

The International Law of Business Method Patents

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In its 1998 decision in *State Street Bank and Trust Co. v. Signature Financial Group, Inc.*, the United States Court of Appeals for the Federal Circuit (which now hears all patent appeals in this country) addressed “the judicially-created, so-called ‘business method’ exception to statutory subject matter” (149 F.3d 1368, 1375 [Fed. Cir. 1998], *cert. denied*, 525 U.S. 1093 [1999]). Throughout most of the history of American patent law, the courts and the U.S. Patent and Trademark Office (USPTO) had usually—but not uniformly—denied patents to inventions that amounted to nothing more than methods for doing business. In *State Street*, the Federal Circuit repudiated this long-standing practice in terms that could not have been blunter: “We take this opportunity to lay this ill-conceived exception to rest. . . . Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method” (*State Street*, 1375).

In the same decision, the Federal Circuit also repudiated the notion that computer-based inventions should be subject to special restrictions. Sweeping away three decades of complex and often inconsistent case law, the court held that a computerized process for transforming data is within the realm of patentable subject matter so long as it “produces a ‘useful, concrete and tangible result’

(p. 1375). Whereas patent lawyers had previously felt it necessary to hide the computerized aspects of their patent claims in a conventionally patentable machine or process, *State Street* made it possible to bring software into the open.

Because contemporary business, particularly in the financial services area, is almost entirely dependent upon computers for its design and implementation, the interrelationship of the two *State Street* holdings is self-evident. Under previous law, it was widely believed that one could not patent either a pure business method or a pure software operation (that is, one that did not produce effects in the physical world). *State Street* allowed both, reversing the lower court’s invalidation of a patent claiming the computerized implementation of a method of providing financial services. The broadest claim in the patent was drawn to “a data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds,” to be implemented by a generic system of hardware and software (p. 1371).

The *State Street* decision is perceived to have sparked a revolution in both law and business. One widely held view is that *State Street* made everything patentable in the business world and that business people are responding by trying to patent everything (Meurer, forthcoming). That may be something of an overstatement. Although business method patents

were relatively uncommon before *State Street*, patent lawyers had found ways to obtain them and, on occasion, had successfully defended them in the courts (Kuester and Thompson 2001). Moreover, while *State Street* certainly led to an increase in the volume of business patent applications (Meurer, forthcoming), it has not been quite the flood that has been claimed. In addition, there is every possibility that here, as in other areas, what the Federal Circuit has given by expanding the standards for patentability it will take away by tightening the standards for enforcement.

Nonetheless, one cannot deny the extraordinary influence of the *State Street* decision, both legally and practically. If it did not quite revolutionize the law, it refined and restated it with absolute clarity. If nothing else, the publicity surrounding the *State Street* case in the legal and business worlds has created near-universal awareness of the existence and potential significance of business method patents.

This paper reviews the state of the law with respect to business method patents, both in the United States and internationally. It begins with a brief overview of the basic requirements for patentability in the United States and internationally. It presents in some detail the evolution and current state of American law and international law, focusing on the European Union, examples of European national law, and Japan. Finally, the paper analyzes legal trends both in the United States and abroad, makes concluding comparative comments, and offers some predictions about unfolding legal issues.

Basics of Patent Law

To meet the basic requirements for obtaining a patent under American law, an invention must pass four tests:

First, under Section 101 of the Patent Act of 1952 (35 U.S.C. §§ 100 *et seq.*), the patent application must claim so-called statutory subject matter. That is, it must claim a human-made process, machine, manufacture, or composition of matter, or an improvement thereon. Laws of nature, products of nature, and abstract ideas such as mathematical algorithms have historically been deemed nonstatutory (*Diamond v. Chakrabarty*, 447 U.S. 303 [1980]).

Second, the claimed invention must be novel. Novelty has a highly technical meaning, which is articulated in the complex provisions of Section 102 of the Patent Act. For example, under Section 102(a), the patent will be denied if the invention was known or used by others in this country, patented here or abroad, or described in a “printed publication” in the United States or a foreign coun-

try prior to the patent applicant’s date of invention. Section 102(b) creates the “statutory bar” that results in a forfeiture of patent rights if the applicant or anyone else makes public use of the invention, puts it on sale, or engages in other specified conduct for more than a year prior to the filing of an application. Section 102(g) establishes the rules for determining priority when two or more inventors claim the same invention. American priority rules are virtually unique in international patent law: Priority is awarded to the person who can prove that he or she was the first to invent whereas in most other countries the patent goes to the first person to file a patent application.

The third requirement is utility. Although Section 101 requires that an invention be “useful,” utility has no specific statutory definition, so its meaning is derived from case law. In the vast majority of instances, it is an easy standard to meet, requiring nothing more than a showing that the invention may be put to some beneficial (very broadly construed) use. Historically, chemistry has been the one area in which significant numbers of applications have been denied for lack of utility. In a 1966 case called *Brenner v. Manson* (383 U.S. 519 [1966]), for example, the Supreme Court denied a patent to “a chemical process which yields an already known product whose utility—other than as a possible object of scientific inquiry—has not yet been evidenced” (p. 532). The compound in question was closely related to a class of compounds that had been shown to inhibit tumors in mice—an unquestioned showing of utility—but whose own potential uses were not yet known. Following the same reasoning, the USPTO and the courts currently require that claims to genetic sequences disclose their function; it is not enough simply to state that the gene is an object of scientific inquiry that is ultimately likely to lead to beneficial medical applications.

The fourth and final requirement is nonobviousness. As set forth in Section 103(a) of the Patent Act, the specific rule is that the invention is unpatentable “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which such subject matter pertains.” The nonobviousness barrier will often trip up applicants who have survived the novelty inquiry. Under the novelty test, the patent will not be denied unless the very invention that is claimed has been described, used, etc. in its entirety before the critical date. Under the nonobviousness rule, by contrast, the patent will be denied if a hypo-

thetical person of ordinary skill in the field, armed with the total knowledge in the field (the “prior art”), would have looked at the applicant’s advance at the time it was made and deemed it an obvious step. As this description suggests, the nonobviousness requirement is highly subjective, and its application by the courts and the USPTO has been inconsistent over the years.

Assuming that these four standards can be satisfied, the application itself must meet certain formal requirements. The most important of these is Section 112’s “enabling disclosure” rule. The patent application must describe the invention with enough specificity to enable a person skilled in the relevant field to make and use it. It is not necessary for the inventor actually to have built the invention (or in patent jargon, reduced it to practice) before filing the application. It is enough that the description provided in the application will enable someone else to build it and that the patent examiner is persuaded that it is indeed operable.

