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LIMITING THE BUSINESS METHOD PATENT: A COMPARISON AND PROPOSED ALIGNMENT OF EUROPEAN, JAPANESE AND UNITED STATES PATENT LAW

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"That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition. . . ."[1]

INTRODUCTION

Recently, several writers have turned their attention to the patentability of methods of doing business in the United States. In addition to numerous law journal articles,[2] several columns in magazines and newspapers discuss recent acquisitions of patents for inventions such as computer-to-computer international trade over the Internet,[3] a method of trading mutual funds,[4] and the process of "upselling," which is best described as a method of squeezing a little extra change out of fast-food customers by enticing them with a larger

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1. Letter from Thomas Jefferson to Issac McPherson (Aug. 13, 1813), *reprinted in* 13 The Writings of Thomas Jefferson (Andrew A. Lipscomb et al. eds., 1903), at 333-34.

2. *See, e.g.*, Jeffrey A. Berkowitz, *Business Method Patents: Everyone Wants to be a Millionaire*, *in* Patenting the New Business Model: Building Fences in Cyberspace 7 (2000); Larry J. Guffey, *Business Method Patents: What They Are – Why Clients and Service Providers Should Care*, 33 Md. B.J. 25, 26 (2000); Peter H. Kang & Kristin A. Snyder, *A Practitioner's Approach to Strategic Enforcement and Analysis of Business Method Patents in the Post-State Street Era*, 40 IDEA 267 (2000); Leo J. Raskind, *The* State Street Bank *Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 61, 69-70 (1999).

3. William M. Bulkeley, *E-Business: A Billion-Dollar Patent?: Software Developer is Seeking to Protect Process Using Internet for Foreign Trade*, Wall St. J., Aug. 28, 2000, at A12 (discussing a pending patent application for "a process for carrying out an international transaction . . . using computer-to-computer communication").

4. Aaron Lucchetti, *Patent Poses Problem for AMEX Exchange-Traded Funds*, Wall St. J., Sept. 20, 2000, at B14; U.S. Patent No. 5,806,048 (issued Sept. 8, 1998) (claiming an "open end mutual fund securitization process").

order of fries, or an extra chicken nugget.[5] Patent law, not generally recognized as a hot topic, has been made so by the public's dismay over the recent exploitation of patent protection for business methods. The number of patent applications being filed makes the pursuit of business method patents resemble a twenty-first century land grab.[6] While some people have embraced the revolution,[7] many others ask why, when many of these business methods have been used before, should our government allow such business methods to become private intellectual property?

Resistance to the expansion of patent protection into the financial sector reflects traditional notions that patents were meant to protect advancements in technology, which specifically encompassed only "manufactures and machines."[8] Society's acceptance of government granted monopolies solely in the area of technology derived from England's Statute of Monopolies,[9] which later influenced the formation of the federal patent system in the United States.[10] Since that time, however, how technology is defined, and whether the definition should limit the scope of patentable subject matter in the United States, have become increasingly difficult questions. The Court of Appeals for the Federal Circuit ("CAFC") recently suggested that patentable subject matter clearly embraces methods of doing business,[11] which indicates that the scope of patentable subject matter in the United States has evolved beyond mere technological innovation. This evolution can be traced to the breakdown of distinctions between inventions relating to tangible machines and merely conceptual inventions,[12] which in turn has played a substantial part in the acceptance of patents for computer-related inventions.[13]

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5. Julia Angwin, *'Business Method' Patents, Key to Priceline, Draw Growing Protest*, Wall St. J., Oct. 3, 2000, at B1 ; U.S. Patent No. 6,119,099 (issued Sept. 12, 2000) (claiming a "method and system for processing supplementary product sales at a point-of-sale terminal").

6. *See* Marc E. Brown, *Internet Patents: A Virtual Land Grab*, Elec. Bus., Jan. 1, 2000, at 26; Eric J. Sinrod, *High-Tech Patent Litigation is High-Stakes Business*, Upside Today, Jan. 23, 2001.

7. *See, e.g.*, Christopher Price, *A Pitch for the Skies*, Nat'l Post, July 31, 2000, at C2 (discussing Jay Walker's company, Walker Digital, which has obtained numerous business method patents).

8. Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 Berkeley Tech. L.J. 577, 585 (1999).

9. *Id.*

10. *See* Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents (5 Part I)*, 78 J. Pat. & Trademark Off. Soc'y 615, 626-28, 631 (1996).

11. *See* State St. Bank & Trust v. Signature Fin. Group, Inc., 149 F.3d 1368, 1377 (Fed. Cir. 1998) (dismissing the exception to patentability of business methods).

12. *See* Merges, *supra* note 8, at 581-82.

13. *See infra* notes 76-85 and accompanying text.

What constitutes a business method, in the patent law sense, and how broadly the scope of patent protection should extend for this subject matter, are questions yet to be adequately resolved.[14] Although the basis for the existence of business method patents is a controversial issue, companies in the United States are clearly eager to obtain them.[15] Fearful that countries failing to grant broad protection will fall far behind in the rapidly developing global economy, some suggest that the world should rally around the United States' exploitation of proprietary subject matter.[16] Those making such suggestions, however, have failed to consider whether patents for business methods are justifiable. Furthermore, these suggestions are likely being offered merely in response to recent instances of international patent law harmonization in biotechnology and computer-related inventions.[17]

This Note argues that patents for business methods are not justifiable under any existing policy and business method patents may actually be economically detrimental. Furthermore, the scope of patent protection in the United States has outgrown its constitutional roots, mainly due to a judiciary that has been increasingly deferential

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14. *See, e.g.*, Rochelle Cooper Dreyfuss, State Street *or Easy Street: Is Patenting Business Methods Good for Business?*, *in* U.S. Intellectual Property: Law and Policy (Hugh Hansen ed., forthcoming 2001) (manuscript at 10-21, on file with the Fordham Law Review) (discussing several interpretations of the *State Street* decision that would have a potentially limiting effect on the scope of patentability for business methods); Guffey, *supra* note 2, at 26 (defining business methods as "utility patent[s] whose subject matter, or the nature of the invention for which a patent has been granted, is 'a method of doing or conducting business'"). The 106th Congress introduced a bill proposing that business methods be defined as:

> (1) a method of (A) administering, managing, or otherwise operating an enterprise or organization, including a technique used in doing or conducting business; or (B) processing financial data; (2) any technique used in athletics, instruction, or personal skills; and (3) any computer-assisted implementation of a method described in paragraph (1) or a technique described in paragraph (2).

H.R. 5364, 106th Cong. (2d Sess. 2000).

15. *See supra* note 6 and accompanying text.

16. James P. Mitchiner, *Patenting of Methods of Doing Business in European Patent Convention and Allied Countries Contrasted with the Decision of the U.S. Federal Court of Appeal,* State Street Bank v. Signature Financial Group, *in* Patenting the New Business Model: Building Fences in Cyberspace 377 (2000) (suggesting that a failure by the EPO to grant patent protection for business methods will give United States businesses a competitive edge); Tamara Loomis, *While Increasingly Common in U.S., Not So in Europe: Business-Method Patents*, N.Y. L.J., Jan. 4, 2001, at 5 (discussing fear of companies in Europe that there is "not a level playing field"). *But see* Michael North, *The U.S. Expansion of Patentable Subject Matter: Creating a Competitive Advantage for Foreign Multinational Companies?*, 18 B.U. Int'l L.J. 111, 115-16 (2000) (arguing that the United States should curtail the expansiveness of its patentable subject matter because "differing standards of patentable subject matter between countries may create an uneven playing field between competing national and international companies").

17. *See infra* notes 181-82 and accompanying text.

to the existence of proprietary rights.[18] More properly, the scope of patent protection should be more clearly defined through legislation that will align it with the practices of the European and Japanese Patent Offices.

Part I of this Note provides a comparative overview of the patent laws in the United States, Europe and Japan, with a focus toward the evolution of protection for business methods. Part II discusses the propriety of such patents in light of basic patent policies, considers the global effects of inconsistent patent laws, and inquires whether a patent system confined to purely technological advancements would be capable of encompassing protection for business methods. Finally, Part III suggests that the decision in *State Street Bank v. Signature Financial Group, Inc.*[19] unjustifiably expands the scope of patentable subject matter to such a point that it reduces considerations of patentability in the United States to a minimal determination of utility and novelty. This extension has blurred acceptable notions of the kinds of innovations that should be protected. Part III concludes that the scope of patentability should be curbed and clarified by language in § 101 of the Patent Act that would align United States patent law with patent law in Europe and Japan.

I. THE EVOLUTION OF BUSINESS METHOD PATENTS IN THE UNITED STATES, EUROPE AND JAPAN

The process for obtaining a patent in the United States, Europe, or Japan begins with the submission of a patent application to the United States Patent and Trademark Office ("PTO"), European Patent Office ("EPO"), or Japanese Patent Office ("JPO"), respectively.[20] Although there are minor differences between the patent offices' procedures, the inventor generally must make or authorize the patent application, which must contain a specification of the invention, a drawing of the invention if appropriate, and in the United States, an oath or declaration by the inventor that she believes herself to be the first inventor of the invention for which she is seeking a patent.[21]

The specification consists primarily of a written description of the invention and a list of definitions, referred to as "claims," of what the inventor professes to have invented.[22] The written description must

18. *See* Rebecca S. Eisenberg, *Analyze This: A Law and Economics Agenda for the Patent System*, 53 Vand. L. Rev. 2081, 2083-84 (2000).

19. 149 F.3d 1368 (Fed. Cir. 1998).

20. The Patent Cooperation Treaty allows for the submission of an International Patent Application under which a search of prior art in any of the signatory countries can be requested; discussion of this process, however, is beyond the scope of this note. *See* Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645.

21. 35 U.S.C. § 111 (1994); European Patent Convention, Oct. 5, 1973, art. 78, 13 I.L.M. 268; Japan Patent Law, Law No. 121 of 1959, art. 36; *see also* Herbert F. Schwartz, Patent Law & Practice 9 (2d ed. 1995).

