4.6.1 Introduction

Recent U.S. case law questioning whether certain types of computerized innovations in the business and financial sector can be protected by patents, and the application of that case law by the USPTO, is making those who develop software or other computerized business systems assess for the first time, or now re-assess, their current patent situation.

Patents provide an effective way of staking e-commerce claims. And the rush to the Patent Office to make claims — what some have termed a “gold rush"[78] has and is occurring at Patent Offices everywhere.

To date, it seems that the majority of goldseekers are American, be it the Canadian Patent Office, or its U.S. or European counterparts, and this may be quite problematic for latecomers:

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77 Keith Beresford, London, *Patent World* (April 1997) 14.

94 J Pila, "Software Patents, Separation of Powers, and Failed Syllogisms: A Cornucopia from the Englarged Board of Appeal of the European Patent Office" (2011) 70 Cambridge LJ 203 at 210.

95 [2005] EWHC 1623 (Pat).

96 [2005] EWHC 1589 (Pat).

97 [1996] RPC 511 (Pat)

98 [1997] RPC 608 (C.A.)

99 [2005] EWHC 1623, [212].

78 In his paper “Canadian/American Intellectual Property Symposium” (presented at the Canadian Institute on November 9, 2000), Michael Stein, of Woodcock, Washburn et al, referred to a “'gold rush' mentality among businesses racing to the Patent Office”. This is an apt analogy.

> As a patent grants an economic monopoly, this trend [that American companies are obtaining a strong business method patent foothold in the marketplace] must have commercial implications when these patents proceed to grant and can be enforced. Owning these patents gives a "First Mover Monopoly".[79]

The "discovery" that commenced the current "gold rush" to the Patent Office to patent online business methods was made by the U.S. Court of Appeals for the Federal Circuit in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*[80] Before the *State Street* decision, business methods, *per se*, were thought not to be patentable. The Court found, however, that a method for managing a portfolio of mutual funds was patentable, thereby opening the "gold rush" floodgates.

How has the rush manifested itself? While business method patent applications historically represented only a small percentage of the total patent applications filed with the U.S. Patent and Trademark Office, applications for business method and software patents increased 700 percent in the year following the *State Street* decision, forcing the U.S. Patent and Trademark Office to overhaul its approach to examining and issuing such patents.

4.6.2 What is a Business Method Patent?

As the name rather obviously suggests, a business method patent is a patent on a method for doing business; the concept is otherwise difficult to precisely define. Business method patents are available on methods for doing business in such diverse industries as stock or bond trading, health care management, reservation systems, electronic shopping, auction systems, and cryptography. According to one U.S. Patent and Trademark Office White Paper,[81] the four largest business method patent application groupings that it has encountered are those directed to the general business operations of:

(1) determining who your customers are, and what products or services they want (This category would include methods of conducting operations research and market analysis.);

(2) informing customers that you exist, showing them your products and services, and enticing them to make a purchase (This category would include methods for managing advertising, catalogue systems, incentive programs, and coupon redemptions.);

(3) exchanging money and credit before, during, and after a business transaction (This category would include methods for processing credit

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79 Likhovski, M. et al, "The First Mover Monopoly," *Journal of Intellectual Property Rights*, November 2000, at 4, available at <www.oiprc.ox.ac.uk>.

80 149 F. 3d 1368,47 U.S.P.Q. 2d 1596 (1998).

81 "Automated Financial or Management Data Processing Methods (Business Methods)", United States Patent and Trademark Office White Paper, available <http://www.uspto.gov/web/menu/busmethp/index.html>.

and loan applications, point of sale systems, billing, funds transfer, banking, clearinghouses; tax preparation, and investment planning.); and

(4) tracing resources, money, and products (This category would include methods for managing human resources, scheduling, accounting; and inventory monitoring.).[82]

Perhaps the most publicized example of a business method patent is Amazon.com Inc.'s patent for its “1-Click” method for purchasing goods from its Web site with a single mouse click.[83] Another highly publicized example is Priceline.com's “Name your price reverse auctions” patent.[84]

E-commerce businesses apparently have a particularly large appetite for business method patents. Bruce Lehman, former U.S. Patent Commissioner and board member of Walker Digital, the company behind Priceline.com, said, “If we can't have a patent, we don't want it... [t]he two questions we ask of projects are: Does it have market value? And can we get a proprietary position?”[85]

4.6.3 United States

4.6.3.1 Case Law

Whether or not an invention is statutory subject matter under the U.S. *Patent Act* §101 is a threshold question. It must still be novel (§ 102), non-obvious (§ 103) and properly described (§ 112).[100]

4.6.3.1.1 State Street Bank and Trust Company v. Signature Financial Group, Inc

The *State Street* decision[101] addressed a patent obtained in 1991 by Signature for software for a data processing system — a hub and spoke mutual fund system that involved a group of small funds, the spokes, the assets of which were pooled into a partnership investment portfolio, the hub, to obtain certain tax advantages and to obtain economies of scale.

The U.S. Court of Appeals for the Federal Circuit noted that the Signature process met the patentability requirements of “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof,” holding that the process avoided the “mere algorithm bar” because it produced a “useful, concrete and tangible result”[102] — that is, a share price derived through an

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82 *Ibid.*
83 U.S. Patent No. 5,960,411.
84 U.S. Patent No. 5,794,207.
85 “The New Priceline” *Managing Intellectual Property*, October, 2000, at 10.
100 *Bilski* v. *Kappos* 130 S. Ct. 3218 (2010). at 3225.
101 *State Street Bank and Trust Company v. Signature Financial Group, Inc*., 149 F.3d 1368 (Fed. Cir. 1998)
102 Followed in *AT&T Corp*. v. *Excel Communications, Inc*., 172 F. 3d 1352, (1999)

algorithm. As to the old "business method" bar, the U.S. Court of Appeals for the Federal Circuit found that the "ill conceived exception" should be put to rest.[94]

The effect of the *State Street* decision is that in the United States, a business method is, and has been since 1952, inherently patentable subject matter, regardless of whether or not the method is incorporated into computer software or hardware.[95]

4.6.3.1.2 In Re Bilski

In Re Bilski,[103] the U.S. Supreme Court set out the defining principles for a statutory "process" under §101. The invention related to a process whereby buyers and sellers of commodities in the energy market could protect, or hedge, against the risk of price changes. The concept of hedging was old.

The CAFC had held that in order for a process to be patentable subject matter it had to satisfy the machine-or-transformation test, namely that either the process:

1. is tied to a particular machine or apparatus; or

2. transforms a particular article into a different state or thing.[104]

The Supreme Court held that although the machine-or-transformation test was a useful and important clue in deciding whether an invention was a statutory "process", it was not the sole test for making that determination.[105] The Supreme Court has "more than once cautioned that courts 'should not read into the patent laws limitations and conditions which the legislature has not expressed.'"[106] The definition of "process" under §100(b) as a "process, art or method" does not require these terms to be tied to a machine or to transform an article,[107] and the term "method" may include some methods of doing business.[108] The *Patent Act*, under §273(b)(1) explicitly contemplates the existence of at least some business methods by providing a defence of prior use for an infringement by a method of doing or conducting a business (§273(a)(3)). A conclusion that business methods are not patentable in any circumstances would render §273 meaningless.[109]

The claimed invention in *Re Bilski* was unanimously rejected because it attempted to patent abstract ideas. [110] The concept of hedging, described in claim 1 and

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94 *Supra* note 77, at para. 11.