If a patent is granted, the inventor will be able to stop others from making, using, or selling the invention for the term of the patent (17 U.S.C. § 271[a]). In most cases, U.S. patents (as well as those in other countries) last for twenty years from the date the application is filed (35 U.S.C. § 154[a][2]). The words “make, use, and sell” are taken in their literal senses. The proscribed activities are strictly prohibited, regardless of whether they involve intentional copying or accidental duplication. The Patent Act also prohibits importing patented inventions into the United States from abroad (35 U.S.C. § 271[a]), as well as actively inducing others to commit acts of infringement (35 U.S.C. § 271[b]). Other provisions define a number of contributory infringements. These include knowingly selling or offering to sell specialized components of patented inventions (35 U.S.C. § 271[c]). U.S. patent laws, like most other national patent laws, generally lack extraterritorial effect, meaning that they do not cover most conduct outside the United States. However, it is also infringement to supply a specialized component of a patented invention from the United States, knowing that such component will be used abroad in a manner that would infringe the patent if done within the United States (35 U.S.C. § 271[f]) or to import a product of a patented process that is practiced abroad (35 U.S.C. § 271[f]). Successful patent infringement plaintiffs may be awarded injunctive relief, actual damages, and, in exceptional cases, multiple damages as well as attorneys fees (35 U.S.C. §§ 283–85).

Under a recent amendment to the Patent Act called the American Inventors Protection Act of 1999

(35 U.S.C. § 273), defendants accused of infringing business method patents have some special defenses. In general, it is a defense to an action for the infringement of a business method patent if the defendant, acting in good faith, had reduced the patented invention to practice (actually built it) more than one year before the plaintiff’s application was filed and had used the invention commercially at any time before the plaintiff’s filing. The defendant has the burden of proof to establish this defense and may not use it if he or she learned of the invention from the patent holder. Moreover, the defense is purely personal, and the defendant’s right to use the invention may not be licensed or transferred to anyone else.

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The purpose of creating this new defense was to address a problem that is believed to be endemic in the business method patent area. At the time a business method application is being reviewed, the sources typically available to the patent examiner (principally, prior patents and conventional publications) may not reveal that the claimed invention was either not novel or obvious at the purported date of invention. Nonetheless, evidence may later emerge that others had been using the same technology well before the date of the application. For a variety of technical reasons, this prior use might not invalidate the patent. While these new provisions do not change the standards for patentability, they may prevent the patent holder from putting such prior users out of business.

A final point is that U.S. patent law is perhaps the most “back-end-loaded” in the world. The United States, in other words, is relatively lenient in granting patents, depending more heavily on judicial scrutiny when patentees bring infringement actions (Kesan 2002). Most other countries offer third parties a more meaningful opportunity to oppose a patent while it is pending or immediately after it is issued (Merges and Duffy 2002, 64). The U.S. law of reexamination has the effect of postponing most such challenges until the patentee brings an infringement action (35 U.S.C.

§§ 311–18).¹ Although plaintiffs’ patents carry a presumption of validity, defendants can—and regularly do—attempt to show that patents were wrongly issued.

The substantive requirements for obtaining a patent vary little from country to country. For example, under Article 27 of the TRIPS Agreement (Agreement on Trade-Related Aspects of Intellectual Property Rights, enacted under the General Agreement on Tariffs and Trade), all members of the World Trade Organization are required to make patents available “for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.” An accompanying footnote states, “The terms ‘inventive step’ and ‘capable of industrial application’ may be deemed by a Member to be synonymous with the terms ‘nonobvious’ and ‘useful,’ respectively.” Similar standards have long been followed by Japan, the European Patent Office, and the individual member states of the European Union. As will be discussed later, there are material differences in patentability standards in some subject matter areas, including business methods and biotechnology.

U.S. Legal Doctrine

History. Despite the conventional view that patents on methods of doing business have long been disfavored, if not flatly prohibited, such patents have, in fact, been regularly granted. For example, the first financial services patent was probably granted to Jacob Perkins in 1789 for a system of detecting counterfeit notes; unfortunately, its details were lost in a fire in 1836 (USPTO 2000). In 1867 Charles L. Hawkes of Titusville, Pennsylvania, obtained a patent titled “Improvement in Hotel-Registers” (Letters Patent No. 63,889). His “invention” was to add to the margins of blank-ruled hotel register pages “advertisements of business houses, entertainments, railroad or steamboat cards, and other notices whose insertion is worth paying for.” And in 1907 a patent was issued to Eugene Graves Adams of Lynchburg, Virginia, for an improved form for the accident insurance policies that were widely purchased by railway travelers of the age (Letters Patent No. 853,852). Adams claimed, “As an article of manufacture, a two-part insurance policy consisting of a paper containing an insurance contract . . . combined with a postal card, both bearing a number or mark of identification, to be mailed to the beneficiary.”

Patents have regularly been granted on machines and processes intended to make business more efficient. In 1815, for example, John Kneas obtained a

patent for an improvement in banknote printing (USPTO 2000). His advance was “to print copper plate on both sides of the note or bill, or copper plate on one side and letter press on the other side, or letter press on both sides of a bank note or bill as an additional security against counterfeiture.” In 1889 Herman Hollerith obtained method and apparatus patents titled “Improvements in the Art and System of Computing Statistics” (Letters Patent No. 395,781). Hollerith’s patents described the mechanical punch card system for processing business information that dominated the market until the age of personal computers. Hollerith founded the Tabulating Machine Company, whose name was changed to International Business Machines Corporation in 1924 by Thomas J. Watson Sr.