22. *See* 35 U.S.C. § 112 (1984); Schwartz, *supra* note 21, at 11.

be set forth "in such full, clear, concise, and exact terms as to enable any person skilled in the [pertinent] art" to practice the invention.[23] The description also names the parts of the invention, "describes how they work; and illustrates how they work together to perform the invention's function."[24] The requirement largely ensures that the public, in exchange for its grant of exclusionary rights to the inventor, receives the full benefit of the invention after the patent expires.[25] Patent claims, unlike the written description, do not describe the invention but define the boundaries of the patent's proprietary right; they are "the essence of the legal right granted by a patent."[26]

Patents are obtained through a process referred to as "prosecution."[27] Prosecution begins with the submission of an application to the Patent Office for review by a patent examiner.[28] The examiner inspects the application to insure that "it is clear enough to be examined" and claims only one invention.[29] After determining that the application satisfies these requirements, the patent examiner then conducts a search for any prior art that may anticipate the applicant's invention.[30] The prosecution of a patent application takes an average of two to three years, during which time the examiner and patent applicant engage in a series of negotiations to ultimately arrive at a decision by the Patent Office that the patent application should either be rejected or permitted to issue as a patent.[31] The applicant may appeal a final rejection of his or her patent application.[32]

A fundamental policy behind the granting of patents is the need to promote the creation and disclosure to the public of novel innovations in technology.[33] In the United States, for example, this policy is expressed through the Constitution,[34] which grants Congress the power to create limited monopolies for the purpose of promoting science and the useful arts.[35] In exchange for the creation and

23. 35 U.S.C. § 112; *see also* European Patent Convention, Oct. 5, 1973, art. 78(3), 13 I.L.M. 268; Japan Patent Law, Law No. 121 of 1959, art. 36(4); Schwartz, *supra* note 21, at 11.

24. Robert Patrick Merges, Patent Law and Policy: Cases and Materials 14 (2d ed. 1997).

25. *Id.* at 657-58.

26. *Id.* at 13.

27. *Id.* at 35.

28. *Id.* at 36; Schwartz, *supra* note 21, at 14.

29. Schwartz, *supra* note 21, at 14.

30. *Id.*

31. Merges, *supra* note 24, at 36.

32. *Id.* at 37.

33. Raskind, *supra* note 2, at 69-70.

34. Section 8, clause 8 of the Constitution gives Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, § 8, cl. 8.

35. *Id.*

disclosure of new and useful inventions, inventors obtain a limited period during which they may exclude others from making, using, selling, or importing the invention so that they may at least recoup their research and development costs.[36] Under this economic model, patents should only be granted in areas where there would be little or no incentive to create without a resulting proprietary right. The need for incentives is constantly opposed by the fundamental desire, expressed for example in the First Amendment, for the free exchange of information.[37] In the past, the Supreme Court recognized that "the stringent requirements for patent protection seek to assure that ideas in the public domain remain there for the free use of the public."[38] More recently, the rising importance of patent rights, both nationally and internationally, has led courts in the United States to adopt a less critical approach to the expansion of the scope of patentability.[39] The following three sections summarize the substantive aspects of patent law in the United States, Europe and Japan, with a focus toward the development of patent rights for methods of doing business.

A. *Protection of Business Methods in the United States*

Pursuant to the authority granted by the Constitution,[40] Congress enacted the Patent Act of 1952, which enables anyone to secure a patent for "invent[ing] or discover[ing] any new and useful process, machine, manufacture, or composition of matter."[41] To protect an invention with a patent, the invention must reside within one of these four classes of subject matter listed in 35 U.S.C. § 101.[42] Courts have consistently interpreted each class of patentable subject matter broadly.[43]

In addition, the patent application must comply with the rest of the statutory provisions of United States patent law. These "technical" requirements for patentability are novelty, non-obviousness and utility.[44] An invention is novel if the inventor seeking the patent for the invention is the first to disclose the claimed subject matter.[45] To determine whether the invention is novel, the PTO conducts a search

36. Raskind, *supra* note 2, at 70 ("[T]he basic theoretical model addressing the function of patents states that the patent serves as an incentive to induce the requisite sunken costs . . . .").

37. U.S. Const. amend. I.

38. Aronson v. Quick Point Pencil Co., 440 U.S. 257, 262 (1979).

39. *See* Dreyfuss, *supra* note 14 (manuscript at 23).

40. U.S. Const. art. I, § 8, cl. 8; *see supra* notes 33-36 and accompanying text.

41. 35 U.S.C. § 101 (1984).

42. *Id.* The only statutorily defined class of subject matter is a process, which is ambiguously described as a "process, art or method." 35 U.S.C. § 100 (1994).

43. *See, e.g.*, Diamond v. Chakrabarty, 447 U.S. 303, 311 (1980) (holding that a man-made living organism constitutes a "composition of matter" and is thus patentable subject matter); Eisenberg, *supra* note 18, at 2083-84.

44. *See* 35 U.S.C. §§ 101-103 (1994 & Supp. 1998).

45. *See* Schwartz, *supra* note 21, at 51-52.

for any relevant prior art that may anticipate the applicant's invention.[46] If the invention was known or used by another in the United States, or published anywhere in the world before the application was filed, then the invention is said to be anticipated and the application will be rejected.[47] The application will also be rejected if the inventor, more than one year before filing the patent application, used or offered to sell the invention in the United States, or disclosed the invention in a publication in any country.[48] Examples of prior art that may anticipate an invention include an article published in a Russian magazine,[49] a doctoral thesis indexed in the library of a German university,[50] and the public use of an invention by the inventor's wife.[51]

The prior art is also relevant in determining whether an invention is obvious.[52] The PTO compares differences between the claimed invention and the prior art as viewed by a person of ordinary skill in the art.[53] If the prior art would suggest to one of ordinary skill in the art that someone should make the claimed invention, then the application will be rejected for obviousness. The inquiry into an invention's obviousness essentially determines "whether an invention is a big enough technical advance to merit the award of a patent."[54]

Historically, the applicant's burden to establish utility has been minimal.[55] Some early courts felt that the term "useful" in the patent

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46. *Id.* at 14-15, 52.

47. 35 U.S.C. § 102(a) (1994); *see also* Schwartz, *supra* note 21, at 52-56.

48. 35 U.S.C. § 102(b); *see also* Schwartz, *supra* note 21, at 64-68. This one year period is often referred to as a "grace period," during which an inventor or a third party may disclose an invention without the inventor losing the right to obtain a patent. Merges, *supra* note 24, at 226. Japan permits a similar grace period of six months in certain situations. *See infra* notes 157-58 and accompanying text. Europe grants a six-month grace period only if an invention is stolen or displayed at an exhibition licensed by the European Patent Office. *See infra* note 126 and accompanying text.

49. Titanium Metals Corp. v. Banner, 778 F.2d 775 (Fed. Cir. 1985).

50. *In re* Hall, 781 F.2d 897, 898 (Fed. Cir. 1986).

51. Egbert v. Lippmann, 104 U.S. 333, 335 (1881).

52. *See* 35 U.S.C. § 103 (1994 & Supp. 1998).

53. Graham v. John Deere Co., 383 U.S. 1, 17 (1966) ("Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved."); *see also* Schwartz, *supra* note 21, at 58-64.

54. Merges, *supra* note 24, at 479.

55. *See* Lowell v. Lewis, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817) (No. 8568); Bedford v. Hunt, 3 F. Cas. 37, 38 (C.C.D. Mass. 1817) (No. 1217). Some commentators encourage such a minimalist approach, arguing that, at least in the area of chemical patents, a better approach to utility would be to allow inventors "to patent a novel, nonobvious chemical" when an end product is in fact produced, regardless of whether "practical utility for the end product" has been shown. Merges, *supra* note 24, at 197 (quoting Note, *Requirements for Patenting Chemical Intermediates: Do They Accomplish the Statutory Goals?*, 29 St. Louis U. L.J. 191 (1984)). Since 1817, however, courts have interpreted utility as a separate requirement that must be specifically asserted for an invention to be patentable. *See*

statute meant only that "the invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society."[56] Later, the basic test for utility was held to be whether the invention is "capable of being used to effect the object proposed."[57] Presently, the PTO Manual of Patent Examining Procedure provides that if the applicant asserts any specific utility that would be credible to one of ordinary skill in the art then the application should not be rejected for lack of utility.[58] The minimalist approach to the utility standard, however, has generally been tempered by a belief that patentable inventions were unavoidably bound to notions of tangibility and technology.[59]

Once a patent application meets the requirements of the Patent Act, the granted patent provides the owner with the right to exclude others from making, using, selling, or importing the claimed invention for twenty years from the date the application was filed, or the date from which the application claimed priority.[60]

Although the Supreme Court broadly construed the classes of patentable subject matter by stating that, "Congress intended statutory subject matter to 'include anything under the sun that is made by man,'"[61] the Court has also consistently maintained that "laws of nature, physical phenomena, and abstract ideas" are per se unpatentable.[62] Postulations, such as Einstein's theory of relativity or Newton's notion of the laws of gravity, which would arguably fall into

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Lowell, 15 F. Cas., at 1019.

56. *Lowell*, 15 F. Cas. at 1019.

57. Mitchell v. Tilghman, 86 U.S. 287, 396 (1873).

58. U.S. Dep't of Commerce Pat. & Trademark Off., Manual of Patent Examining Procedure, § 706.03(a)(1) (7th ed. 1998). Problems with utility most commonly arise in cases involving chemical compound claims and, more recently, biotechnology. *See, e.g.*, Brenner v. Manson, 383 U.S. 519, 536 (1966) (rejecting the argument that a process for making a chemical compound was useful because a related substance was already known to have a similar utility). *But see In re* Brana, 51 F.3d 1560, 1568 (Fed. Cir. 1995) (holding that showing successful test results coupled with evidence that structurally similar compounds had known utility was sufficient to establish usefulness of the claimed invention).