95 The U.S. Court of Appeals for the Federal Circuit, affirmed in *AT&T v. Excel Communications, Inc.*, 172 F.3d 1352, that business method patent claims directed to a method (a distinction from the State Street decision) are properly patentable.

103 *Bilski* v. *Kappos* 130 S. Ct. 3218 (2010).

104 *Bilski*, at p. 3.

105 *Bilski*, at p. 8.

106 *Diamond* v. *Diehr*, 450 U. S. 175, 182 (1981), quoting *Diamond* v. *Chakrabarty*, 447 U.S. 303, (U.S. Sup. Ct., 1980) at 308.

107 *Bilski*, at p. 7.

108 *Bilski*, at p. 10.

109 *Bilski*, at p. 11.

110 *Bilski*, at p. 13.

reduced to a mathematical formula in claim 4, was an unpatentable abstract idea, just like the algorithms at issue in *Benson* and *Flook*. Allowing petitioners to patent risk hedging would have pre-empted use of this approach in all fields, and would effectively have granted a monopoly over an abstract idea.[111] Such an idea cannot be made patentable by "limiting an abstract idea to on field of use or adding token post solution components."[112]

4.6.3.1.3 Decisions post-Bilski

Although many business method "inventions" use computers to do calculations, part of the bias against patentability is that the computers are merely doing calculations and therefore are performing "mental steps", although at a very high rate. As expressed in *Bancorp Services v. Sun Life*:

> "… prior to the information age, a "computer" was not a machine at all; rather, it was a job title: "a person employed to make calculations." [113]

The objection to patentability might better be expressed as a prohibition on patenting "mental steps". Calling them an "abstract idea" seems to be a deceptive mis-nomer.

External observers, including retired UK House of Lords judge Lord Hoffman,[114] have noted that the U.S. Supreme Court has painted U.S patent law into a corner. Although many business methods apply theories to achieve a commercial result, given the characterization of the *Bilski* method (which likewise had practical applicability) as being an "abstract idea", many later cases have likewise found what otherwise appear to be applied ideas, to be "abstract".

For example, U.S. courts have found the following to be "abstract" and not patentable subject matter:

- The Internet is an abstraction, not a machine;[115]
- A marketing "paradigm".[116] The method failed the "machine test" as it was not tied to any concrete parts, devices, or combination of devices. The method also failed the "transformation test" as it was directed to organizing, in the structuring of a marketing company, business or legal relationships which are not physical objects or representative of physical objects.[117]

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111 *Bilski*, at p. 15.
112 *Bilski*, at p. 15.
113 *Bancorp Services LLP*. v. *Sun Life Assurance Co. of Canada*, 687 F.3d 1266 (Fed. Cir. 2012) at p. 1278.
114 Lord Leonard Hoffmann; "Patents for Software and Business Methods"; IPIC AGM September 24, 2009.
115 *Cybersource Corp*. v. *Retail Designs, Inc*., 620 F. Supp. 2d 1068 (N.D. Cal. 2009).
116 *In re Ferguson*, 558 F.3d 1359 (Fed. Cir. 2009).
117 *Ibid*, at p. 1364.

- A method for exchanging obligations between parties through an intermediary to reduce counter-party risk.[118] The method was not patentable under the "machine" test as it was not tied to a particular machine but ran on a general purpose computer. The machine was not essential to the operation of the method.[119] The computer system and product claims were also not patentable as they were merely an incarnation of the abstract idea (of employing an intermediary to facilitate simultaneous exchange of obligations in order to minimize risk) on a computer without any further meaningful limitation.[120]

- A method of verifying the validity of a credit card transaction that detected fraudulent transactions by making one or more processors carry out similar steps (and *Beauregard* apparatus claims relating thereto).[121] Collecting information did not constitute a transformation and the claim did not require a machine. The court concluded that the claim was a mental process – a subcategory of unpatentable ideas.[122] As in *Abele*, the basic character of a process claim drawn to an abstract idea is not changed by claiming only its performance by computers, or by claiming the process embodied in program instructions on a computer readable medium.[123]

- A system for expediting car loan applications by having a single car loan application filled out and forwarded to potential lenders for review and completion.[124] The "computer-aided" language in the preamble did not render the claim "patent eligible". The claims were silent as to how a computer aided the method, the extent to which a computer aided the method, or the significance of a computer to the performance of the method.[125]

- An investment method that allowed real estate to be aggregated and divided into interests called deedshares to take advantage of a tax code provision allowing owners to exchange property of a like kind without tax liability.[126] It was still abstract even though it involved real property. It was an abstract concept: an investment tool.

- A method and system for managing a life insurance policy.[127] The patent included media claims which were held to be the equivalent of the method claim.[128] The program did not improve the function of a computer but merely improved the administration of a policy.

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118 *CLS Bank International* v. *Alice Corp. Pty.Ltd*., 768 F. Supp. 2d. 221 (D.D.C. 2011).
119 *Ibid*, at p. 239.
120 *Ibid*, at p. 252.
121 *Cybersource Corp. v. Retail Decisions, Inc*., 654 F.3d 1366 (Fed. Cir. 2011).
122 *Ibid*, at p. 1371.
123 *Ibid*, at p. 1375.
124 *Dealertrack, Inc. v. Huber,* 674 F.3d 1315 (Fed. Cir. 2012).
125 *Ibid*, at p. 35.
126 *Fort Properties, Inc. v. American Master Lease LLC,* 671 F.3d 1317 (Fed. Cir. 2012).
127 *Bancorp Services LLP*. v. *Sun Life Assurance Co. of Canada*, 687 F.3d 1266 (Fed. Cir. 2012).
128 *Ibid,* at p. 1277.

> "… the use of a computer in an otherwise patent ineligible process for no more than its basic function – making calculations or computations – fails to circumvent the prohibition against patenting abstract ideas and mental processes."[129]
>
> "… a computer must be integral to the claimed invention, facilitating the process in a way that a person making calculations could not."[130]

- A system for generating tasks to be performed in an insurance organization.[131] The majority of the court held that confining the claims to a computer and to the insurance industry was insufficient to make the otherwise abstract idea patent eligible, though Chief Judge Radar dissented.

- A method for guiding the selection of a therapeutic treatment regimen for a patient.[132] The claim at issue was found to do nothing more than "physical implementations of routine mental information-comparison and rule-application processes." The concern was about preempting public use of certain kinds of knowledge.

The CAFC however, has found some business method inventions to be non-abstract:

- A system that allowed users to view material on the Internet for free in return for watching advertisements;[133] The system involved complex software programming and the Internet. It appears that extensive computer technology assisted in its patentability. The Court applied *Bilski* to a machine.