In spite of this history, the USPTO and most courts long recognized a nearly absolute prohibition against claims drawn to methods of doing business. The most often cited case is *Hotel Security Checking Co. v. Lorraine Co.*, a 1908 decision of the Second Circuit (160 F. 467 [2d Cir. 1908]). The patent in question involved a hotel bookkeeping system that provided for cash registering and account checking in a manner designed to prevent fraud. Although, as will be seen, the Federal Circuit in *State Street* treated *Hotel Security* as a case of novelty and nonobviousness rather than as a subject matter case, the Second Circuit did state that “a system of transacting business disconnected from the means for carrying out the system is not . . . an art” (p. 469). By “art,” it meant “process” as that term is currently used in Section 101. This language was followed as settled law by a number of cases extending through the beginning of the computer age in the second half of the twentieth century. In a 1942 case called *In re Patton*, the Court of Customs and Patent Appeals (the Federal Circuit’s predecessor) reaffirmed the *Hotel Security* doctrine by stating that a system for transacting business, separate from the means for carrying out that system, was not patentable subject matter (127 F. 2d 423 [C.C.P.A. 1942]). The USPTO followed the *Hotel Security* rule as well. Through 1996, Section 706.03(a) of the *Manual of Patenting Examining Procedures* contained the following statement: “Though seemingly within the category of process or method, a method of doing business can be rejected as not being within the statutory classes” (citing *Hotel Security Checking*).²

The seemingly absolute rule of *Hotel Security* began to erode in the 1960s and 1970s as computers were increasingly used to perform business functions. Claims drawn to computer-related inventions had a tortured history in the courts prior to *State*

Street. Two Supreme Court decisions may have contributed to the confusion. In its 1978 decision in *Parker v. Flook* (437 U.S. 584 [1978]), the Court rejected as nonstatutory a claim drawn to a method for calculating an “alarm limit” for catalytic converters that was intended to be implemented on a computer. The essential problem, as the Court saw it, was that the patent claimed nothing more than the calculation of a mathematical formula. Three years later, in *Diamond v. Diehr*, the Court upheld the statutory status of a claim on “a method of operating a rubber molding press for precision-molded compounds with the aid of a digital computer” (450 U.S. 175, 179 n.5 [1981]). The computer’s function was the repetitive calculation of a well-known mathematical formula known as the Arrhenius equation. The Court apparently saw a material distinction between claiming an industrial process that happened to employ computer calculations and claiming the act of calculation itself as an aid to carrying out an industrial process.

Before and after the two Supreme Court decisions, the Court of Customs and Patent Appeals and its successor, the Federal Circuit, struggled with limited success to establish coherent rules for the patentability of computer-based inventions. Many cases focused on whether and under what circumstances the inevitable presence of mathematical algorithms in computerized processes would defeat the patent. Despite their inconsistency, these cases seemed to establish that the use of a computer to perform mathematical calculations would not in itself defeat patentability if the calculations were applied so as to affect or understand the physical world (*State Street*, 1373–75; Chisum 2002, § 1.03[6]). Accordingly, in 1992 the Federal Circuit upheld a patent claiming methods and apparatus for the computerized transformation of electrocardiograph signals into a form that would give a doctor useful diagnostic information (*Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053 [Fed. Cir. 1992]).

Many patent lawyers drew a more straightforward lesson from a comparison of *Flook* and *Diehr*: A computer-based invention would survive statutory subject matter scrutiny so long as the functions of the computer were “hidden” in a familiar and otherwise patentable process or machine (Blumenthal and Riter 1980). Thus, even before *State Street*, patent drafters regularly obtained patents on processes that

happened to include the operation of a computer or on machines that were nothing more than general-purpose computers programmed to perform the function in question (Merges and Duffy 2002, 151; Kuester and Thompson 2001; USPTO 2000). Means-plus-function claims were especially popular. In such claims, the function of a device is claimed and the general means for performing the function are recited; the specific structural features recited in the written description portion of the patent are then read back into the claims (35 U.S.C. § 112, ¶6). In its 1989 decision in *In re Iwahashi*, the Federal Circuit upheld a claim in this form on “an autocorrelation unit for providing autocorrelation coefficients for use as feature

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parameters in pattern recognition”—in other words, a device for implementing a mathematical algorithm for voice recognition purposes (888 F.2d 1370 [Fed. Cir. 1989]).

This growing tolerance of computer-based inventions spilled over into the business method area, leading to the allowance of a number of patents on methods of doing business that were implemented by computerized means (Chisum 2002, § 1.03[5]). In 1974, in *In re Johnston* (502 F.2d 765 [C.C.P.A. 1974]), the Court of Customs and Patent Appeals found that a patent drawn to an automatic record-keeping system for a bank constituted statutory subject matter. Perhaps significantly, the claim was on a machine—a digital computer programmed to operate the system—rather than on the process itself. Nine years later, in *Paine, Webber, Jackson and Curtis, Inc. v. Merrill, Lynch, Pierce, Fenner & Smith, Inc.* (564 F. Supp. 1358 [D. Del. 1983]), a federal district court in Delaware rejected a subject matter challenge to a claim on a “securities brokerage-cash management system.” The relevant claims, drafted in means-plus-function form, were directed to

1. A third party who requests reexamination and loses may not challenge validity of the patent in subsequent infringement litigation “on any ground which the third-party requester raised or could have raised” in the reexamination (35 U.S.C. § 313(c)).
2. The manual and all other official publications of the USPTO are available on-line at its Web site, <www.uspto.gov>.

computer hardware and software, designed and programmed to implement a system whereby the brokerage could manage all aspects of customer accounts. Paine Webber, seeking a declaratory judgment of noninfringement, attacked the patent as claiming “nothing more than familiar business systems, that is, the financial management of individual brokerage accounts” (p. 1365). Citing prior decisions of the Court of Customs and Patent Appeals, the district court held that “the product of a computer program is irrelevant, and the focus of analysis should be on the operation of the program on the computer” (p. 1369). Therefore, it concluded, the Merrill Lynch patent passed the

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statutory subject matter test as “a method of operation on a computer to effectuate a business activity” (p. 1369).

The USPTO’s Board of Patent Appeals and Interferences stated the evolving doctrine succinctly in its 1988 decision in *Ex Parte Murray*: “Whereas an apparatus or system capable of performing a business function may comprise patentable subject matter, a method of doing business generated by the apparatus or system is not” (9 U.S.P.Q. 2d 1819, 1820 [Bd. Pat. App. & Interf. 1988]). *Murray* held that the “claimed accounting method, requiring no more than the entering, sorting, debiting, and totaling of expenditures as necessary preliminary steps to issuing an expense analysis statement, is, on its very face, a vivid example of the type of ‘method of doing business’ contemplated by our review court [the Federal Circuit] as outside the protection of the patent statutes” (p. 1820).