59. *See* Donald S. Chisum, 1 Chisum on Patents § 1.03[6] (2000); *see, e.g.*, *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (holding that "a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means" produces a "useful, concrete, and tangible result"); Diamond v. Diehr, 450 U.S. 175, 184 (1981) (stating that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines" (quoting Gottschalk v. Benson, 409 U.S. 63, 70 (1972))). Judge Newman's dissent in *In re Schrader* clearly articulated the necessity of physical utility when she stated that "the patent system is directed to tangible things and procedures." *In re Schrader*, 22 F.3d 290, 298 (Fed. Cir. 1994) (Newman, J., dissenting).

60. 35 U.S.C. § 154 (1984 & Supp. 2000).

61. Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82d Cong. (2d Sess. 1952); H.R. Rep. No. 1923, 82d Cong. (2d Sess. 1952)).

62. *Id.*

all three banned categories, would therefore not be patentable.[63] The social policy underlying the granting of patents makes this position understandable. Namely, patents provide "an incentive for the outlay of the time and the technical skill . . . central to the development of new technology."[64] Patents are fundamentally a contract, whereby in exchange for the disclosure of a novel invention, the government grants inventors a limited monopoly to exclude others from using, making, selling, or importing an invention.[65] Such a policy serves the primary goal of the Constitution's intellectual property clause by "promot[ing] the Progress of Science and useful Arts."[66] The protection of abstract ideas or laws of nature would work against this policy by restraining use of "the basic tools of scientific and technological work" that are necessary to promote the progress of science.[67]

As an extension to the ban on abstract ideas, the courts more specifically defined certain categories of discoveries that are unpatentable. Two prominent examples are discoveries relating to methods of doing business and computer programs.[68] The business method exception originated in *Hotel Security Checking Co. v. Lorraine Co.*[69] The court in that case reasoned that "the patent system was meant to protect *technology* . . . rather than pure concepts."[70] Although later cases recited the business method exception as a basis for rejecting claims, the claims were in reality most often rejected because of lack of novelty, obviousness, or a failure to demonstrate tangible utility.[71]

The reluctance of courts to consider concepts, or mere principles, as patentable subject matter was similar to their early treatment of

63. *Id.*

64. Raskind, *supra* note 2, at 70.

65. *See supra* notes 33-36 and accompanying text.

66. U.S. Const. art I, § 8, cl. 8.

67. Gottschalk v. Benson, 409 U.S. 63, 67 (1972).

68. *See* Chisum, *supra* note 59, at §§ 1.03[5]-[6]; *see also Gottschalk*, 409 U.S. at 71-72 (holding that a process involving the use of a mathematical algorithm in conjunction with a digital computer is not patentable).

69. 160 F. 467, 469 (2d Cir. 1908) ("A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretations of the term, an art."); *see also Ex parte* Turner, 1894 Dec. Comm'r Pat. 36, 37-38 (1894) (holding that "a plan or theory of action which, if carried into practice, could produce no physical results proceeding direct from the operation of the theory or plan itself is not an art within the meaning of the patent laws").

70. Merges, *supra* note 8, at 581.

71. State St. Bank v. Signature Fin. Group, Inc., 149 F.3d 1368, 1376 (Fed. Cir. 1998) (citing Loew's Drive-in Theaters v. Park-in Theaters, 174 F.2d 547, 552 (1st Cir. 1949); *In re* Howard, 394 F.2d 869, 870 (C.C.P.A. 1968); *In re* Patton, 29 C.C.P.A. 982, 127 F.2d 324, 327-38 (C.C.P.A. 1942); *In re* Wait, 22 C.C.P.A. 822, 73 F.2d 982, 983 (C.C.P.A. 1934); Berardini v. Tocci, 190 F. 329, 332 (C.C.S.D.N.Y. 1911)); Raskind, *supra* note 2, at 61.

processes, which remained unpatentable until the late 19th century.[72] Courts early on rejected process claims if "divorced from any particular apparatus" because they were equated with disembodied principles.[73] Eventually, a process came to be seen as "a mode of treatment of certain materials to produce a given result. [A process] is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing"[74] and is distinguishable from a concept, or principle, which consists of the "useful result or effect itself."[75]

The opposition to patents for conceptual inventions began to fade with the acceptance of claims for computer programs.[76] In *Diamond v. Diehr*,[77] the applicant claimed a method for curing rubber by employing a computer program to monitor the temperature of the rubber as it cooled.[78] Rather than focusing solely on the algorithm employed by the invention, the Supreme Court found it more appropriate to consider whether the inventor claimed the algorithm in the abstract or as part of an invention, which applied the algorithm "in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect."[79] The Court upheld the patent, even though it involved the use of a mathematical formula, because it was directed towards a process which transformed "an article 'to a different state or thing.'"[80] Despite the holding in *Diehr*, the PTO continued to reject claims for software-related inventions.[81] Finally, after the CAFC decision in *In re Alappat*,[82] the PTO removed its opposition to patenting software-related inventions. In *Alappat*, the CAFC reaffirmed *Diehr* by finding that a software-related invention may be patentable if the invention "cover[s] a useful application of technology," and is not simply "directed to a disembodied mathematical concept, law of nature or abstract idea."[83] The decision substantially dissolved the courts'

72. Merges, *supra* note 8, at 581.
73. Chisum, *supra* note 59, at § 1.03[2][a].
74. Cochrane v. Deener, 94 U.S. 780, 788 (1876).
75. Chisum, *supra* note 59, at § 1.03[2].
76. *See* Merges, *supra* note 8, at 582. Notably, just prior to accepting the patentability of computer programs, the Supreme Court acknowledged the broad scope of patentable subject matter in *Diamond v. Chakrabarty*, which held that living organisms could be patented. Diamond v. Chakrabarty, 447 U.S. 303 (1980).
77. 450 U.S. 175 (1981).
78. *Id.* at 177.
79. *Id.* at 192.
80. *Id.* at 184 (quoting Gottschalk v. Benson, 409 U.S. 63, 70 (1972)).
81. Gregory J. Maier & Robert C. Mattson, State Street Bank *in the Context of the Software Patent Saga*, 8 Geo. Mason L. Rev. 307, 326 (1999). The authors suggest that the PTO's position against software-related patents arose from the difficulty in examining such applications and the lack of federal funding for expansion of the resources needed to handle the increase in such applications. *Id.* at 309-10.
82. 33 F.3d 1526 (Fed. Cir. 1994).
83. Maier & Mattson, *supra* note 81, at 326.

apprehension to allowing patents for the pure application of a concept. Eventually, the PTO adopted the Guidelines for Computer-Related Inventions, which confirmed the patentability of computer programs.[84]

The PTO's acceptance of patents for computer programs helped close the door on the courts' ability to distinguish between concepts and machines, and thus opened the door for the patenting of business methods.[85] In *State Street Bank & Trust v. Signature Financial Group, Inc.*,[86] the CAFC broadly construed the classes of subject matter under § 101, and upheld the validity of software-related patents.[87] The patent in *State Street* involved a "Hub and Spoke" system used as an "administrator and accounting agent for mutual funds."[88] The district court granted State Street Bank summary judgment on the basis that Signature's patent was invalid.[89] The district court determined that the invention was unpatentable because it was directed to a process falling into either the "mathematical algorithm"[90] or "business method"[91] exception to patentable subject matter.[92] The CAFC reversed the decision first by construing the invention as a machine rather than a process.[93] Furthermore, the court denied that the algorithm and business method exceptions ever existed and held that the invention involved in the patent should be treated the same as any other invention which falls within the four classes of patentable subject matter.[94]

While the portion of *State Street* which rejected the mathematical algorithm exception[95] could have been limited to a selective expansion of the scope of patentable subject matter protection, the court, in order to find business methods equally patentable, essentially rendered the subject matter classes in § 101 meaningless.[96] After affirming the broad interpretation of § 101 and the decision to treat computer-related inventions the same as any other patentable subject matter, the CAFC swiftly decided to extend this treatment to methods of doing business. The court simply concluded that "the Patent Act

84. *Id.* at 330-31.
85. Merges, *supra* note 8, at 586.
86. 149 F.3d 1368 (Fed. Cir. 1998).
87. *Id.* at 1373-75; Maier & Mattson, *supra* note 81, at 331-33.
88. *State Street*, 149 F.3d at 1370. In a "Hub and Spoke" system, the mutual funds represent the spokes and are pooled together in an investment portfolio known as the "Hub." *Id.* at 1371. The invention at issue allowed for an investment administrator to determine the daily allocations among the spokes of the portfolio. *Id.*
89. *Id.* at 1370.
90. *See supra* note 68 and accompanying text.
91. *See supra* notes 69-71 and accompanying text.
92. *State Street*, 149 F.3d at 1372.
93. *Id.* at 1371.
94. *Id.* at 1373-77.
95. *Id.* at 1373-75.
96. *Id.* at 1375-77.

authorizes patents, including business method patents."[97] Judge Rich stated, "business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method."[98] The court addressed prior decisions that purportedly invalidated patents because they involved methods of doing business by noting that the patents in those cases were actually invalidated on "some clearer concept," such as lack of novelty or obviousness.[99] Although *State Street* was significant, especially because it construed the production of financial data as a patentably "useful, concrete, and tangible result,"[100] the court failed to make a complete break from the need to embody a concept in a claim for an apparatus. The court in *State Street* emphasized that the invention claimed was in reality a machine and not a process.[101] One year later, though, the CAFC cemented the patentability of business methods by holding that "the scope of § 101 [is] the same regardless of the form—machine or process—in which a particular claim is drafted."[102]

B. *Business Method Patents Under the European Patent Convention*

Patent law in European countries originated from the Venetian Senate's 1474 Act, which established a registration process for inventors who created new and useful devices.[103] As trade between European nations increased, the "idea of legal protection for inventions" spread to other countries as the basis of a strategic trade policy.[104] These nations embraced the notion that "useful technology, and . . . persons with knowledge of that technology, had a value apart from the value of the manufactured product."[105] Balanced against this appreciation for technology was a widespread distrust of monopolies that eventually led to the enactment in England of the Statute of Monopolies.[106] The statute represented a compromise between the Crown's practice of using patents to grant special favors and the recognition that monopolies used for the advancement of technology