- A transmitter that used a microcontroller to generate and send a signal to open or close a garage door. The subject matter was statutory because the mathematical algorithms were directed at a physical product to be used for a specific purpose.[134]

- A GPS receiver system was a machine that was integral to the claims.[135]

- A method for transmitting encrypted data over a communication link.[136] The method involved use of a predetermined characteristic of the data being

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[129] *Ibid,* at p. 1278.
[130] *Ibid,* at p. 1278.
[131] *Accenture Global Services v. Guidewire Software*, 728 F.3d 1336 (Fed. Cir. 2013).
[132] *SmartGene, Inc. v. Advanced Biological Laboratories, SA*, NO. 2013-1186 (Fed. Cir. Jan. 24, 2014) (nonprecendential). See also *Cyberfone Sys., LLC, v. CNN Interactive Grp., Inc.*, Nos. 2012-1673, -1679 (Fed. Cir. Feb. 26, 2014) (nonprecedential).
[133] *Ultramercial, LLC* v. *Hulu, LLC*, No. CV 09-06918, 2010 WL 3360098 (C.D. Cal. Aug. 13, 2010), rev'd, *Ultramercial LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011), judgment vacated, case remanded, *Ultramercial LLC v. Hulu, LLC,* 722 F.3d 1335 (Fed. Cir. 2013), same holding.
[134] *Chamberlain Group, Inc*. v. *Lear Corp*., 756 F.Supp.2d 938 (N.D. Ill. 2010), at pp. 969-970.
[135] *SiRF Tech., Inc*. v. *Int'l Trade Comm'n*., 601 F.3d 1319, 1332 (Fed. Cir. 2010).
[136] *TQP Development, LLC v. Intuit Inc.*, No. 2:12-cv-180-WCB (E.D. Tex., Memorandum

transmitted to trigger the generation of new key values. Judge Bryson of the Federal Circuit found that to be a fundamental concept that narrowed the claim to a very specific method in the field of data encryption and, therefore, an "inventive concept" which made the subject matter patent eligible.

Rather than attempt to define what is "abstract", in *Research Corporation Technologies* v. *Microsoft Corp*.[137], the CAFC held that, in order for patentability to be rejected on that basis, this disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter.[138] They held a method of half-toning grey scale and color imaging to be non-abstract and patentable subject matter.

The U.S. Supreme Court decision in *Mayo Collaborative Services* v. *Prometheus Laboratories, Inc.*[139], although relating to a medical diagnostic process, discussed inventions applying laws of nature: they must do more than instruct a user to use the scientific principle. It must be implemented in an inventive way.[140] Simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable.[141] The Court also cautioned that "too broad an interpretation" of the abstract idea exception to §101 "could eviscerate patent law" because 'all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas."[142] The Supreme Court required there to be an "inventive concept" which it defined as "other elements or a combination of elements … sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the natural law itself."[143] One must do something more than simply state the law of nature while adding the words "apply it".[144]

4.6.3.1.4 CLS Bank International v. Alice Corporation (in CAFC)

In *CLS Bank International v. Alice Corporation*,[145] at issue was a claim related to a method of exchanging financial obligations between two parties using a third-party intermediary to mitigate settlement risk. The intermediary created and updated "shadow" records to reflect the value of each party's actual accounts held at "exchange institutions", thereby permitting only those transactions for which the parties had

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Opinion and Order of Feb. 19, 2014).

137 627 F. 3d 859 (Fed. Cir. 2010).

138 *Ibid* at p. 868.

139 132 S.Ct. 1289 (2012).

140 *Ibid*, at p. 1300.

141 *Ibid*, at p. 1300.

142 *Ibid*, at p. 1293.

143 *Ibid*, at p. 1294.

144 *Ibid*, at p. 1294.

145 *CLS Bank International v. Alice Corporation*, 2011-1301. CAFC May 10, 2013 ("*CLS in CAFC*"), affirmed, *CLS Bank International v. Alice Corporation*, 573 U. S. ____ S. Ct. June 19, 2014 ("*CLS in S.Ct.*").

sufficient resources. At the end of each day, the intermediary issued irrevocable instructions to the exchange institutions to carry out the permitted transactions.[146]

The CAFC tried to summarize the law with respect to business method patents. The result was judgments from the judges on the court that gave no clear directions.

The majority of the court held that the method claims did not recite patent eligible subject matter[147] although they did not agree on a rationale for that decision.[148]

***CLS v. Alice* CAFC "scorecard"**										
Judge	Rader	Newman	Lourie	Linn	Dyk	Prost	Moore	O'Malley	Reyna	Wallach
apptd	1990	1984	1990	1999	2000	2001	2006	2010	2011	2011
sides										
method	42	14		14						
media	42	14		14						
system	27	14								

Because the court was equally divided, the district court's holding that the claims were not directed to eligible subject matter was affirmed. Otherwise, the court was divided:

- Seven judges of the ten judges held that the methods claim were ineligible.
- The court was evenly split (5:5) on the eligibility of the system claims.
- Eight judges held that the method, media and system claims should rise or fall together. Two judges (Rader and Moore) held that the system claims were eligible but that the method and media claims were not.
- One judge (Newman) held that the method, media and system claims were patent eligible.

Linn and O'Malley, in their own reasons, held that the method, media and system claims all had to succeed or fail together. They found all claims to be patent-eligible. They scolded the other judges for ignoring the evidence in this case.

Judge Newman, concurring in part with the majority and dissenting in part, summarized the decisions well:

> "The ascendance of section 101 as an independent source of litigation, separate from the merits of patentability, is a new uncertainty for inventors. The court, now rehearing this case en banc, hoped to ameliorate this uncertainty by providing objective standards for section 101 patent-eligibility. Instead we have

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[146] *Alice Corporation Pty. Ltd. v. CLS Bank International et al*, 134 S. Ct. 2347 (2014). ("*CLS in S.Ct*."), 573 U.S. ___ (2014) at page 9.

[147] Judges Lourie, Dyk, Prost, Reyna and Wallach

[148] *CLS in CAFC* per Chief Justice Rader at p. 2, footnote 1.

> propounded at least three incompatible standards, devoid of consensus, serving simply to add to the unreliability of the system of patents as an incentive for innovation. With today's judicial deadlock, the only assurance is that any successful innovation is likely to be challenged in opportunistic litigation, whose result will depend on the random selection of the panel."[149]

The methods and systems claimed by Alice related to arranging an exchange between two parties by an independent institution who kept track of credit and debit records of the parties while transactions occurred between the parties, making sure that transactions were allowed only if the parties could 'afford' them in so much as their debit record always remained less than their credit record. The exchange institutions were instructed to carry out the permitted transactions at the end of the day and balances were accordingly adjusted.

After reviewing the seminal cases involving computer related inventions (*Gottschalk v. Benson*, *Parker v. Flook*, *Diamond v. Diehr*), business method patents (*Bilski v. Kappos*) and even medical diagnostic patents (*Mayo v. Prometheus*), Judge Lourie[150] set out what he saw as an integrated approach to §101 from the previous case law:

1. Patents should not be allowed to preempt the fundamental tools of discovery – those must remain 'free to all … and reserved exclusively to none."[151] Claims should not be coextensive with a natural law, natural phenomenon, or abstract idea. They must add "significantly more" to the basic principle, with the result that the claim covers significantly less.[152]

2. Overly formulistic approaches to subject-matter eligibility invites manipulation by patent applicants.[153] Highly stylized language, hollow field-of-use limitations or token post-solution activity should not be credited.

3. A flexible, claim-by-claim approach to subject matter eligibility that avoids rigid line drawing, in keeping with the Supreme Court's direction in *Bilski* regarding the "machine or transformation" test.

Justice Lourie said the approach should be:[154]

1. Does the claimed invention fit within one of the four statutory classes set out in §101 (in the U.S.A: process, machine, manufacture or composition of matter)?