The distinction drawn by the board in *Murray* is useful in explaining other post-computer but pre-*State Street* business method cases. For example, in *In re Maucorps* (609 F. 2d 481 [C.C.P.A. 1979]) and *In re Meyer* (688 F.2d 789 [C.C.P.A. 1982]), the Court of Customs and Patent Appeals rejected as nonstatutory claims drawn, respectively, to a business methodology for deciding how salesmen should best handle particular customers and a system for

aiding neurologists in diagnosing patients. Then, in the 1994 case of *In re Schrader*, the board denied statutory status to a claimed system of auction bidding and the Federal Circuit affirmed (22 F. 3d 290 [Fed. Cir. 1994]). While the board relied both on the abstract mathematical algorithm and the business method exceptions, the Federal Circuit’s majority opinion focused only on the former. In a significant dissent, Judge Pauline Newman took the opportunity to review the history of the business method doctrine and concluded that it “merits retirement from the glossary of Section 101” (pp. 296–98). She distinguished a number of often-cited business method cases (including *Hotel Security*) as being better analyzed as novelty or nonobviousness cases. She argued that “historical distinctions between a method of ‘doing’ business and the means of carrying it out blur in the complexity of modern business systems” (p. 298), thus rejecting the analysis suggested by *Murray*. She also quoted the Delaware district court’s *Merrill Lynch* opinion approvingly and at length. As will be seen in the next section, Judge Newman’s conclusion and reasoning were to be adopted almost unchanged in *State Street*.

A final development was the USPTO’s deletion of the business method prohibition from the *Manual of Patent Examining Procedures* in 1996. Simultaneously, the following language was added to the 1996 edition of the *Examination Guidelines for Computer-Related Inventions*: “Office personnel have had difficulty in properly treating claims directed to methods of doing business. Claims should not be categorized as methods of doing business. Instead, such claims should be treated like any other process claims” (61 Fed. Reg. 7478, 7479 [1996]). The USPTO’s more explicitly flexible attitude was quickly reflected in its examination results. The late 1990s saw the issuance of a significant number of patents on what appeared to be standard business practices conducted on the Internet (Oxford IPRC 2000, 17–18; Meurer, forthcoming, 6).

The state of American law with respect to business method patents immediately prior to the *State Street* decision can be summarized as follows: To the extent there had ever been an absolute bar on patenting methods of doing business, it had all but disappeared. Filings in the USPTO were becoming more numerous and more aggressive. The USPTO itself had moved from intransigence to flexibility to what some regarded as abject surrender in the face of such filings. The courts, meanwhile, were not always consistent but were, on balance, increasingly accommodating. Drawing on the proliferating case law concerning computer-based inventions, some

courts attempted to draw distinctions between claims to pure business methods, which remained nonstatutory, and claims to otherwise patentable machines and systems (programmed computers, in both cases, whose purpose was to implement business methods).

One final point to be emphasized is that these legal controversies focused on the question of statutory subject matter status. The novelty, utility, and nonobviousness inquiries were always (at least in theory) conducted in exactly the same way as they were with respect to any other kind of invention.

The *State Street* and *AT&T* Decisions. The *State Street* case involved a patent (U.S. Pat. No. 5,193,056) that had been issued to Signature Financial Group, Inc., in 1993, titled “Data Processing System for Hub and Spoke Financial Services Configuration” (p. 1370). *State Street*, like *Signature*, is in the business “of acting as custodians and accounting agents for multi-tiered partnership fund financial services” (p. 1370). When *State Street* was unable to negotiate a license to use the *Signature* patent, it filed suit, seeking a declaratory judgment of invalidity and noninfringement. The Massachusetts district court granted summary judgment for *State Street* on the issue of invalidity, and the Federal Circuit ultimately reversed.

More specifically, the patented invention allows for the unified management of a portfolio set up as a partnership, with each partner being a separate mutual fund. The portfolio is characterized as the “hub” and the constituent funds as “spokes.” The “system provides means for a daily allocation of assets for two or more Spokes that are invested in the same Hub” (p. 1371). It “determines the percentage share that each Spoke maintains in the Hub, while taking into consideration daily changes both in the value of the Hub’s investment securities and in the concomitant amount of each Spoke’s assets” (p. 1371). The system allocates the hub’s daily income, expenses, and net realized and unrealized gains or losses among the constituent spokes. This allocation allows for the calculation of the true asset value of each spoke on a daily basis as well as for the year-end aggregation of income, expenses, and capital gain or loss. Because each spoke is a mutual fund selling shares to the public, it is essential for pricing purposes that it has real-time data based on its percentage interest in the hub portfolio.

Signature’s application, filed in 1991, initially contained six machine claims in means-plus-function form as well as six method claims. *Signature* cancelled the method claims in response to the patent examiner’s opposition, and the six means-plus-function claims were ultimately allowed. The only independent claim,³ claim 1, recited “a data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising” a variety of computer hardware and software means (p. 1371). The district court treated this and the other five claims as process claims and rejected them because the mathematical algorithm that they included was not “applied to or limited by physical elements or process steps” (927 F. Supp. 508, 513 [D. Mass. 1996]). Drawing on the pre-*State Street* case law, the district court concluded, not unreasonably, that the patent claimed an abstract mathematical calculation that was not adequately tied to the physical world. The district court also observed that its decision “comports with another doctrinal exclusion from subject matter patentability known as the ‘business methods exception’” (p. 515). It cited numerous treatises and cases for the continuing validity of the doctrine and, in particular, for the developing distinction between an apparatus or a system capable of performing a business function and that function itself.

The Federal Circuit thoroughly repudiated both aspects of the district court’s decision. Initially, it observed that the claims were properly viewed as being in machine rather than process form, although the distinction would ultimately prove immaterial. It then significantly narrowed the mathematical algorithm exception to patentability, thereby clarifying and simplifying the law of computer-related patents. Citing the Supreme Court’s 1981 decision in *Diamond v. Diehr* (discussed above), the Federal Circuit acknowledged “that mathematical algorithms are not patentable subject matter to the extent that they are merely abstract ideas” (p. 1373). The court went on, however, to redefine radically what is meant by “abstract.” Specifically, “to be patentable, an algorithm must be applied in a ‘useful’ way” (p. 1373). On the facts before it, the court held “that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price,

3. An independent claim, as the word suggests, stands alone and is interpreted without reference to any others. A dependent claim incorporates the claim on which it depends and then adds further limitations. An independent claim might, for example, recite a chemical process, and a subsequent dependent claim could incorporate the first claim but then require that it be carried out in a specified pH range.

constitutes a practical application of a mathematical algorithm, formula or calculation, because it produces a ‘useful, concrete, and tangible’ result—a final share price momentarily fixed for recording and reporting purposes” (p. 1373). It repudiated a prior test (the so-called *Freeman-Walter-Abele* test) that focused on the application of algorithms to physical elements as having “little, if any, applicability to determining the presence of statutory subject matter” (p. 1374). Henceforth, the only test is whether computation of the algorithm yields a useful, concrete, and tangible result. A dollar number that will be of use in the financial services industry constitutes such a result.