97. Raskind, *supra* note 2, at 80.
98. *State Street*, 149 F.3d at 1375.
99. *Id.* at 1375-76.
100. *Id.* at 1375 (quoting *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994)). *But see Parker v. Flook*, 437 U.S. 584, 594-95 (1978) (rejecting respondent's application because it involved a method of calculating a number by using a mathematical formula).
101. *State Street*, 149 F.3d at 1371.
102. AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1357 (Fed. Cir. 1999), *cert. denied* 120 S. Ct. 368 (1999).
103. Merges, *supra* note 24, at 4.
104. *Id.* at 5.
105. Victor Siber, *The Technical Character of Software Invention: Why Continental and United States Patent Law Should Be Consistent in Analyzing Patentability*, 9 Fed. Cir. B.J. 555, 561 (1999-2000).
106. *See* Merges, *supra* note 24, at 6.

were special "property rights that could enhance social welfare."[107] In fact, the balance between the exclusionary rights of the individual and society's desire for freedom of information represents the principal tension underlying patent protection.[108]

On October 5, 1973, an Intergovernmental Conference of fourteen European countries signed the Convention on the Grant of European Patents ("EPC").[109] The six member states of the European Economic Community ("EEC"), now known as the European Union ("EU"), formed the conference to create a uniform European Patent System.[110] A total of twenty member states collectively form the European Patent Office ("EPO").[111] The EPO grants European patents that create an entitlement to claim proprietary rights in any of the signatory nations.[112] A European patent is basically "a 'bundle' of national patent *applications* which are processed together" by the EPO and confer rights in each of the contracting states applied for by the patentee.[113] Applicants do not have to apply for rights in all of the contracting states, rather "[t]he grant of a European patent may be requested for one or more of the Contracting States."[114] Although the EPC unifies certain laws with regard to the granting of patent rights, each European signatory nation still controls the enforcement of its own patent laws.[115] Consequently, the national courts continue to handle all infringement actions, and subsequent interpretations of European patent law.[116]

Unlike the United States, the EPC does not define patentable inventions within statutory classes of patentable subject matter.[117] Instead, the Convention provides a list of examples of unpatentable

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107. Merges, *supra* note 8, at 585-86.

108. *See supra* notes 33-37 and accompanying text.

109. Siber, *supra* note 105, at 562-63.

110. M. Van Empel, The Granting of European Patents 21-23 (1975).

111. The current member states are Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Hellenic Republic, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Portugal, Spain, Switzerland, Sweden, Turkey and the United Kingdom. *EPO Member States*, *at* http://www.european-patent-office.org/epo/members.htm (last modified Nov. 2, 2000). The EPO expects that Albania, Latvia, Lithuania, the former Yugoslav Republic of Macedonia, Romania and Slovenia will soon become members. *Id.*

112. Siber, *supra* note 105, at 564.

113. Van Empel, *supra* note 110, at 25.

114. European Patent Convention, Oct. 5, 1973, art. 3, 13 I.L.M. 268.

115. Siber, *supra* note 105, at 563-64. The EEC originally intended to draft a second convention in conjunction with the EPO, called the Community Patent Convention ("CPC"), which would be capable of issuing a single patent for the EEC nations. *Id.* at 562. Furthermore, the "CPC envisioned a common appeals court that would exclusively handle both validity and infringement suits." *Id.* The CPC has not yet been signed and has, for the time being, been set aside.

116. *Id.* at 564.

117. *See* Romvald Singer & Margarete Singer, The European Patent Convention: A Commentary 111 (Ralph Lunzer ed. & trans., Sweet & Maxwell 1995).

subject matter.[118] Article 52(2) specifies these exceptions and explicitly denies protection to, *inter alia*, mathematical methods, computer programs, and methods of doing business.[119] However, Article 52(3) limits the scope of Article 52(2) by stating that protection will not be offered for subject matter enumerated in Article 52(2) when the subject matter is claimed "as such."[120] Therefore, although a scientific theory or mathematical method may be excluded from protection, the "technical application of a theory or discovery" may be considered a patentable invention.[121]

The EPC provides that patent protection should be granted for "any inventions which are susceptible of industrial application, which are new and which involve an inventive step."[122] Under the EPC, inventions are considered new if they do "not form part of the state of the art."[123] The "state of the art" encompasses anything disclosed in a manner similar to that discussed in the United States novelty standard.[124] The date against which the prior art is compared in Europe, however, as in Japan, is the filing date of the patent application, not the date of invention.[125] Furthermore, the EPC provides only a very limited grace period during which the right to claim the invention in a patent will not be lost if the invention is disclosed to others.[126]

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118. *Id.*; European Patent Convention, Oct. 5, 1973, art. 52(2), 13 I.L.M. 285.

119. European Patent Convention, Oct. 5, 1973, art. 52(2), 13 I.L.M. 285. "The following in particular shall not be regarded as inventions within the meaning of [Article 52(1)]: (a) discoveries, scientific theories and mathematical methods; (b) aesthetic creations; (c) schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers; (d) presentations of information." *Id.*

120. *Id.* art. 52(3). "The provisions of [Article 52(2)] shall exclude patentability of the subject-matter or activities referred to in that provision only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such." *Id.* The language of Article 52(3) is reminiscent of the CAFC's discussion in *State Street*, where the court emphasized that, although mathematical algorithms are not patentable to the extent they represent abstract ideas, they may be included in a claim as part of a method or process when the claimed invention produces "'a useful, concrete and tangible result.'" State St. Bank v. Signature Fin. Group, 149 F.3d 1368, 1373-75 (Fed. Cir. 1998) (quoting *In re* Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994)).

121. Singer & Singer, *supra* note 117, at 112. For example, if a business method "is implemented by running a program on a general-purpose computer," the mere presence of hardware in the computer "does not render the method patentable if said hardware is purely conventional and no technical contribution to [computer] art is made . . . ." Sohei, Decision T 769/92 (1994), 1996 E.P.O.R. 253, 259.

122. European Patent Convention, Oct. 5, 1973, art. 52(1), 13 I.L.M. 285.

123. *Id.* art. 54(1).

124. *See id.* art. 54(2); *see supra* notes 45-51 and accompanying text (discussing the United States novelty standard).

125. European Patent Convention, Oct. 5, 1973, art. 54(3), 13 I.L.M. 286; Japan Patent Law, Law No. 121 of 1959, art. 29.

126. European Patent Convention, Oct. 5, 1973, art. 54, 13 I.L.M. 286. The convention provides for a six-month grace period if the invention has been stolen or

The EPC also requires that patented inventions contain an inventive step,[127] which parallels the United States' requirement that an invention be non-obvious.[128] Besides novelty, the inventive step requirement is "the most important prerequisite" for obtaining a European patent.[129] As in the United States, the inventive step requirement ensures that the inventor makes a substantial enough contribution to society to warrant the grant of a proprietary right.[130]

The industrial application requirement differs significantly from the broad utility requirement in the United States, and may serve as a substantial limitation on the patentability of business methods if the EPO narrowly construes the standard.[131] Article 57 of the EPC provides that "[a]n invention shall be considered as susceptible of industrial application if it can be made or used in any kind of industry, including agriculture."[132] While this provision suggests a broad interpretation of the requirement, industrial applications are in fact limited by the necessity that patentable inventions produce a technical effect.[133] The EPC Implementing Guidelines clearly confine patents by stating that an invention must relate to a "technical field," solve a "technical problem," and contain "technical features."[134] The required combination of industrial application and technical effect evinces the EPO's strong desire to restrict patentable innovations to traditionally technological inventions. In practice, however, the EPO has broadly interpreted the provisions, resulting in the patenting of inventions such as medical devices and objects for religious worship, because they are capable of being industrially manufactured.[135]

The national courts in Europe have recognized that business methods and computer programs may be patentable if incorporated as part of an invention producing a technical effect.[136] Although the

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displayed at an exhibition licensed by the European Patent Office. *Id.* art. 55.

127. *Id.* art. 56; *see also* Esswein/Automatic programmer, Decision T 579/88 (1990), 1991 E.P.O.R. 120, 124-28 (holding that the perception and solution of a problem will not satisfy the inventive step requirement if the problem is not of a technical nature).

128. *See supra* notes 52-54 and accompanying text.

129. Singer & Singer, *supra* note 117, at 177.

130. *See supra* note 54 and accompanying text.

131. John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. Rev. 1139, 1178-85 (1999).

132. European Patent Convention, Oct. 5, 1973, art. 57, 13 I.L.M. 268.

133. *See* Singer & Singer, *supra* note 117, at 111.

134. Implementing Regulations to the Convention on the Grant of European Patents, Oct. 5, 1973, rules 27 & 29, 13 I.L.M. 312, 322-23.

135. Singer & Singer, *supra* note 117, at 212.

136. *See, e.g.*, Sohei, Decision T 769/92 (1994), 1996 E.P.O.R. 253, 261 (holding that an invention specifying business method processes to be performed on data files will not be "excluded from patentability if [the invention] involves, or implies, at least one" technical component not excluded from patentability); NAT, Decision T 636/88 (1990), 1991 E.P.O.R. 517, 520-23 (holding that a method for delivering free-flowing material to remote locations is patentable because "it involves the use of technical equipment . . . to achieve a technical end").