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[149] *CLS in CAFC* per Newman at pp. 1-2. Judge Newman spent much of her judgment explaining the need for clarification on experimental use not being infringement and held that the system, and media claims were all eligible under §101. Lynn and O'Malley held likewise that they were all patent eligible.

[150] with whom four other judges concurred: Dyk, Prost, Reyna and Wallach.

[151] *CLS in CAFC* per Lourie at p. 15.

[152] *CLS in CAFC* per Lourie at p. 16.

[153] *CLS in CAFC* per Lourie at p. 16.

[154] *CLS in CAFC* per Lourie at p. 18.

2. If yes, does the subject matter raise abstractness issues at all? Does the claim pose any risk of preempting an abstract idea? This requires an identification of the idea at risk. Although not required (under US law), claim construction before addressing §101 may be especially helpful.

3. If yes to #2, then does the balance of the claim contain additional substantive limitations that narrow, confine or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract idea itself.[155] (Judge Moore strongly criticized this approach as being inconsistent with precedent that abolished the "heart of the invention" analysis.[156]) Does it confine the claims to a particular, useful application of the principle and does it foreclose from others only the use of that equation in conjunction with all the other steps in their claimed process?[157] Those limitations can also be described as amounting to something significantly more than a patent upon the natural law. Limitations that are merely tangential, routine, well-understood or conventional or which, in practice, fail to narrow the claim relative to the fundamental principle therein cannot confer patent eligibility. Judge Lourie referred to this contribution as "the inventive concept" which was a "genuine human contribution to the claimed subject matter".[158]

4. Section 101 is not a "threshold test" which must always be addressed first by the court.[159] The district courts have a broad discretion to control their dockets and the order of arguments. Section 101 raised questions different from those of §102 (novelty) and §103 (obviousness).

5. Issued patents have a statutory presumption of validity and that includes compliance with §101.[160]

According to Judge Lourie, the abstract idea represented in the claim was reducing settlement risk by effecting trades through a third-party intermediary – a form of escrow.[161] Although the parties agreed that the process had to be implemented by a computer, the balance of the claim did not add anything of substance to the claim.[162] Adding a computer to speed up the performance of an abstract concept does not meaningfully limit claim scope for purposes of patent eligibility.[163] It did not represent a non-trivial, non-conventional contribution nor materially narrow the claims relative to the abstract idea they embrace. Likewise, the use of "shadow credit records" and end-of-

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155 *CLS in CAFC* per Lourie at pp. 18-19.
156 *CLS in CAFC* per Moore at p. 6.
157 *CLS in CAFC* per Lourie at p. 19.
158 *CLS in CAFC* per Lourie at p. 22.
159 *CLS in CAFC* per Lourie at p. 22.
160 *CLS in CAFC* per Lourie at p. 22; Rader C.J. and Linn, Moore and O'Malley agreed at *CLS* per Rader, at p. 26.
161 *CLS in CAFC* per Lourie at p. 25.
162 *CLS in CAFC* per Lourie at p. 25.
163 *CLS in CAFC* per Lourie at p. 27.

day instructions to exchange institutions did not add 'significantly more" to the underlying abstract idea to render it patent eligible.[164]

Judge Lourie held that Alice's patent's *Beauregard*-type claims (that claimed a computer readable storage medium having a program code that, when executed, caused the computer to carry out the Alice process) was not truly drawn to a specific computer-readable medium, but rather to the underlying method and were "merely method claims in the guise of a device"[165] and likewise were patent ineligible as being no less abstract than the method claims. He held likewise with respect to the system claims. Eight of the judges agreed that the method, medium and system claims should be considered together for purposes of §101.

According to Lourie, although Alice's system claims recited tangible devices (a computer, a data storage unit, a first party device and a communications controller), these limitations did not add enough beyond the abstract idea itself to limit the claim to a narrower, patent eligible application of that idea - it might be a Trojan horse designed to enable abstract ideas to slide through the screen of patentability.[166]

Chief Judge Rader[167] held that, based on *Diehr*, a court must consider the actual language of each claim and that it should not strip down, simplify or generalize each claim to remove its concrete limitations until, at its core, something that could be described as abstract idea is revealed.[168] Rader suggested that the test should be whether the claim includes "meaningful limitations restricting it to an application, rather than merely an abstract idea or to a concrete reality or actual application of that idea.[169]

Chief Judge Rader stated that "pre-emption" is only a subject matter eligibility problem when a claim preempts all practical uses of an abstract idea.[170] For Judge Rader, it was important whether the claims tie the otherwise abstract idea to a *specific way* of doing something with a computer, or a *specific computer* for doing something (e.g., if a computer is part of the solution, is integral to the performance of the method, or contains an improvement in computer technology).[171]

Chief Judge Rader believed that the system claims were patent eligible because the claimed "computer" were "machines".[172] He disagreed with Judge Lourie and held that because everything done by a computer could be done by a human, a computer-related invention should not have to do something that a computer does before it can be

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[164] *CLS in CAFC* per Lourie at p. 28.
[165] *CLS in CAFC* per Lourie at p. 31.
[166] *CLS in CAFC* per Lourie at p. 34.
[167] with Linn, Moore and O'Malley concurring.
[168] *CLS in CAFC* per Rader at p. 13.
[169] *CLS in CAFC* per Rader at p. 16.
[170] *CLS in CAFC* per Rader at p. 16.
[171] *CLS in CAFC* per Rader at p. 21.
[172] *CLS in CAFC* per Rader at p. 27.

considered a patent-eligible invention.[173] The Alice system claims cover the use of a computer and other hardware specifically programmed to solve a complex problem.[174]

Chief Judge Rader warned of the effect of Judge Lourie's approach:

> "Labeling this system claim an "abstract concept" wrenches all meaning form those words, and turns a narrow exemption into one which may swallow the expansive rule (and with it much of the investment and innovation in software)."[175]

Chief Judge Rader held that the additional steps were in addition to the escrow and not inherent in it.[176] In his view, the system claims were eligible subject matter.

With respect to the process claims, Chief Judge Rader held that the recited steps were inherent within the concept of an escrow and were not patent eligible.

Judge Moore gave a dissenting opinion (in which Rader, Linn and O'Malley joined) expressing her concern that the abstract idea exception was "causing a free fall in the patent system"[177] and "… if all of these claims, including the system claims, are not patent-eligible, this case is the death of hundreds of thousands of patents, including all business method, financial system, and software patents as well as many computer implemented and telecommunication patents" [178] She said "There has never been a case which could do more damage to the patent system as this one." [179] Judge Moore, an electrical engineer by training, asked, "How can this system, with its first party device, data storage unit, second party device, computer and communications controller, be an "abstract idea"?" [180] Quoting an 1863 case, Judge Moore noted "A machine is a concrete thing, consisting of parts … A machine is not a principle or an idea." [181] She would have allowed the system claims under §101.

Judges Linn and O'Malley issued reasons critical of Judge Lourie's, Chief Judge Rader's and Judge Moore's claim constructions as being contrary to what was agreed upon by the parties in the record and differentiating between the scope of the system and method claims: "The analytic process in which Judge Lourie engages is at odds with the most basic concepts that govern our patent system."[182] They would have allowed all claims as eligible subject matter.[183]

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[173] *CLS in CAFC* per Rader at p. 29.
[174] *CLS in CAFC* per Rader at p. 31.
[175] *CLS in CAFC* per Rader at p. 34.
[176] *CLS in CAFC* per Rader at p. 36.
[177] *CLS in CAFC* per Moore at pp. 1-2.
[178] *CLS in CAFC* per Moore at p. 2.
[179] *CLS in CAFC* per Moore at pp. 2-3, footnote 1.
[180] *CLS in CAFC* per Moore at p. 3.
[181] *CLS in CAFC* per Moore at p. 7.
[182] *CLS in CAFC* per Linn and O'Malley at p. 9.
[183] *CLS in CAFC* per Linn and O'Malley at p. 11.