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puter operation produces a specific and use-
ful result even if that result is simply a number.**

The court then turned to the business method exception and disposed of it succinctly and summarily: “We take this opportunity to lay this ill-conceived exception to rest” (p. 1375). The exception should not have survived the 1952 Patent Act’s all-inclusive definition of statutory subject matter. Tracking Judge Newman’s dissent four years earlier in *Schrader*, the court expressed doubt that the doctrine had ever been as robust as generally assumed. Analyzing its own precedent, as well as that of the Court of Customs and Patent Appeals, the court noted that “[a]pplication of this particular exception has always been preceded by a ruling based on some clearer concept” (p. 1375). Even *Hotel Security*, the court found, again following Judge Newman, was really a novelty and nonobviousness case. Finally, the court also endorsed the proposition that the purported distinction between a method of doing business per se and the means of implementing that method was far too fuzzy to be of any ongoing utility. Therefore, the court concluded, “Whether the claims are directed to subject matter within Section 101 should not turn on whether the claimed subject matter does ‘business’ instead of something else” (p. 1377).

In summary, in a factual context that reflects the inseparability of computer technology and modern financial services, the Federal Circuit significantly enhanced the patentability of both business meth-

ods and computer-based inventions generally. With respect to the former, it dismissed as irrelevant the characterization of a patent claim as drawn to a method of doing business. With respect to the latter, it cut through a convoluted case law to hold that computer systems implementing mathematical algorithms can constitute statutory subject matter so long as they produce a useful, concrete, and tangible result. Finally, and perhaps most significantly, it bridged the two legal points by holding that a set of numbers of use to the financial services community constitutes precisely such a result.

A year later, the Federal Circuit decided *AT&T Corp. v. Excel Communications, Inc.* (172 F.3d 1352 [Fed. Cir. 1999]). The invention in that case involved a system for creating message records for long-distance telephone calls. Whereas the patent in *State Street* was characterized as a means-plus-function machine claim, AT&T’s patent contained ten method claims. A Delaware federal district court had held the patent invalid under Section 101 for want of statutory subject matter. The Federal Circuit reversed that decision.

AT&T did not directly involve the business method exception, but it is relevant to the topic as a reaffirmation of *State Street*’s impact on computer-based inventions. The district court recognized that the claimed method required the use of computers and switches. The court held the method nonstatutory, however, on the grounds that it involved nothing more than the operation of a mathematical algorithm without any physical steps. The algorithm in question was basic Boolean algebra.

In reversing the decision, the Federal Circuit focused on the variable being calculated, “the PIC indicator value.” The PIC indicator value provides a record of a customer’s primary long-distance service carrier. Therefore, in the telephone business it is “a useful, non-abstract result that facilitates differential billing of long-distance calls” (p. 1358). Just like the financial data produced by the system in *State Street*, the production of a PIC indicator value was a sufficiently useful, concrete, and tangible application of the Boolean algorithm as to “fall comfortably within the broad scope of patentable subject matter under Section 101” (p. 1361).

AT&T v. Excel put to rest any concern that the *State Street* court did not mean what it said about the patentability of computer-based inventions. Once again, a process that does not produce an effect in the physical world has been held nonetheless to be “useful, concrete and tangible.” In other words, “tangible” really means “specific.” Combined with the demise of the business method barrier, this holding

means that any computer-based invention that performs a business or financial operation should be patentable subject matter. In every case, of course, the other standards of patentability—novelty, utility, and nonobviousness—will still have to be satisfied. *AT&T* illustrates this latter point: on remand to consider these other factors, the district court invalidated the patent on novelty and obviousness grounds (1999 U.S. Dist. LEXIS 17871 [D. Del. 1999]).

Subsequent Developments. The state of the law can be categorized as stable. Perhaps the most closely watched case has been *Amazon.com v. Barnesandnoble.com* (239 F.3d 1343 [Fed. Cir. 2001]). Amazon.com sued for infringement of its patent on a “method and system for placing a purchase order via a communications network” (U.S. Pat. No. 5,960,411). The claims, which were drafted with great breadth, cover one-click on-line shopping, both with and without the use of a shopping basket. Amazon filed the suit in its hometown district court in the state of Washington and was granted a preliminary injunction on December 1, 1999. The award of a preliminary injunction requires a finding that the plaintiff has a probability of success on the merits. The district court was therefore required to find that Amazon would probably succeed on the issue of patent validity. The Federal Circuit vacated this injunction in 2001, expressing doubts about Amazon’s ability to defend the validity of the patent. Significantly, these doubts arose under Sections 102 and 103—not 101. Therefore, one should not read into this decision any doubts about the *State Street* and *AT&T* decisions. The case was settled on undisclosed terms before the district court rendered a final decision on the merits (Merges and Duffy 2002, 1052).

Summary. The *State Street* case has officially killed off whatever was left of the outright subject matter ban on patenting methods of doing business. Indeed, such patents are no longer even in the disfavored category. Simultaneously, *State Street* greatly simplified the law with respect to computer-based inventions. A computer-based invention now constitutes patentable subject matter so long as the computer operation produces a specific and useful result even if that result is simply in the form of a number.

State of International Legal Doctrine

Europe. This section will deal with two topics: legal developments concerning business method

patents in Europe as a whole and related developments in individual European countries.

Business methods and “European” patents. The first and perhaps most significant point to be made is that there is at present no such thing as a true European patent (Merges and Duffy 2002, 55–56; Taketa 2002, 962–64). There are currently three ways to obtain a patent in Europe: proceeding through (1) the European Patent Office in Munich, (2) individual national patent offices, and (3) the Patent Cooperation Treaty. Since the Patent Cooperation Treaty is a procedural agreement intended primarily to assist countries with limited resources in processing applications, it will not be discussed further here.