EPC originally denied patent protection for computer programs,[137] the national courts in Europe and the EPO Boards of Appeal expanded protection for such inventions in response to their acceptance in countries such as the United States and Japan.[138] In an IBM patent application, the Boards of Appeal commented that where a program for a computer is the only means of bringing about a "further technical effect," the "computer program products are not excluded from patentability."[139] The Boards of Appeal carried this position even further when it held that

> a patent may be granted . . . in every case where a program for a computer is the only means, or one of the necessary means, of obtaining a technical effect . . . where for instance, a technical effect of that kind is achieved by the internal functioning of a computer itself under the influence of said program.[140]

The court essentially realized that even in the abstract, programs might demonstrate a technical effect as a result of the relationship between computer software and hardware. Although the EPO recently rejected a proposal that would have removed computer programs from the list of unpatentable subject matter in Article 52(2), the chairman of the Administrative Council of the EPO stated that "[a]s before, computer-implemented inventions can be patented if they involve a new and inventive technical contribution to the state of the art."[141] Furthermore, technical solutions "for carrying out methods of doing business . . . remain patentable."[142]

The effect of acceptance by the national courts in Europe of patents for computer programs on the patentability of business methods remains unclear. The President of the EPO recently suggested that business method patent claims may be classified into three categories: 1) claims for a business method "in abstract," 2) claims that include use of a computer "for carrying out at least some of the steps of the business method," and 3) claims similar to category two, but which include the use of "other apparatus" such as cellular phones.[143] Business method claims falling into category one will continue to be excluded from patentability by Article 52(2), but category two claims

137. European Patent Convention, Oct. 5, 1973, art. 52(2)(c), 13 I.L.M. 285.

138. *See* Mitchiner, *supra* note 16, at 389-94; *see supra* notes 76-84 and accompanying text; *infra* notes 165-69 and accompanying text.

139. IBM/Computer Programs, Decision T 935/97 (1998), 1999 E.P.O.R. 301, 312.

140. IBM, Decision T 1173/97 (1998), 1999 OJ EPO 609.

141. Press Release, Statement by Dr. Roland Grossenbacher, Chairman of the Administrative Council of the European Patent Organisation (Nov. 29, 2000), *available at* http://www.european-patent-office.org/news/pressrel/2000_11_29_e.htm.

142. *Id.*

143. Report on Comparative Study Carried Out Under Trilateral Project B3b, Appendix 6, *Examination of "business method" applications* 3 (May 19, 2000), *available at* http://www.uspto.gov/web/tws/appendix6.pdf [hereinafter Comparative Study].

will be evaluated under the standard set forth in the *Sohei* decision.[144] In *Sohei*, the court upheld a claim involving a data processing method even though it was directed toward use in a business context.[145] The court found that although the claim encompassed subject matter excluded from patentability by Article 52(2),[146] it might still be patentable if the *overall invention*, as claimed, meets the examination criteria.[147]

In the EPO, any method involving the use of computers may be patented provided that it "take[s] the form of a method of operating" the computer, the combination of computer and program to implement the method, or "the program itself."[148] When considering such claims, the examination for novelty, inventive step and industrial application will be made with regard to the computer and not to the overall method or purpose of the invention.[149] Therefore, the patentability of business methods involving the use of a computer will depend not on the method per se but on the inventiveness of the computer program used to implement the method.

C. *Business Method Patents Under Japanese Patent Law*

Japan began granting monopolies for novel inventions in 1871. It was not until 1885, however, that Japan enacted the Patent Monopoly Act as its first patent law.[150] This Act remained in effect until 1921 when the Japanese Patent Law replaced the Patent Monopoly Act and established the policy of granting a patent to the first to file, rather than the first to invent.[151] Currently, the Japan Patent Law of 1959 governs patent law in Japan.[152] The Japanese Patent Office ("JPO") presently provides industrial property rights through the granting of patents designed to promote the development of sciences and technology.

For an invention to be patentable in Japan, it must fall within prescribed statutory subject matter involving a technical idea utilizing a law of nature[153] and, as in Europe, it must be "industrially

144. Sohei, Decision T 769/92 (1994), 1996 E.P.O.R. 253.
145. *Id.*
146. European Patent Convention, Oct. 5, 1973, art. 52(2), 13 I.L.M. 285; See *supra* note 119 for the full text of Article 52(2).
147. Sohei, Decision T 769/92 (1994), 1996 E.P.O.R. 253.
148. Comparative Study, *supra* note 143, at 4.
149. *Id.* at 3-4.
150. A. Aoki et al., Japanese Patent and Trademark Law 17 (1976).
151. *Id.*
152. Japan Patent Law, Law No. 121 of 1959.
153. The Japanese Patent Office Implementing Guidelines for Examination of Industrially Applicable Inventions provides a list of inventions that are not considered to be statutory. Japanese Patent Office, *Implementing Guidelines for Examination of Industrially Applicable Inventions*, § 1.1 (Feb. 27, 1997), *available at* http://www.jpo-miti.go.jp/infoe/txt/indstry-e.txt [hereinafter *Industrial Examination Guidelines*]. This list includes but is not limited to: 1) "natural laws as such," 2) "mere discoveries,"

applicable."[154] In addition, the invention must involve the creation of an idea relating to technology[155] and, as in the United States and Europe, it must be shown to be novel and non-obvious.[156] An invention is not novel if it has been used in public, if it is known in Japan, or if the invention was described in a publication anywhere in the world prior to the filing of the patent application.[157] There is, however, a six-month grace period prior to the filing date, during which public disclosure by the inventor will not destroy the novelty of the claimed invention.[158] The inventive step requirement is essentially identical to the United States and European non-obviousness requirements. The invention is obvious if it "could have been easily made . . . by a person who has ordinary skill in the art to which the invention pertains on the basis of prior art."[159]

Although the industrial application requirement is comparable to the United States' requirement of utility, the Japanese standard limits the patentability of inventions to products or methods that are described as "technological."[160] Industrial application essentially involves the repeated application of an invention "in manufacture as a means to fulfill material desires of mankind."[161] The scope of patent protection is further limited by the requirement that "inventions liable to contravene public order, morality or public health shall not be patented."[162] This requirement, along with the need for industrial application, "has resulted in the [JPO] refusing to grant patents for . . . new medical treatments, methods of typhoon control, [and] business methods."[163] As the protection for computer software has expanded,

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where an inventor does not create a technical idea, 3) "personal skill," 4) "aesthetic creations," and 5) "mere presentation of information." *Id.* at § 1.1.

154. Japan Patent Law, Law No. 121 of 1959, art. 29; Aoki, *supra* note 150, at 22; *see supra* notes 131-35 and accompanying text (discussing Europe's industrial application requirement).

155. Masami Hanabusa, An Analysis of Japanese Patent Law 28 (1992). The author defines technology as a "rational measure, that is thought out in order to use the natural rules as a measure to accomplish the material desires of mankind." *Id.* at 23.

156. *See* Japan Patent Law, Law No. 121 of 1959, art. 29; Aoki, *supra* note 150, at 22; *supra* notes 45-54 and accompanying text (discussing the United States' novelty and non-obvious requirements); *supra* notes 123-29 and accompanying text (discussing Europe's novelty and non-obvious requirements).

157. Japan Patent Law, Law No. 121 of 1959, art. 29.

158. *Id.* art. 30.

159. Aoki, *supra* note 150, at 22.

160. *See* Thomas, *supra* note 131, at 1180. The Japanese Examination Guidelines state that the term "industrial" "is interpreted in a broad sense, including mining, agriculture, fishery, transportation, telecommunications, etc., as well as manufacturing." *Industrial Examination Guidelines*, *supra* note 153, at § 2.

161. Hanabusa, *supra* note 155, at 58. The author states that "the invention applied in manufacture includes . . . those relating to the manufacture of a product and those concerning the product manufactured." *Id.*

162. Japan Patent Law, Law No. 121 of 1959, art. 32.

163. John Richards, *Recent Patent Law Developments in Asia*, 7 Fordham Intell.

however, the JPO has suggested that a business method may be patentable when claimed as a part of an invention involving a computer program.[164]

Currently, Japan treats inventions for business methods in a manner similar to Europe. The JPO recognizes that "most business-related inventions can be considered as certain forms of software-related inventions."[165] Since 1997, the JPO has allowed "computer programs recorded on or in a medium" to be patented by recognizing that such software are "products."[166] To satisfy the requirement that an invention utilize a law of nature, the JPO has construed the use of computer hardware for data processing to be a use of a law of nature,[167] which has resulted in two classes of claims in which computer programs may be patentable. The first class of claims involves the "utilization of a law of nature in information processing performed by the software—including computer control of apparatus used for other purposes, operations controlling the computer itself, [and] video image processing . . . ."[168] The second class of claims is for "inventions using hardware resources—including [for example] . . . methods of converting Japanese phonetic letters into Chinese characters."[169]

Thus, a business method, or any other method, implemented by way of a computer program may be patented as long as the computer program satisfies the other requirements of patentability.[170] The claim must describe how the computer program in the invention utilizes the computer hardware, and exhibits inventiveness and novelty in light of the prior art.[171] The mere "systemization of existing human transactions," for example, would not be deemed patentable since it would be obvious to a person of ordinary skill in the art.[172] In addition, even if a computer program satisfies the basic requirements for patentability, the program may be held unpatentable if it fails to demonstrate industrial application.[173]

For the time being, Europe and Japan have refused to follow the United States and fully extend protection to business methods. The industrial application requirements in Japan and Europe, coupled

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Prop. Media & Ent. L.J. 599, 619 (1997).

164. Japanese Examination Standards Office, Coordination Division, *Examination of business-related inventions* (Dec. 1999), *available at* http://www.jpomiti.go.jp/infoe/treatment.htm [hereinafter *Examination of Business Inventions*].

165. *Id.*

166. Kohji Yoshioka, *Summary of Patentability of Business Systems in Japan*, *in* Patenting the New Business Model: Building Fences in Cyberspace 405, 407 (2000).

167. *Id.* at 408.

168. Richards, *supra* note 163, at 622.

169. *Id.*

170. Yoshioka, *supra* note 166, at 407-08.

171. *Id.*

172. *Examination of Business Inventions*, *supra* note 164.

173. Japan Patent Law, Law No. 121 of 1959, art. 29.

with their confinement of patentable inventions to purely technological innovations, limit the extent to which protection may be sought for inventions of an economic nature. The standards of patentability in Europe and Japan reflect the more traditional views of patentable subject matter in the United States and are therefore helpful in assessing the propriety of patents for business methods, which Part II will discuss.