4.6.3.1.5 CLS Bank International v. Alice Corporation (in U.S. Supreme Court)

On June 19, 2014, the U.S. Supreme Court affirmed the judgment of the CAFC in *CLS v Alice*.[184]

The Supreme Court held that the claims at issue were drawn to the abstract idea of intermediated settlement (the use of a third party to mitigate settlement risk), and that merely requiring generic computer implementation failed to transform that abstract idea into a patent-eligible invention. (This argument seems to be directed more to one of obviousness than patentable subject matter: the addition of a computer to an old concept does not make the subject matter patentable. To do so would be obvious.)

The Supreme Court confirmed that the same analysis as set forth in *Mayo v. Prometheus*[185] should be used for all types of judicial exceptions including abstract ideas:

> "… we set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts... If so, we then ask, '[w]hat else is there in the claims before us?'... To answer that question, we consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application... We have described step two of this analysis as a search for an 'inventive concept'—i.e., an element or combination of elements that is 'sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.'"[186]

Breaking out the *Mayo* questions into their constituent parts:

1. Examine the elements of each claim individually. Is the claim directed to one of those patent ineligible concepts: a law of nature, a natural phenomenon, or an abstract idea?

2. If yes, then examine the claim "as an ordered combination" to determine whether the additional elements "transform the nature of the claim" into a patent-eligible application. This is the search for an "inventive concept", i.e. an element or combination of elements that is "sufficient to ensure that the patent in practice amounts to significantly more than a patent on the ineligible concept itself.

The first question seems odd. It is either a tautology (if the claim is directed to non-statutory subject matter, then it is non-statutory) or is an imprecise way of posing the

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[184] *Alice Corporation Pty. Ltd. v. CLS Bank International et al*, 134 S. Ct. 2347 (2014). ("*CLS in S.Ct*.")
[185] 132 S.Ct. 1289 (2012).
[186] *CLS in S.Ct.* at page 7.

question as to whether the claim, at least in part, is directed to prohibited subject matter (law of nature, a natural phenomenon, or an abstract idea).[187] If it is the latter, such parsing of the claim seems both improper or misdirected (since it is the claim as a whole that defines the invention[188] not a constituent part of a claim – the second part of the test.).

The second question suggests that the second interpretation of the first question is correct and that the first question should have been phrased as:

1. Is the claim in whole or in part directed to a law of nature, a natural phenomenon, or an abstract idea?

Justice Thomas acknowledged that "[a]t some level, all inventions … embody, use, reflect, rest upon or apply laws of nature, natural phenomena, or abstract ideas."[189] But to characterize the application of a law of nature, natural phenomena or abstract idea as a law of nature, natural phenomena or abstract idea confuses two different things: one statutory and the other not. And to look for an abstract idea lying behind the application of an idea, further confuses the analysis, by creating an abstraction of the claimed invention, to determine if there is some law of nature, natural phenomena, or abstract idea, which the claimed invention applies to a practical purpose.

Justice Thomas stated that "[a] claim that recites an abstract idea must include "additional features" to ensure "that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].

Furthermore, Justice Thomas did not provide any real guidance as to how to recognize an "abstract idea": "… we need not labor to delimit the precise contours of the 'abstract ideas' category in this case." [190]

In Alice, the use of generic computer implementation, failed to transform the abstract idea into a patent-eligible invention. [191]

4.6.3.1.6 Decisions post-Alice

Since the *Alice* decision, the USPTO has taken steps to avoid granting patents on those applications containing patent ineligible claims in view of *Alice*. More specifically, the USPTO withdrew notice of allowances for some applications and returned them to the originally assigned examiner for further prosecution, "due to the presence of at least one claim having an abstract idea and no more than a generic computer to perform generic computer functions."[192] This sheds some light on the

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[187] This is consistent with the Preliminary Examination Instructions issued by Andrew Hirshfeld, the Deputy Commissioner for Patent Examination Policy of the USPTO on June 25, 2014 at page 3, directing Examiners to determine whether "an abstract idea is present in the claim".

[188] *Diamond v. Diehr*, 450 U.S. 175, 188 (1981)

[189] *Alice*, 134 S. Ct. at 2347.

[190] *Alice*, 134 S. Ct. at 2357.

[191] *Alice*, 134 S. Ct. at 2357.

[192] http://www.uspto.gov/blog/director/entry/update_on_uspto_s_implementation

USPTO's post-*Alice* patent application review process and how business method claims should be tailored in the future.

Digitech Image Technologies, LLC v. Electronics For Imaging, Inc.[193] is a case decided by the CAFC addressing subject matter eligibility, after the Supreme Court's decision in *CLS v Alice*.

The claims at issue recited a "device profile … comprising … data" and a "method of generating a device profile … comprising: generating … data; and combining said … data into the device profile." The CAFC found the device profile claims invalid for lacking patentable subject matter, because they appear not to require any physical embodiment but to be directed to data structures per se. The CAFC also rejected the method claims for reciting "an ineligible abstract process of gathering and combining data that does not require input from a physical device"[194] and having "nothing in the claim language [that] expressly ties the method to [a physical device]."[195] Arguably, reciting the use of hardware that's meaningfully tied to method steps might have led to a different outcome.

While some commentators are asserting that *Digitech* represents a sweeping application of *Alice* to invalidate patents, some argue that the text of the decision show the rejections are based on old law - data structures and abstract ideas per se are not patent eligible - and do not reflect a post-*Alice* change.[196]

One factor that assists in patentability is the claimed invention is not something that could have been carried out by the human brain. Instead a computer is "integral to the claimed invention, facilitating the process in a way that a person making calculations or computations could not."[197] Another is by establishing that the claims require specific hardware so as not to "preempt every application of the idea".[198]

As pointed out by one set of commentators:

> "In this struggle to characterize the patented technology, an unsurprising pattern emerges: How broadly or narrowly the court defines the idea in any given case will foreshadow the fate of the patent. If the court provides a simple

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193 *Digitech Image Technologies, LLC v. Electronics For Imaging, Inc.*, Case No. 13-1600 (Fed. Cir. July 14, 2014).

194 *Ibid*, at p. 12.

195 *Ibid*, at p. 12.