The European Patent Office (EPO) was established in 1973 under the European Patent Convention (EPC).⁴ The EPO is a hybrid organization with both procedural and substantive functions. Although all European Union members are signatories to the EPC, the EPO is an intergovernmental rather than EU body. An applicant files a single application with the EPO, designating the particular EPC countries in which patent protection is sought. The EPO then conducts a single examination of the application under unitary patentability standards established by the EPC. What is issued, however, is not a true European patent but a bundle of national patents. (An ongoing EU effort to develop a unitary European patent is discussed below.) Significantly, a patent holder is required to file infringement actions in the national courts of the countries in which infringement is alleged. This requirement is, of course, expensive and inefficient—in contrast to the situation of a U.S. patent holder whose single federal patent, enforceable in the federal courts, covers the entire United States. Moreover, although the enforcing European courts theoretically apply the same law, there is a substantial risk of variable interpretations. Again, this situation is in contrast with that in the United States, where all patent appeals go to the Federal Circuit.

The general EPC standards for patentable subject matter do not differ substantially from their American counterparts. Under Article 52(1) of the EPC, “European patents shall be granted for any inventions which are susceptible of industrial application, which are new and which involve an inventive step.” These three requirements are generally viewed as equivalent to the American criteria of utility, novelty, and nonobviousness.

4. For general information on the EPO and the EPC, see the EPO’s Web site at <www.european-patent-office.org/epo-general.htm>. The text of the EPC is available at the same site at <www.european-patent-office.org/legal/epc/index.html>.

The specific standards governing business method patents show similarities and differences when compared to the American rules. Article 52(2) contains a number of specific exclusions, including “schemes, rules and methods for performing mental acts, playing games or doing business, and programs for computers.” This apparently explicit prohibition against patenting either computer programs or methods for doing business is not nearly so absolute as it appears, however. The next section, Article 52(3), states that “the provisions of paragraph 2 shall exclude patentability of the subject matter or activities referred to in that provision only to the extent to which a European patent application or European

The holy grail of “technical character” seems little more than a challenge to European claim drafters.... Business methods will be found to be patentable subject matter, if not through the front door then through the back.

patent relates to such subject matter or activities *as such*” (emphasis supplied).

According to an official EPO press release on business methods and computer programs, the phrase “as such” is critical:

It follows that, although methods for doing business, programs for computers, etc. are *as such* explicitly excluded from patentability, a product or a method which is of a technical character may be patentable, even if the claimed subject matter defines or at least involves a business method, a computer program, etc. (EPO 2000)

The recent EU Commission document proposing a directive on computer-implemented inventions (discussed below) makes two related points (Comm. of the EC 2002, 7–8). First, “an algorithm which is considered as a theoretical entity in isolation from the context of a physical environment, and in respect of which it is accordingly not possible to infer its effects, will be inherently non-technical and thus not susceptible of being regarded as a patentable invention.” However, the second point—“all programs when run in a computer are by definition technical”—virtually moots the first. An algorithm apparently becomes “technical,” and thus potentially patentable, so long as it is implemented on a computer.

The current *Guidelines for Examination in the EPO* reinforce these principles.⁵ Under the heading “Schemes, Rules and Methods for Performing Mental Acts, Playing Games, or Doing Business,” the guidelines state:

These are further examples of items of an abstract or intellectual character. In particular, . . . a scheme for organizing a commercial operation would not be patentable. However, if the claimed subject matter specifies an apparatus or technical process for carrying out at least some part of the scheme, that scheme and the apparatus or process have to be examined as a whole. In particular, if the claim specifies computers, computer networks or other conventional programmable apparatus, or a program therefor, for carrying out at least some steps of a scheme, it is to be examined as a “computer-implemented invention.”

The next section, “Programs for Computers,” summarizes the relevant doctrine as follows:

When considering whether a claimed computer-implemented invention is patentable, the following is to be borne in mind. In the case of a method, specifying technical means for a purely nontechnical purpose and/or for processing purely nontechnical information does not necessarily confer technical character on any such individual step of or use on the method as a whole. On the other hand, a computer system suitably programmed for use in a particular field, even if that is, for example, the field of business and economy, has the character of a concrete apparatus, in the sense of a physical entity or product, and thus is an invention within the meaning of Article 52(1).

The same section states elsewhere:

[Computer-implemented invention] claims may, e.g., take the form of a method of operating said conventional apparatus, the apparatus set up to execute the method, or following [a decision of the EPO Boards of Appeal], the program itself. Insofar as the scheme for examination is concerned, no distinctions are made on the basis of the overall purpose of the invention, i.e., whether it is intended to fill a business niche, to provide some new entertainment, etc.

It is difficult to distinguish these principles in material ways from the current state of U.S. law. First,

as *State Street* did, the EPO *Guidelines* make it clear that a claim directed to carrying out a business method is not for that reason barred or even disfavored. Second, claims on computer-implemented inventions generally are also neither barred nor disfavored. Third, such claims may be drafted either in apparatus (machine) or in process form, specifying computers, computer networks, or even software (recall that *State Street* involved a machine claim, whereas the patent in *AT&T* claimed a method or a process). Fourth, an algorithm “as a theoretical entity in isolation” is not a patentable invention, a rule not materially different from *State Street*’s requirement that a claimed algorithm must be tied to a useful, concrete, and tangible result. In each of these respects, the EPO position seems wholly consistent with the doctrine of *State Street* and *AT&T*. To the extent that there is a difference, it is that the EPO, with its “as such” doctrine, is insisting on the distinction, drawn in the now-repudiated *Murray* case, between “an apparatus or system capable of performing a business function . . . [and] a method of doing business generated by the apparatus or system.”

A fifth aspect of the EPO subject matter requirements, the so-called technicality or technicity standard, is ostensibly distinguishable from the U.S. standards but is likely to yield functionally similar results in many cases (EU 2001). Under the EPO *Guidelines* for “Programs for Computers,” the claimed invention must have “technical character.” This requirement is satisfied if “technical considerations are required to carry out the invention,” and such technical considerations must be reflected in the claims. A technical consideration will be found, however, in the case of “a computer system suitably programmed for use in a particular field, even if that is, for example, the field of business and economy.” This is to be contrasted with “a method, specifying technical means for a purely nontechnical purpose,” which would not be patentable. Putting these various principles together, it appears that the technical character requirement will be satisfied by any computer, computer network, or computer program that is developed or improved to yield a specific result in a particular practical field of endeavor.

Although *State Street* and *AT&T* do not contain similar language, they achieve a similar effect. Their principal holdings are (1) that the mathematical algorithms embodied in computer programs do not bar patentability so long as their use produces a useful, concrete, and tangible result and (2) that

the production of specific business or financial data satisfies that criterion. Thus, although worded differently, the U.S. and EPO subject matter standards seem to be functionally similar.