II. THE PROPRIETY OF BUSINESS METHOD PATENTS

The significant differences between United States, Japanese and European patent laws affect the likelihood of uniform treatment of business method patents. The United States' enumeration of broad categories of patentable subject matter potentially extends protection into a variety of areas[174] that would be impermissible within the EPC's and JPO's provisions for protection of technological innovations. The limitation of patentable subject matter in Europe and Japan to inventions perceived as technological is ineluctably bound to the requirements of industrial application and technical effect.[175] By explicitly including "technology" and industrial application as prerequisites to even entering the realm of patentability, the possibility of protecting processes solely involving economic or personal utility, such as a method of training a janitorial staff[176] or of smoking a cigarette,[177] is significantly reduced. These different treatments give rise to the more difficult issue of which level of protection is appropriate. Part II questions whether patent protection by the United States for business methods is necessary and appropriate, and what negative effects may result from such patents. Specifically, Part II examines the propriety of business method patents in light of their potential to produce incentives, their possible negative effects on competition in the United States, and their correlation with technological subject matter.

The increasing globalization of industry and trade has heightened awareness of the importance of intellectual property rights.[178] Differing standards of patentable subject matter in each country may pose problems for competing international companies.[179] The inability of a company to protect patentable inventions in the United States from copying by free-riding competitors in Europe or Japan may

174. Thomas, *supra* note 131, at 1175-76. The author suggests that "a broad scope of patentable subject matter" may make innovations in service areas such as "law, medicine, teaching and the ministry . . . amenable to patenting." *Id.* at 1175.

175. *See supra* notes 131-35, 160-64 and accompanying text.

176. U.S. Patent No. 5,851,117 (issued Dec. 22, 1998).

177. *Industrial Examination Guidelines*, *supra* note 153, at § 2.1(2)(i) (providing that a method of smoking is an industrially inapplicable invention and therefore unpatentable).

178. *See* Merges, *supra* note 24, at 39.

179. North, *supra* note 16, at 116.

reduce the company's capacity to earn profits.[180] Free-riding by competitors is detrimental in ways that normal competition is not because of the inequality of competing companies' research and development costs. The grant of a patent protects the inventor by allowing him to prevent others from profiting from the inventor's innovation to such a degree that he would be left unable to effectively compete and thus be driven from the market.

The more stringent standard adopted in Japan and Europe regarding both subject matter and utility, coupled with the rapid globalization of national economies, has prompted patentees to push for international harmonization of patent laws.[181] However, arguments supporting the expansion of patentable subject matter by harmonizing European and Japanese patent law with the United States apparently depend on the development cost of the technology in question. For example, both biotechnology and computer software development have been recognized as highly innovative industries with significant research and development costs.[182] The concern that such costs may not be incurred if the inventor cannot recoup those investments represents the paradigmatic argument for providing patent protection in those areas of technology.[183] While the United States, Europe and Japan have proven amenable to protecting innovations in biotechnology and computer programs, Japan and Europe have been more hesitant to extend patent protection to innovations in business-related inventions.[184] The difficulty in adapting business-related patent claims to the EPO and JPO requirements of "industrial application," coupled with the limitations imposed by a strict adherence to notions of technology, likely form much of the basis for this hesitation. In addition, it may be difficult to justify such an expansion of patent law protection in light of the incentive model that underlies a patent system.[185] In assessing the merits of extending Japanese and European law to conform to the scope of protection afforded by United States patent law, it is beneficial to examine whether business methods fit the economic

180. *Id.*

181. *Id.*

182. *See* Final Report of the National Commission on New Technological Uses of Copyrighted Works (1978), ("The cost of developing computer programs is far greater than the cost of their duplication. Consequently, computer programs. . .are likely to be disseminated only if . . . the creator can spread its costs over multiple copies of the work with some form of protection against unauthorized duplication of the work."). This report was the result of significant research into the necessity of providing copyright protection for computer programs. *See also* Merges, *supra* note 24, at 154; Lila Feisee, *Are Biotechnology Patents Important? Yes!*, 1 PTO Today 9 (Feb. 2000), *available at* http://www.uspto.gov/web/offices/ac/ahrpa/opa/ptotoday/monthlist.html.

183. *See supra* note 36 and accompanying text.

184. *See supra* Parts I.B. & I.C.

185. *See supra* notes 33-37 and accompanying text.

policy model for patent laws, as well as whether they are legally permissible in a patent system founded on strict notions of technical utility.

A. *Is There a Need for Incentives?*

The relatively short period during which business methods have been recognized as patentable in the United States[186] makes it difficult to determine whether added incentives are necessary to increase innovation in that field. Absent empirical data demonstrating a need to spur innovation in a certain area, it is not clear that such an expansion should be undertaken.[187] In *State Street*,[188] Judge Rich merely assumed that Congress intended the Patent Act to authorize patents, and did not provide "an analytical platform" for why protection was necessary.[189] Unlike the opinion's affirmation of the long fought campaign to allow computer program patents, the decision to explicitly include business methods as patentable subject matter appears to have come as an afterthought.[190] The court simply continued its movement away from reliance on the need to embody concepts in a machine. The CAFC effectively removed the distinction "between laboratory and experimentally-generated methods," such as computer programs and chemical compounds, and "processes and methods derived from the competitive rivalry of the marketplace."[191] Business methods, however, are significantly different from the subject matter of most patent protection because "they affect not just products in competition, but rather the competitive process itself."[192] Furthermore, protection of certain business methods that have relationship-building capabilities may result in monopolies that extend far beyond the legislated twenty-year period.[193]

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186. *See supra* Part I.A.

187. Raskind, *supra* note 2, at 78.

188. State St. Bank & Trust v. Signature Fin. Group, 149 F.3d 1368 (Fed. Cir. 1998); *see supra* notes 86-101 and accompanying text for a background discussion of *State Street*.

189. Raskind, *supra* note 2, at 80.

190. The difficulty in understanding the court's basis for dismissing the business method exception is exacerbated by the fact that the invention in *State Street* was not even directed towards a method. Thomas, *supra* note 131, at 1160. So while the analysis of the computer program as a machine comported with the actions of the court, the extension of protection for business methods appears to have been outside the facts of the case. *See id.* at 1160-61. The following year in *AT&T Corp. v. Excel Communications, Inc.*, the CAFC upheld the validity of a method patent involving the use of a mathematical algorithm that did not also include claims construing the invention as a machine. AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352 (Fed. Cir. 1999).

191. Raskind, *supra* note 2, at 81.

192. Dreyfuss, *supra* note 14 (manuscript at 2) ("By exerting potentially distortive constraints on [the competitive] process, exclusive rights in business methods undermine the very basis for assuming that patents are not monopolies.").

193. *Id.* (manuscript at 16-17). "[O]nce a patented business method locks in users

Methods of doing business have thrived throughout history even without patent protection.[194] Proponents of business method patents argue that, had patents protected such methods earlier, the financial services sector would have far exceeded current levels of innovation.[195] While such an argument is as plausible as the "if it ain't broke don't fix it" approach, the failure of the court in *State Street* to provide supporting policy considerations for permitting business method patents makes such an expansion at best an unsettled question. Arguably, the intrusion of patent protection "into such an emulating, competitive market system, absent a clear showing of useful innovative advances, [may] serve[] only to disrupt [the competitive process]."[196] At this point, the best that one can hope for is an *ex post* analysis of the propriety of such patents that will demonstrate the success or failure of the *State Street* decision.[197]

B. *Global Effects of the United States' Expansion of Patentable Subject Matter*

The effect of business method patents on incentives to innovate in the United States financial services sector may be uncertain at this point, but their unilateral acceptance in the United States is likely to produce a negative effect on the relative competitiveness between American and foreign companies. The inability of United States patent owners to obtain reciprocal rights in foreign countries creates a competitive advantage for companies in foreign markets and may reduce incentives for companies to develop and patent innovative business methods in the United States.[198]

Although companies can now receive exclusionary rights on novel business methods in the United States, they are generally unable to obtain similar rights in Europe or Japan.[199] Therefore, once a United States patent application for a new method of doing business becomes publicly available, companies in Europe and Japan may begin using the method outside the United States, while American companies in competition with the patentee would be unable to use the method in

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or creates a substantial network, then new entrants face an uphill battle." *Id.* (manuscript at 16).

194. Merges, *supra* note 24, at 154. The incentive argument may similarly be put forth against the patentability of computer programs. However, unlike business methods, the cost of developing new technologies in computer programs appears to have risen to a point where there may no longer be sufficient incentive for such development without patent protection. *See id.*

195. *See id.* at 154-55.

196. Raskind, *supra* note 2, at 82.

197. Thomas, *supra* note 131, at 1165 ("Following *State Street*, economists may be able to tell us whether the patent system would benefit or harm particular industrial sectors by influencing such factors as the engagement in unproductive activity, rate of innovation or market concentration.").

198. North, *supra* note 16, at 116.

199. *See* Siber, *supra* note 105, at 573-74; *supra* Parts I.B. & I.C.

the United States without incurring licensing fees. The result is that companies outside of the United States receive the benefit of the novel method without incurring either the research and development costs of the inventor, or the licensing fees of the patentee's American competitors. In the aggregate, companies in Europe and Japan will be able to benefit from United States business method innovations without the resultant artificial constraints on competition and economic dead weight loss that will occur in the United States.[200]

This problem may be exacerbated further if the § 271(g) ban on importation of products made using a patented process is found inapplicable to business methods.[201] § 271(g) provides that it is an act of infringement to import a product "which is made by a process patented in the United States."[202] In many situations, companies may be able to employ patented business methods outside the United States while importing resulting by-products or products that simply differ from what is claimed in the patent.[203]

The ability of foreign companies to receive a United States patent on a new business method may also put them at an advantage over their American counterparts in two ways. First, a foreign company that does business in the United States and obtains a United States patent may exclude American competitors from using the patented method in the United States. While a United States patent is territorial and will not allow the patentee to exclude others from using the method in countries outside the United States, a foreign company's national competitive advantage[204] may prevent American companies from being as successful in the patentee's country even though they are able to use the same business method.[205] Thus, the foreign company obtains an advantage both in the United States, due to the patent, and abroad, as a result of the company's inherent competitive advantage. Second, a foreign company that does not compete in the United States may still acquire a United States

200. *See generally*, Ann Marie Rizzo, *The Aftermath of* State Street Bank & Trust v. Signature Financial Group*: Effects of United States Electronic Commerce Business Method Patentability on International Legal and Economic Systems*, 50 DePaul L. Rev. 313, 361-62 (2000) (discussing how a monopoly allows sellers to raise prices resulting in the production of dead weight loss).