196 Steven W. Lundberg, "*Digitech Image Technologies, LLC v. Electronics For Imaging, Inc*. – data structures per se not patentable", article, available at http://www.lexology.com/library/detail.aspx?g=52bf1b23-da16-4893-8ebd-3999e1f47f43

197 *Comcast IP Holdings I, LLC v. Sprint Commc'ns Co. L.P.*, No. 12-cv-205, 2014 U.S. Dist. LEXIS 96289 at p. 15 (D. Del. July 16, 2014) (quoting *Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.),* 687 F.3d 1266, 1278 (Fed. Cir. 2012))

198 *DDR Holdings*, 2014 U.S. App. Lexis 22902 at pp. 25-26

characterization of the patented technology, the patent is likely to be held to be ineligible subject matter."[199]

4.6.3.2 USPTO Interim Guidance on Patent Subject Matter Eligibility – Dec. 2014

The USPTO issued their Interim Guidance on Patent Subject Matter Eligibility on December 16, 2015.[200]

According to the USPTO*, Alice Corp* included as abstract ideas:

- fundamental economic practices: intermediate settlement;
- certain methods of organizing human activities: a series of steps instructing how to hedge risk (citing *Bilski*);
- an idea of itself, a principle, an original cause, a motive (citing *Gottschalk v. Benson*); and
- mathematical relationships/formulas (citing *Parker v. Flook* and *Benson*).[201]

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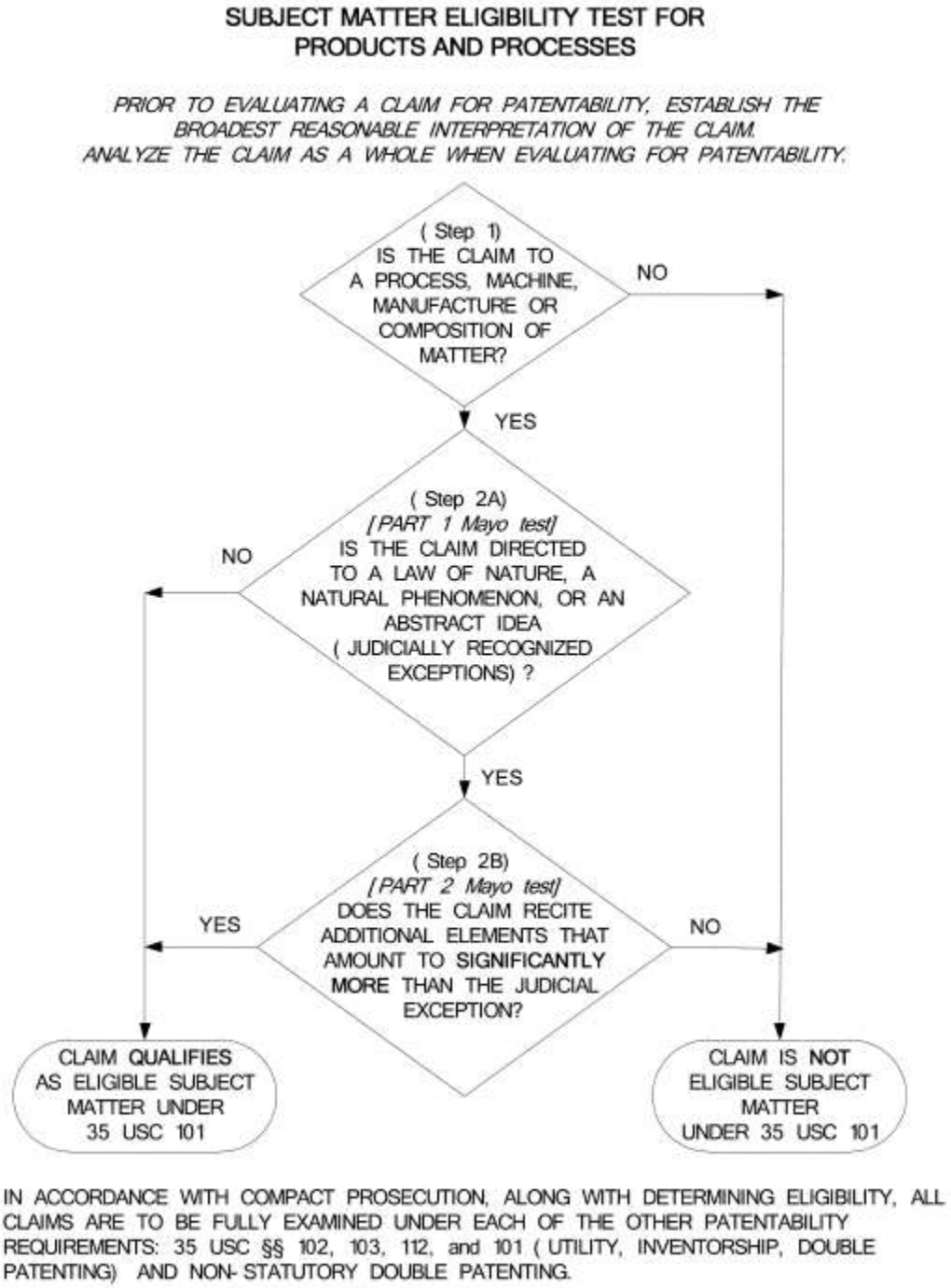
[199] Courtney Quish, Michael Renaud, Matthew Karambelas, and Sean Casey; "Patentability of Software Post-Alice: How Do Courts Determine Whether an Idea is Abstract ?" January 12, 2015 at http://www.mintz.com/newsletter/2015/Advisories/4561-0115-NAT-IP/4561-0115-NAT-IP.pdf

[200] https://www.federalregister.gov/articles/2014/12/16/2014-29414/2014-interim-guidance-on-patent-subject-matter-eligibility

[201] "2014 Interim Guidance on Patent Subject Matter Eligibility", Federal register, Vol. 79, No. 241, December 16, 2014, p. 74619 found at http://www.gpo.gov/fdsys/pkg/FR-2014-12-16/pdf/2014-29414.pdf

The Interim Guidance includes a flowchart for the USPTO test, based on *Alice*:



4.6.3.3 Class 705

The USPTO defines business methods as belonging to Class 705: "Business Method-Related Arts". Class 705 was created in 1997 and by 1998 had 12 examiners.[90] In 2010, over 8,000 applications were being filed per year with over 3,500 Class 705 patents issuing in 2010.[91]

4.6.4 Canada

The Canadian equivalent to the *State Street* application (Canadian Patent Application Number 2,072,904) was abandoned.[97]

Still, Canadian courts have recently recognized the need for patent law to protect novel technologies. In the "*Harvard Mouse*" decision, the Federal Court of Appeal acknowledged, for the first time, the patentability of genetically engineered life forms. In doing so, the Court expressly agreed with the statement that "[t]he language of patent law is broad and general and is to be given wide scope because inventions are, necessarily, unanticipated and unforeseeable".[98]

4.6.4.1 Case Law: Patentable "Art"

As discussed above, the subject matter of patents is restricted. A patent application must be refused if the claim, construed purposively, describes something that is outside the enumerated categories in the statutory definition of "invention".[202]

Also, as previously noted, the *Patent Act* specifically provides that patents are not available in Canada for any mere scientific principle or abstract theorem,[86] and the Supreme Court of Canada has found that patents are not available in respect of professional skills.[87]

It is generally accepted that "method" and "process" are the same thing and that "art" may include either.[203]

In *Tennessee Eastman Co. v. Canada (Commissioner of Patents)*,[104] the Supreme Court of Canada included as patentable "art" a process that:

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90 "Automated Financial or Management Data Processing Methods", USPTO White Paper, <http://www.uspto.gov/web/menu/busmethp/index.html>.

91 http://www.uspto.gov/patents/resources/methods/applicationfiling.jsp

97 I. Caulder, "Software and Business Method Patents – The Latest Developments", paper given at the IT.Can annual meeting October 23-24, 2004, available <http://www.bereskinparr.com/English/publications/pdf/Software-BMPatents.pdf>.