The EPO *Guidelines* are derived from the case law of the EPO Boards of Appeal. Perhaps the most important of its business method decisions is the *Sohei* case (T 769/92, 1995 OJ EPO 525 [1994]),⁶ which is cited in the *Guidelines* and has been widely discussed in the European literature (Oxford IPRC 2000, 35). In *Sohei*, the applicant claimed “a computer system for plural types of independent management including at least financial and inventory management” and a method for operating said system. Data could be input using a single “transfer slip,” which could take the form of an image displayed on a computer screen. The board held that the claimed subject matter constituted an invention under Article 52(1) of the EPC and could not be excluded from patentability under Articles 52(2)(c) and (3).

Consistent with the U.S. practice of treating patentable subject matter as an initial inquiry independent of novelty and nonobviousness, the appellant *Sohei* argued that “technicality . . . of an invention should, in principle, be examined independently of the question of novelty and inventive step.” The board apparently agreed, “remitting” the case to the EPO’s Examining Division for further consideration of the questions of novelty and inventive step. *Sohei* then argued that a computerized invention such as that claimed could not be held unpatentable under Article 52 as a program for a computer “as such”:

Whenever a computerized solution of a problem involves an implementation which is different from how a human being would solve the problem manually or mentally, technicality in the above sense should be assumed. As to computer programs, Article 52(2)(c) was only intended to exclude program listings.

Although the board did not endorse so broad a proposition, it did find in *Sohei*’s favor. The claimed invention embodied adequate technicality because “the file handling needs a knowledge of the capacities of the computer on which the respective program is to be run.” The claim in question was really directed to the operation of the computer system, which is technical; the financial and inventory management systems, which are not technical, were held to be

5. The guidelines are available at the EPO’s Web site, <www.european-patent-office.org/legal/gui_lines/e/c_iv_2.htm>.

6. The EPO Boards of Appeal decisions are available at the EPO Web site at <legal.European-patent-office.org/dg3/search_dg3.htm>.

tangible illustrations of the operation of the system and perhaps “a voluntary limitation of the scope of protection.” Their mention, however, did not undercut the technicality of the invention. Finally, the fact that the computer system was to be used to implement business methods that might be unpatentable “as such” did not render the system itself unpatentable: “Against claims so generalized in the Board’s view, no objection that they relate only to ‘doing business’ as such could be raised.” As the Oxford Intellectual Property Research Centre has put it, “the Board attached no importance to the end use of the system” (2000, 35). The bottom line is that, despite apparently more complex and demanding require-

ment and/or financial character.” The apparatus claim, however, was upheld as “constituting a physical entity or concrete product suitable for performing or supporting an economic activity.”

These sorts of distinctions are insubstantial, if not illusory. The doctrine that emerges resembles the muddle that characterized U.S. case law before *State Street*. The holy grail of “technical character” seems little more than a challenge to European claim drafters.⁷ There is no reason to doubt that, like their American counterparts, they will be up to it. Business methods will be found to be patentable subject matter, if not through the front door then through the back.

A more substantial distinction appears to lie in the EPO’s application of the inventive step (nonobviousness) requirement to business method and computer-related inventions. The EPO requires that the inventive step be in a technical area; thus, an obvious computer implementation of a nonobvious business method will fail. In a consultation paper prepared to guide discussion on the proposed Directive on Computer-Implemented Inventions, the EU technical staff emphasized that “[t]he fact that the technical contribution also has to be non-obvious is an important limitation on the patentability of computer-implemented inventions” (Comm. of the EC 2000, 4). *State Street* does not appear to contemplate such a limitation.

Nonetheless, it is not clear that EPO examination practice is significantly more onerous than that in the USPTO. The examination process begins with the presumption that business methods are not per se unpatentable. The examiner next looks for an inventive step; to satisfy this criterion the invention must solve a technical problem. However, “if implementation of a business method calls for solution of a technical problem, it will pass muster”; “the overall purpose of the invention is not considered material” (Oxford IPRC 2000, 36). A conventional novelty inquiry follows.

With respect to software-based inventions generally, the president of the EPO stated in 1998 that, “Far from being antisoftware, we have been at pains to ensure that the European Patent system remains fully in tune with the needs of the software industry. . . . The EPO’s approach to software-related inventions has been liberal” (Oxford IPRC 2000, 39). The ultimate question is whether this liberality will extend to software-based business method inventions. Perhaps spurred by the *Sohei* decision, EPO business method applications have risen substantially in the last few years (the vast majority are still pending) although the volume is as yet nowhere near

Japanese law and practice with respect to both software and business method patents are usually described as being similar to the EPO’s, with both standing in contrast to the American situation.

ments, a computerized system for solving a pure business problem constitutes patentable subject matter under the European Patent Convention almost to the same extent as under the *State Street* regime.

A more recent board decision underlines the importance of claim drafting to the determination of whether a business method constitutes patentable subject matter. The *Pension Benefits Systems Partnership* (TT 931/95 [2000]) case involved two primary claims: the first drawn to “a method of controlling a pension benefits program” that involves various unspecified “data processing means” and “computing means” and the second claiming “an apparatus for controlling a pension benefits system” that involves “data processing means.” (Interestingly, the applicant is an American company.) The board held that the first claim “does not go beyond a method of doing business as such, and therefore, is excluded from patentability under Article 52(2)(c) in combination with Article 52(3) EPC; the claim does not define an invention within the meaning of Article 52(1).” The board rejected the argument that the references to data processing and computing means “conferred technical character to the method claimed,” finding instead that the method amounted “to no more than the general teaching to use data processing means for processing or providing information of purely administrative, actuar-

what it has been in the United States (pp. 40–41). This lag may be due to real differences in legal requirements for patenting. It is equally plausible, however, that the disparity results from late-developing awareness among European companies of the availability of business method patents. Indeed, a recent Oxford IPRC survey indicates that most EPO business method filings are made by U.S. nationals (p. 41, app. B). According to the same survey, it remains too early to discern whether the EPO will distinguish itself from the USPTO in the handling of business method applications.

European national laws. The national law with respect to computer-implemented inventions in general, and business method inventions in particular, is well developed only in the United Kingdom and Germany. U.K. courts deal with the interpretation and enforcement of U.K. patents issued by both the U.K. Patent Office (UKPO) and the EPO. Although the U.K. courts are not bound by the decisions of the EPO Boards of Appeal, they are influenced by a parliamentary declaration of intention that patent laws be uniform throughout the EU. Nonetheless, the recent Oxford IPRC report concludes that “United Kingdom courts approach the issue of excluded subject matter in a manner somewhat less favorable to the patentee [than the EPO]” (2000, 37).