201. *See generally*, Timothy F. Myers, *Foreign Infringement of Business Method Patents*, 7 Willamette J. Int'l L. & Disp. Resol. 101 (2000).

202. 35 U.S.C. § 271(g) (1994).

203. *See* Myers, *supra* note 201, at 124-27. The author suggests that problems with enforcing § 271(g) lie not only in identifying the product, but also in determining who is the importer. *Id.* at 118-19. For example, if the business method is employed over the Internet, the importer may be the Internet network provider rather than the allegedly infringing party. *Id.*

204. North, *supra* note 16, at 134. The competitive advantage arises from factors such as lower marketing costs, name recognition and nationalism. *Id.*

205. *See id.* at 134-36.

patent[206] and impose artificial constraints on competition in the United States, which would produce the same aggregate imbalance discussed above.[207] Thus, regardless of whether the foreign patentee does business in the United States, its acquisition of a business method patent in the United States would inhibit the competitive potential of American companies.

Finally, although it is possible that allowing business method patents may generate added incentives to develop this subject matter further, the increased incentives are likely to be diminished by the inventor's inability to protect the invention from use in foreign countries.[208] When reciprocal patent rights are available in foreign countries, American companies doing business internationally do not have to be as concerned that disclosure of their innovations will put them at a competitive disadvantage. As companies become increasingly global, free-riding by competing companies in foreign markets may become so detrimental that businesses may decide that increased investment in the development of new business method ideas does not provide adequate returns to warrant the expense.

C. *Technical Utility and Industrial Application*

Professor John Thomas recently considered the boundaries of the United States' utility requirement for patentable inventions by analogizing "useful Arts" with philosophical characterizations of the term "technology."[209] While the minimalist nature of the utility requirement[210] has been somewhat tempered by the courts' continual maintenance of the need for physical instantiation,[211] decisions like *State Street* have tremendously enlarged the notion of what qualifies as tangible when considering an invention's utility.[212] The *State Street* decision resulted from the movement away from the requirement of traditional tangibility and the dissolution of conventional notions of

206. A company not doing business in the United States may still wish to obtain a United States patent in anticipation of the possibility that its country may offer similar protection, or perhaps in anticipation of entering United States' markets at some future date.

207. *See supra* text accompanying note 200.

208. *See* Siber, *supra* note 105, at 576.

209. Thomas, *supra* note 131, at 1165-66. Prior decisions by the courts have offered support for such a comparison. *See, e.g., In re* Waldbaum, 457 F.2d 997, 1003 (C.C.P.A. 1972) (equating the phrase "useful arts" with "technological arts"); *In re* Musgrave, 431 F.2d 882, 893 (C.C.P.A. 1970) (same).

210. *See supra* notes 55-58 and accompanying text.

211. *See supra* note 59 and accompanying text.

212. *See* State St. Bank & Trust v. Signature Fin. Group, 149 F.3d 1368, 1373 (Fed. Cir. 1998) (holding that "the transformation of data, representing discrete dollar amounts" produces a "useful, concrete and tangible result"); Maier & Mattson, *supra* note 81, at 332-33 (discussing the conceptual difficulty of "something as ethereal" as a dollar value being regarded as "concrete and tangible").

patentable subject matter.[213] The expansion of patentable subject matter through an augmentation of what may be considered tangible utility reflects an increasing deference by courts to the validity of patent claims.[214] In his article, Professor Thomas prescribes a change in the boundaries of patentable utility to correspond with a more "refined sense" of the term "technology."[215] Thomas concludes that technology is best summarized as "knowledge that is applied toward material enterprise, guided by an orientation to the external environment and the necessity of design."[216] Such a definition of technology focuses on the use of knowledge to produce physically useful results, and is reminiscent of the traditional stance taken by early courts in the United States against protecting purely conceptual innovations.[217] Thomas argues that confining our understanding of utility to that which is technological would bring clarity to the scope of patentable subject matter and encourage greater consideration before expanding the availability of protection for inventions into "traditionally patent-free professions."[218]

Medical method patents provide one example of an area that properly lies outside of the accepted sphere of patent protection.[219] In 1996, Congress amended 35 U.S.C. § 287 to eliminate the remedies available to owners of medical procedure patents.[220] Congress changed the law out of concern that such patents limited patients' access to medical procedures, affected doctors' ability to practice their profession responsibly, and imposed undue costs on consumers.[221] Proponents of the change argued that "[p]hysicians do not need incentives . . . as a stimulus to innovation,"[222] and in fact, exclusionary rights in this field would likely chill development in this area.[223] Constraints on the autonomy of doctors to practice responsibly "could alter the willingness of professionals to disseminate and put into

213. The Supreme Court undertook a similar expansion when it recognized advancements in biotechnology as deserving of protection. Diamond v. Chakrabarty, 447 U.S. 303 (1980).

214. *See* Dreyfuss, *supra* note 14 (manuscript at 23).

215. Thomas, *supra* note 131, at 1170.

216. *Id.* at 1175. This definition is similar to the definition of "technology" in Japanese patent law provided in Part II.B. *See supra* note 155.

217. *See* supra notes 70-75 and accompanying text.

218. Thomas, *supra* note 131, at 1176. "Culturally and historically, we would not include endeavors in such fields as athletics, dance or surgery as technological, and neither should our patent system." *Id.* at 1181.

219. *See id.* at 1175-78.

220. 35 U.S.C. § 287(c) (Supp. 1998); Pub. L. No. 104-208, § 616, 104 Stat. 3009-67 (1996). The law did not eliminate the ability to obtain such patents, but the inability to enforce them essentially produces the same result.

221. *See* 142 Cong. Rec. 18,898 (July 24, 1996) (statement of Rep. Ganske); Thomas, *supra* note 131, at 1176.

222. 142 Cong. Rec. 18,898 (July 24, 1996) (statement of Rep. Ganske).

223. *Id.* at 18,899.

practice new learning."[224] Congress' reaction to the enforcement of medical method patents suggests that certain areas outside the traditional sphere of patentable innovation may involve issues that are irreconcilable with the grant of exclusive rights.[225]

In suggesting that the above characterization of technology should be incorporated into United States patent law,[226] Professor Thomas prescribes a utility requirement that is comparable to the industrial application requirement in the EPC and Japanese Patent Law.[227] He proposes that if the scope of utility were confined to a traditional understanding of technology, then the requirement of industrial application would provide statutory support for the courts and the PTO to adhere to the resultant (and proper) narrowing of what is patentable.[228] An industrial application standard would most likely prevent the patenting of business methods because, among other things, business methods "are not transformative in character."[229]

Although some business methods claimed as part of a patentable invention that demonstrate industrial applicability, such as a computer program, have been granted in Europe,[230] the hesitation in Europe and Japan to authorize patent protection of business methods per se suggests that an industrial application requirement would limit the scope of business methods now patentable. Many patent applications in this area involve purely economic principles and have absolutely no application in manufacturing.[231] Although it appears likely that business methods, within a patent system that employs an industrial application requirement and confines patentable subject matter to technological innovations, would not be given the wide scope of protection they have in the United States, such a conclusion cannot be reached with absolute certainty without judicial decision. A significant consideration yet to be definitively resolved is whether business methods can be considered technology.[232] Ultimately,

224. Thomas, *supra* note 131, at 1176.

225. *See id.* at 1177.

226. *See supra* text accompanying notes 215-16.

227. Thomas, *supra* note 131, at 1178-85. The author suggests that the "industrial application standard appears very much in keeping with the characterizations of technology offered by contemporary technological thinking." *Id.* at 1180.

228. *See id.* at 1180, 1184.

229. *Id.* at 1181 ("[Business methods] do not manipulate physical forces to achieve the production or transformation of material objects. Business methods engage economic principles rather than the laws of physics, chemistry or biology. They do not comprise technology and should not be within the grasp of the patent system.").

230. *See supra* note 136 and accompanying text.

231. *See, e.g.*, U.S. Patent No. 5,960,411 (issued Sept. 28, 1999) ("A method and system for placing an order to purchase an item via the Internet"); U.S. Patent No. 5,851,117 (issued Dec. 22, 1998) (providing a method for on-the-job training of janitorial workers).

232. Not only is the determination of whether business methods are technological important in light of the European and Japanese limitations on patentable subject matter, but the determination is also relevant to the requirement of the agreement on

whether the EPO or JPO will bar business methods from receiving patent protection will depend on the courts' interpretation in Europe and Japan, which may in turn depend on the economic effect of such patents in the United States.

While Europe and Japan wait for the effects of business method patents in the United States, the United States is quickly blurring the boundaries of patentable innovation. The acceptance of business method patents without consideration of the need for incentives in this area has all but eliminated the classification of patentable subject matter.[233] As a result, United States companies may be at an economic disadvantage as the patent system branches out into increasingly diverse areas.[234] The United States legislature should slow this expansion by clarifying the scope of patentable subject matter and returning to the traditionally technological nature of the patent system. Specifically, Part III argues that Congress should add an industrial application requirement to section 101 of the Patent Act and explicate an intention to confine patentable inventions to those possessing a technological character.