98 *Harvard College v. Canada (Commissioner of Patents)* (2000), 7 C.P.R. (4th) 1 (Fed. C.A.), leave to appeal allowed (2001), 2001 CarswellNat 1194 (S.C.C.), reversed (2002), 2002 CarswellNat 3434 (S.C.C.) at para. 36.

202 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 49.

86 *Patent Act*, subs. 27(8).

87 *Shell Oil Co. v. Canada (Patent Commissioner)*, [1982] 2 S.C.R. 536 (S.C.C.).

203 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 50.

(a) is not a disembodied idea, but has a method of practical application;

(b) is a new and innovative method of applying skill and knowledge; and

(c) has a result or effect that is commercially useful.[204]

In *Shell Oil Company v. Canada (Commissioner of Patents)*,[105] the Supreme Court of Canada again commented on patentable "art" and focused on the practical application of the discovery or idea[205]:

> "... that "art" was a word of very wide connotation and was not to be confined to new processes or products or manufacturing techniques but extended as well to new and innovative methods of applying skill or knowledge provided they produced effects or results commercially useful to the public."

In a more recent Federal Court decision, *Progressive Games, Inc. v. Canada (Commissioner of Patents)*,[106] the Court considered the patentability of a method of playing poker. The claims considered were not limited to a computerized implementation of the method.

In determining whether the method was a patentable "art," Denault J. of the Federal Court held that the method met the first and third criteria from the *Tennessee Eastman* decision. First, it was a "practical application" because there were changes involving the physical manipulation of cards. Second, the method had a result that was commercially useful, as could be seen from the fact that Progressive Games had licensed games played in accordance with the method and earned license fees in the order of $43,000 per month.

Mr. Justice Denault found that the method was not a method of applying skill or knowledge, as contemplated by the *Shell Oil* decision, however, because the changes in the method of playing poker were a contribution or addition to the cumulative wisdom on the subject of games. It did not substantially modify the poker game as it existed nor did it create a new game. Had the method been new and innovative — that is, if the method had met the statutory requirements of novelty and inventive step — then this method "art" may have been patentable.[107]

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104 (1972), [1974] S.C.R. 111.

204 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 50 quoting with approval *Amazon.com, Inc. v. Canada (Attorney General)*, 2010 FC 1011 (F.C. per Phelan J. at para. 52.

105 [1982] 2 S.C.R. 536 (S.C.C.) at 554.

205 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 50 quoting with approval *Amazon.com, Inc. v. Canada (Attorney General)*, 2010 FC 1011 (F.C. per Phelan J. at para. 50.

106 *Progressive Games Inc. v. Canada (Commissioner of Patents)* (1999), 3 C.P.R. (4th) 517 (Fed. T.D.), per Denault, J., affirmed (2000), 9 C.P.R. (4th) 479 (Fed. C.A.).

107 *In obiter*, the Federal Court of Appeal, after noting, like Denault J., that the changes "do not substantially modify the poker game as it is generally known" [at 479] and that the changes were only

In *Lawson*,[206] the Court defined "art" as follows:

> "An art or operation is an act or series of acts performed by some physical agent upon some physical object and producing in such object some change either of character or of condition. It is abstract in that, it is capable of contemplation of the mind. It is concrete in that it consists in the application of physical agents to physical objects and is then apparent to the senses in connection with some tangible object or instrument."

Because a patent cannot be granted for an abstract idea, it is implicit in the definition of "invention" that patentable subject matter must be something with physical existence, or something that manifests a discernible effect or change.[207] This "physicality" requirement cannot however be met merely by the fact that the claimed invention has a practical application.[208]

4.6.4.1.1 The 2011 Amazon.com "One-click" decision

No Canadian jurisprudence determines conclusively that a business method cannot be patentable subject matter.[209] The 2011 decision of the Federal Court of Appeal in *Amazon.com* stands for the proposition that certain business method inventions are patentable.

For questions relating to patentable subject matter, what must be examined is "the subject matter defined by the claim" rather than "the invention" or "what the inventor claims to have invented".[210] The Commissioner's identification of the actual invention is to be grounded in a purposive construction of the patent claims.[211] Purposive construction will necessarily ensure that the Commissioner is alive to the possibility that a patent claim may be expressed in language that is deliberately or inadvertently deceptive. Thus, for example, what appears on its face to be a claim for an "art" or a

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a "slight variation," [at 479] stated, however, that "...we do not want to be taken as deciding that more substantial changes in the existing game would have changed the result." [at 480.]

206 *Lawson v. Canada (Commissioner of Patents)* (1970), 62 C.P.R. 101 (Ex. Ct.) at para. 30, [1970] Ex. C.J. No. 13 (QL) (F.C.),

207 *Canada (Attorney General) v. Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 66 quoting with approval *Amazon.com, Inc. v. Canada (Attorney General)*, 2010 FC 1011 (F.C. per Phelan J. at para. 53.

208 *Canada (Attorney General) v. Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 69 distinguishing *Amazon.com, Inc. v. Canada (Attorney General)*, 2010 FC 1011 (F.C. per Phelan J. at para. 53.

209 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 60.

210 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 41.

211 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at paras. 43 & 47.

"process" may, on a proper construction, be a claim for a mathematical formula and therefore not patentable subject matter.[212]

Asking whether the subject matter is "scientific or technological in nature" is unclear and confusing.[213] This is an example where the use of a tag word may represent an unhelpful distraction. [214]

Just because a business method has a practical embodiment or a "practical application" does not mean that it is patentable subject matter.[215]

The Federal Court of Appeal sent the Amazon one-click patent application back to the Patent Office for continued re-examination. The Patent Office then issued the disputed claims in 2011 without further debate.

4.6.4.2 CIPO Manual of Patent Office Practice

4.6.4.2.1 Chapter 12: Guidance on non-technological fields

Chapter 12 of the Manual of Patent Office Practice deals with "Subject Matter and Utility". The section dealing with business methods is still drafted in the context of before the Amazon.com decisions of the Federal Court and Federal Court of Appeal and is in need of revision to reflect those decisions.

> **"12.04.02 Guidance on non-technological fields**
>
> As noted above, an "art" or "process" that addresses a problem in a non-technological field is, itself, non-statutory.
>
> Fields of human endeavour such as economics, commerce, accounting, record-keeping, marketing, and law are not themselves fields of technology. While it is certainly possible for inventions of relevance to such fields to be patentable (i.e. tools for use in their practice), advances in the concepts of their practice are

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212 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para.44. This comment is troublesome as it appears to ask the Court to look beyond or within the patent claim to determine whether what the inventor <u>really</u> invented is something other than what is claimed. The "pith and substance" of the invention, otherwise killed in *Free World* may have been resurrected.

213 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 56.

214 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 56.

215 *Canada (Attorney General)* v. *Amazon.com, Inc*., 2011 FCA 328 (F.C.A. per Sharlow J.A., Trudel & Stratas JJ.A. concurring) at para. 61. Justice Sharlow's decision then becomes muddled in its thinking:

> "…the difficulty with a bare "practical application" test for distinguishing patentable from unpatentable business methods is highlighted because the particular business method – itself an abstract idea – is realized by programming it into the computer by means of a formula or algorithm, which is also an abstract idea."

Just because a mathematical formula – in isolation - is an abstract idea, its application is not necessarily abstract.

beyond the scope of section 2 of the Patent Act. This exclusion applies to many types of commercial interactions, and in some contexts can be descriptively referred to as a "business method" exclusion as was done in Re Application No. 2,246,933 of Amazon.Com.16[216]

Methods for influencing human interactions or behaviours do not belong to a field of technology. Such methods are implicitly dependent on the subjective interpretations, judgements and value systems of the parties involved, and these are not in any practical sense subject to the laws of science. It can therefore be broadly stated that methods of interpersonal communication and interactions governed by subjective valuations are not statutory. This includes methods for teaching, bartering, trading, selling, advocating, lobbying, etc.

Similarly, methods that are significant only by virtue of human, rather than natural, law do not belong to a field of technology. Thus, a method for filing taxes or for engaging in binding arbitration is not statutory."[217]

4.6.4.2.2 The CIPO 2013 Guidelines on Statutory Subject Matter

In 2013, CIPO issued new guidelines for Statutory Subject Matter. The draft guidelines of 2012 were widely criticized by the IP community on the basis that they appeared to ignore most of the analysis provided by the Federal Court and Federal Court of Appeal in the *Amazon.com* case, focusing heavily on the notion of "inventive concept", and over-reading the Supreme Court of Canada's obviousness test in *Apotex Inc. v. Sanofi-Synthelabo Canada Inc.*[218] It remains to be seen how the 2013 Guidelines will be applied by examiners and received by practitioners.

4.6.4.2.2.1 Inventive concept

In *Sanofi*,[219] Mr. Justice Rothstein adopted the United Kingdom courts' four-step approach to determine obviousness as expressed in the Windsurfing case, and as updated in the *Pozzoli* case[220]:

(1) (a) Identify the notional "person skilled in the art";

(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim in question or, if that cannot readily be done, construe it;

The *Windsurfing* approach was developed in the context of the *U.K. Patents Act* 1977 which provides that a patent may only be granted for an invention "if it involves an

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216 *Re Application No. 2,246,933 of Amazon.Com* (2009) C.D. 1290 at paragraphs 140-149.
217 http://www.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03153.html#n12_04_02
218 2008 SCC 61 [Sanofi]
219 [2008] 3 S.C.R. 265, 2008 SCC 61.
220 *Pozzoli SPA v. BOSO SA,* [2007] F.S.R. 37, [2007] ENCA Civ 588.

inventive step".[221] There was no corresponding statutory requirement in the "Old" Canadian *Patent Act*, under which *Sanofi* was decided.

In *Sanofi*, the patent was a selection patent and claimed a different version of an old compound: the enantiomer. In fact, the invention was the newly discovered advantageous features of that enantiomer. Therefore, Justice Rothstein had to look beyond the patent claim itself to determine what was the invention.

By adopting a test that permits one to find "the inventive concept" elsewhere than in the claims, it appears that the Supreme Court may have resurrected "the spirit of the invention" or the ghost of the "pith and substance of the invention" from older cases,[222] which concepts had been expressly put to death in the consideration of claim construction in the *Free World*[223] case.

According to the *Amazon.com* decision, determining patentable subject matter solely on the basis of inventive concept is "an analysis that is incorrect in law".

Thankfully, the CIPO 2013 Guidelines, unlike the predecessor 2012 draft Guidelines, do not discuss "inventive concept" at all. Instead, the Guidelines focus on the notion that compliance with section 2 of the *Patent Act* is to be assessed based on the essential elements determined through purposive construction.

4.6.4.2.2.2 Physical existence, or manifests a discernible effect or change and technical result

The CIPO 2013 Guidelines for Examination Practice Respecting Computer-Implemented Inventions provide:

> " ...[W]here a computer is found to be an essential element of a construed claim, the claimed subject matter will generally be statutory. A good indicator that a claim is directed to statutory subject-matter is that it provides a technical solution to a technical problem.
>
> Where, on the other hand, it is determined that the essential elements of a construed claim are limited to matter excluded from the definition of "invention" (as noted above), the claim is not compliance with section 2 of the *Patent Act*, and consequently, not patentable."[224]

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[221] U.K. *Patents Act 1977, s*ection 1(1)(b).

[222] See, for example, *Smith Incubator Co. v. Seiling* [1936] S.C.R. 251 per Rinfret J. at 259; and *C. Ven Der Lely N.V. v. Bamfords Ltd.* [1963] R.P.C. 61 at 75 (H.L. per Lord Reid).

[223] *Free World Trust v. Électro Santé Inc. et al.,* (2001) 9 C.P.R. (4th) 168 (S.C.C. per Binnie J.) at 184, para. 31(d):

> "The language of the claims thus construed defines the monopoly. There is no recourse to such vague notions as the "spirit of the invention" to expand it further."

[224] Canadian Patent Office, "Examination Practice Respecting Computer-Implemented Inventions", PN 2013-03 at 2.

Later on, with reference to determining whether the subject-matter is patentable, the Computer-Implemented Inventions Guideline outlines factors that assist in determining whether the problem being solved is a "computer problem", that is a problem with the operation of a computer, versus a "non-computer problem", where the solution to the problem may be applied by a computer:

> Factors that may indicate the existence of a "computer problem" include:
>
> - the description details a specific problem with the operation of a computer;
> - the solution to the problem involves controlling a chip, system component or technical architecture element such as through firmware (embedded software);
> - the description emphasizes challenges or deficiencies in prior computers;
> - a significant level of detail is devoted to describing technical details, such as the algorithm or logic performed by the computer.
>
> Factors that may suggest that the problem was not a "computer problem" include:
>
> - explicit statements in the description suggesting a problem other than a "computer problem";
> - the absence of any explicit indication in the application that any practical problems relating to the operation of a computer were overcome;
> - a relative absence of technical details, despite an indication in the description that the solution be implemented on a computer.[225]

The “solution to a technical problem” is contrary to the *Amazon.com* decision, however the Guidelines continue to use this as a means of determining the purposive construction of the claims. Ultimately, the Guidelines conclude that where the computer cannot be altered or replaced in a claim without fundamentally changing the way the invention operates, or where the computer is necessary to solve the problem addressed by the invention, the computer may be an essential element of the claim.

4.6.4.3 Some Practical Consequences on Pursuing Business Method Patents in Canada

The Canadian position on business method patentability appears to be approaching the U.S. position, but it is not yet as well developed. Until the Canadian position catches up with the U.S., a “conservative” approach to claim drafting of business methods is recommended. Specifically, the conservative approach would involve the drafting of claims, if possible, as computer software method or article claims.

Moreover, consideration should be given as to where a business method invention might be implemented. This is particularly so for e-commerce business

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[225] Canadian Patent Office, "Examination Practice Respecting Computer-Implemented Inventions", PN 2013-03 at 4, at www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr03627.html

method inventions. For example, if it might be done, in some part, over the Internet, then the claims should be drafted with a view to having the acts of infringement occur in jurisdictions in which patent protection will be sought, and where patents are enforceable — that is, the claims should be drafted so that infringement is irrespective of the server location.

4.7 Conclusions

The United States has set the trend in the last decade for opening the doors of the Patent Office to software-related patents. Other countries such as Japan and Korea are following suit, and the rest of the world is likely not far behind. With a chapter in the *Manual of Patent Office Practice* dedicated to computer-implemented inventions, Canada is becoming more permissive in terms of subject matter.

The patentability of business methods, be they computerized or not, creates a whole new frontier for patent law, as the world finds intellectual property to be the “oil” of the digital economy