III. CLARIFYING THE SCOPE OF PROPERLY PATENTABLE SUBJECT MATTER

The patent system is first and foremost based on the recognition that, in certain situations, exclusive proprietary rights should be granted to provide incentives to inventors for the advancement of technology and innovation.[235] Even Thomas Jefferson, whose distrust of government-created monopolies was well known, accepted this fact when the first Patent Act was implemented during his tenure as Secretary of State.[236] Thus, when extending the scope of patententable subject matter, the legislature, and especially the judiciary, should always have an eye on the purpose of patents, and continually assess the incentive producing potential of patent protection. The effect of an increasing number of patents on a company's ability to compete both in the United States and abroad is a necessary consideration. As discussed in Part II, the need for incentives to promote innovation in business methods is not evident,[237]

Trade Related Aspects of Intellectual Property ("TRIPs") that in all signatory countries, "patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology." Agreement on Trade-Related Aspects of Intellectual Property Rights, General Agreement on Tariffs and Trade, Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, Apr. 15, 1994, Annex 1C, 33 I.L.M. 1197 [hereinafter TRIPs Agreement].

233. *See supra* Part II.A., note 96 and accompanying text.

234. *See supra* Part II.B.

235. *See supra* notes 33-37 and accompanying text.

236. Merges, *supra* note 24, at 9.

237. *See supra* Part II.A.

and unilateral acceptance of business method patents by the United States may actually be detrimental.[238] Furthermore, the patent system has traditionally been confined to innovations in technology.[239] To clarify the boundaries of patentability, this part argues that Congress should reassess the language of section 101 of the Patent Act and align United States law with that of Europe and Japan.

In *State Street*, the CAFC stated, "[t]he question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to . . . but rather on the essential characteristics of the subject matter."[240] Dismissal of an inquiry into an invention's status under § 101 leaves only novelty, non-obviousness, and a minimal showing of utility as limitations on what may be deemed patentable.[241] Although the Supreme Court has expressed a desire for § 101 to be construed broadly,[242] it is difficult to accept that the enumerated classes of patentable subject matter in that section were meant to have no limiting effect whatsoever on what is patentable.[243] Such interpretation has resulted in the possibility of patenting innovations, such as business methods, that may fall outside the traditional notions of proprietary subject matter.[244] Without immediate action by Congress, the negative effects of the intrusion of patents into unreceptive areas may be irreversible.[245]

State Street is disconcerting for yet another reason. Since the Patent Act of 1952, the judiciary, and not the legislature, has initiated the majority of changes in the patent laws.[246] At the same time, Congress seems to have recognized, as evidenced by its agreements to international treaties such as TRIPs, that patent laws are becoming an

238. *See supra* Part II.B.

239. *See supra* Part II.C.

240. State St. Bank & Trust v. Signature Fin. Group, 149 F.3d 1368, 1375 (Fed. Cir. 1998) (emphasis omitted). Specifically regarding business methods the court later states, "[w]hether the claims are directed to subject matter within § 101 should not turn on whether the claimed subject matter does 'business' instead of something else." *Id.* at 1377.

241. *See* Thomas, *supra* note 131, at 1160; *see supra* notes 44-59 and accompanying text (discussing the United States patent law requirements of novelty, non-obviousness and utility).

242. *See supra* note 61 and accompanying text.

243. *See supra* notes 41-43 and accompanying text (discussing the four classes of patentable subject matter in the United States).

244. Professor Dreyfuss cites athletic moves as an example of an area similar to business methods, which, following the *State Street* decision, may arguably fall within the scope of patentable subject matter. Dreyfuss, *supra* note 14 (manuscript at 8-10). The PTO has already granted patents in this area. *See, e.g.*, U.S. Patent No. 5,616,089 (issued Apr. 1, 1997) (claiming a method of golf putting); U.S. Patent No. 5,993,336 (issued Nov. 30, 1999) (claiming a "[m]ethod of executing a tennis stroke").

245. *See supra* notes 219-25 and accompanying text.

246. *See* Eisenberg, *supra* note 18, at 2084. Justice Brennan expressed displeasure with this trend when he stated in dissent to *Diamond v. Chakrabarty* that "[i]t is the role of Congress, not this Court, to broaden or narrow the reach of the patent laws." Diamond v. Chakrabarty, 447 U.S. 303, 322 (1980) (Brennan, J., dissenting).

increasingly global concern.[247] There is no indication in *State Street*, or in *Diamond v. Chakrabarty*, where the Supreme Court expressed its desire for broad interpretation of patentable subject matter,[248] that the Court considered the global economic effects of its decision. Furthermore, courts should recognize that such extensive changes to the patent law are more appropriate for the legislature than the judiciary.[249] It is now time for the legislature to step in and reassess the manner in which the language of the Patent Act has been construed over the past fifty years.

Without empirical data demonstrating that new business methods should be taken out of the public domain and put in the exclusive control of patent applicants, such a far-reaching extension of patentable subject matter should not have been made.[250] The patent laws in the United States, Europe and Japan, coupled with the patent system's dichotomy between the free exchange of information and need for incentives,[251] suggest that the value of allowing business method patents is, at best, an unsettled question, and, at worst, detrimental to consumer welfare.[252] At the very least, business method patents introduce an artificial constraint to the competitive process that was generally unknown before *State Street*.[253] The financial sector in the United States has always been a substantially emulative industry that may not be compatible with the constraints created by patent monopolies. In fact, unilateral provision of business method patents in the United States may actually put United States companies at an economic disadvantage.[254] Conversely, the lack of evidence suggesting that business method patents pose substantial economic threats cuts against the imposition of an absolute ban on their patentability.[255]

Rather than enacting a broad ban that would prevent all patents on business methods from issuing, Congress should include provisions in the patent laws that would more closely align the United States' scope

247. *See supra* notes 178-80, 232 and accompanying text.
248. *See supra* note 61 and accompanying text.
249. As Justice Brennan stated:

> The patent laws attempt to reconcile this Nation's deep-seated antipathy to monopolies with the need to encourage progress. Given the complexity and legislative nature of this delicate task, we must be careful to extend patent protection no further than Congress has provided. In particular, were there an absence of legislative direction, the courts should leave to Congress the decisions whether and how far to extend the patent privilege into areas where the common understanding has been that patents are not available.

Chakrabarty, 447 U.S. at 319 (Brennan, J., dissenting) (citations omitted).
250. *See supra* notes 187-93 and accompanying text.
251. *See supra* notes 33-37 and accompanying text.
252. *See supra* notes 194-97 and accompanying text.
253. *See supra* note 196 and accompanying text.
254. *See supra* Part II.B.
255. *See supra* notes 194-97 and accompanying text.

of patentable subject matter with that of Europe and Japan.[256] Inclusion of language restricting patents to inventions evincing a technological contribution would not exclude all business methods,[257] but would temper the rapid exploitation of business method patents in the United States while harmonizing the protection available internationally.[258] Specifically, Congress should make the following changes to section 101 of the United States Patent Act:

> 35 U.S.C. § 101 Inventions patentable.
>
> Whoever invents or discovers any new ~~and useful~~ process, machine, manufacture, or composition of matter, **[in any field of technology,]** or any new ~~and useful~~ improvement thereof, **[which is capable of industrial application,]** may obtain a patent therefore, subject to the conditions and requirements of this title.[259]

The inclusion of the phrase "in any field of technology" would bring the United States Patent Act in line with the Japan Patent Law, the TRIPs agreement, and the EPC, which was recently amended to include similar language.[260] Reciprocal standards of patentability are beneficial to companies competing in a global economy because these companies are better able to determine whether they will receive adequate returns to justify investment in innovation. As evidenced by certain decisions in Europe, the above language would not exclude all business method patents.[261] Basically, business methods implemented by way of a computer program could still receive protection if the computer program itself meets the requirements of patentability. Therefore, the limitation of invention to technological innovations evincing industrial applicability would not inhibit the protection of computer programs, a field that exhibits a need for patent protection.[262] In addition, business methods will receive substantially the same level of protection currently offered in Europe and Japan.[263] Furthermore, the above-proposed language would satisfy the continued push towards harmonization among international patent offices without making a sweeping, unjustified extension or rescission of patentable subject matter that could result in the improper approval or rejection of patent applications.[264]

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256. See *supra* notes 117-21 and accompanying text for a discussion of patentable subject matter under the EPC, and *supra* notes 153-59 and accompanying text for a discussion of patentable subject mater under the JPO.

257. *See supra* note 136 and accompanying text.

258. See *supra* Parts I.B. & I.C. for a discussion of the grant of business method patents in Europe and Japan.

259. *See* 35 U.S.C. § 101 (1984).

260. *See supra* note 232.

261. *See supra* note 136 and accompanying text.

262. *See supra* note 182 and accompanying text.

263. *See supra* Parts I.B. & I.C.

264. *See* Raskind, *supra* note 2, at 64-67.

Removing the term "useful" and replacing it with "industrial application" would further advance this goal. As Professor Thomas suggests, an industrial application requirement would clarify the scope of patentable subject matter in the United States by confining it to traditional notions of technology.[265] In Europe, the requirement has been coupled with the need for technical effect to establish a union between patents and technology.[266] The requirement would also bring United States patent law in line with the current language of the TRIPs agreement and eliminate the need for the fallacious equation in the treaty of "usefulness" with "capable of industrial application."[267] Ultimately, the combination of a requirement of industrial application with an explicit intent to confine patentable inventions to technology would better represent the intentions behind the Constitution's patent clause, by promoting consideration of the balance between the need for incentives in new areas and society's desire for the free exchange of information and ideas.[268]

CONCLUSION

In the past, the lines of patentability were more clearly marked by an intentional equation of invention and machine. As these lines continue to blur and the boundaries of patent protection are expanded through increasingly liberal interpretation of the "useful Arts," it seems time for Congress to consider refining the scope of the Patent Act. The extension of patentable subject matter by the Court in *State Street* was made without consideration of the effect on incentives to develop business methods or the potentially detrimental economic impact amongst competing businesses. Alignment of the scope of patentable subject matter in the United States with that of Europe and Japan will bring clarity to United States patent laws and promote the further harmonization of intellectual property rights around the world.

265. *See* Thomas, *supra* note 131, at 1178-85.
266. *See supra* notes 131-35 and accompanying text.
267. TRIPs Agreement, *supra* note 232, art. 27 n.5.
268. *See supra* notes 33-39 and accompanying text.