The critical difference may be that, whereas under EPO law the ultimate objective is irrelevant to the patentability of a computer system, a 1996 English decision rejecting a patent on a program for designing chemical structures held that “the Court or Patent Office must direct its attention not to the fact that the program is controlling the computer but to what the computer, so controlled, is doing” (*Fujitsu Ltd.’s Application* [1996] RPC 511 [Pat. Ct.], *aff’d* [1997] RPC 561 [Ct. App.]). This view is consistent with the 1989 English Court of Appeal decision in *Merrill Lynch Inc.’s Application* ([1989] RPC 561 [Ct. App.]), which held unpatentable a data processing system for buying and selling securities. In contrast to the approach taken by the EPO in *Sohei*, the *Merrill Lynch* court held that, although a data processing system operating to produce a novel technical result would normally be patentable, such a system is unpatentable “if the result itself is a prohibited item” such as a method of doing business. The UKPO

(2001) has recently reaffirmed its adherence to these principles and its intent to do so for the foreseeable future.

German case law, by contrast, has been interpreted as “not exclud[ing] the possibility that business methods having a technical aspect could be patentable, even if the only contribution that the invention makes is nontechnical” (Comm. of the EC 2002, 10). A recent decision of the German Supreme Court has emphasized that German courts should follow the EPO approach and require that the inventive step constitute a technical contribution (p. 10).

Japan. Japanese law and practice with respect to both software and business method patents are usually described as being similar to the EPO’s, with both standing in contrast to the American situation. For example, the background material to the EU’s proposed directive on computer-implemented inventions states that “in Europe there has to be a *technical contribution* provided by the invention. In Japan there is a doctrine which has traditionally been interpreted in a similar way: the invention has to be a highly advanced creation of technical ideas by which a law of nature is utilized” (Comm. of the EC 2002, 5).

Japan has no outright ban on either software or business method patents. On the contrary, with respect to business methods the stated policy of the Japanese Patent Office (JPO) is “to offer appropriate protection of intellectual property rights (IPRs) in this field under close cooperation with overseas national patent offices” (JPO 2000). The JPO examines business methods applications under the category of “Computer Software-Related Inventions.” It issued highly detailed new *Examination Guidelines* for such inventions on December 28, 2000.⁸ These new guidelines suggest that business method claims (at least those that are implemented by computers) may pass the statutory subject matter test almost as easily as they do in the United States but that the inventive step scrutiny will approximate that in the EPO.

According to the new JPO guidelines, business method claims face three major hurdles: statutory subject matter, the requirement that inventions be “clearly stated,” and inventive step. To meet the subject matter requirement of “a creation of technical ideas utilizing a law of nature,” a business method

7. Two recent EPO board decisions concerning software, both captioned *International Business Machines Corporation*, have further complicated this issue (T 1173/97 [1998] and T935/97 [1999]). Both involved claims drawn to “a computer program product.” In both, after long and convoluted discussion of the nature of technical character, the board remitted the application back to the examiners to continue the search for this elusive prey. Both patents ultimately issued; there were some modifications, but both still contained computer program product claims.

8. These guidelines are available at the JPO’s Web site at <www.jpo.go.jp/tetuzuki_e/index.htm>.

or other software-related invention must be “concretely realized by using hardware resources” (p. 11). The JPO’s examples of business method claims that meet this standard include “a storing method of articles distributed via network” (p. 33), “a computer program for predicting daily sales of commodities” (p. 36), and “a service method for offering service points depending on an amount of commodity purchased in telephone shopping” (p. 43). These examples suggest that it makes no difference whether a business method claim is drawn to the method of providing the service or the implementing software.

The requirement that an invention be “clearly stated” is—ironically if not unexpectedly—not very

The substantial rhetorical gap between the United States on the one hand and Europe and Japan on the other concerning the patentability of business methods might not be so profound in practice.

clear. The following is an example of a claim that comes up short: “an order-receiving method using a computer, comprising the steps of . . .” (p. 4). The problem with this claim is that it is unclear whether it is to be construed “as an order-receiving method (by a human) using a computer as a mere calculation tool” or “as an information processing method by computer software in the constructed order-receiving system” (p. 5). A claim to “a program equipped with an order-receiving means to accept a commodity order from a customer” is said to be similarly flawed but easily curable by amendment to “a program to make the computer operate as an order-receiving means” (p. 5). On balance, though this issue receives substantial attention in the new guidelines, it seems to be little more than a technical challenge to Japanese patent lawyers.

The inventive step question is far more substantive. The basic concept is very much like the U.S. nonobviousness standard: whether “a person skilled in the art could easily have arrived at a claimed invention based on cited inventions” (p. 15). As in the United States, the claimed invention is to be viewed as a whole. The JPO guidelines then offer extended examples of inventions that will fail the inventive step test; two categories are especially relevant to business methods. The first is the application of existing knowledge to other fields. For

example, “[w]here there exists the cited invention of ‘medical information retrieval system’, to apply the concrete means for retrieving in said ‘medical information retrieval system’ to a ‘commodity information retrieval system’ is deemed to be within the ordinary creative activity of a person skilled in the art” (p. 16). This example appears to involve the same general category of invention as the EPO’s *Sohei* decision, where the Boards of Appeal found patentable subject matter but left open the question of inventive step.

The second noninventive category is the “systematization of human transactions,” in which “the cited prior art describes human transactions but not how to systematize them” (p. 17). Business examples include “[m]erely to replace a telephone or fax previously used in order to receive orders from customers with a home page on the Internet,” and “[m]erely to change the way of managing a classified section in a magazine into a way of managing such information via the home page on the Internet” (p. 17). These examples are reminiscent of the patent in dispute in the *Amazon.com v. BarnesandNoble.com* case in the United States. The USPTO had issued the patent, but the Federal Circuit was dubious whether it would hold up under novelty and nonobviousness scrutiny. The overall import of these inventive step examples seems to be that the JPO will unequivocally oppose patents that lie in a gray area in the United States and maybe even in the EPO.

Whatever the theoretical distinctions, there is evidence that the JPO’s results do not differ materially from those reached by the USPTO. At a meeting in Japan in the summer of 2000, the “Trilateral Offices” (the JPO, the USPTO, and the EPO) carried out an interesting experiment (Trilateral Technical Meeting 2000). The JPO and the USPTO examined several sets of hypothetical business method claims. Despite some differences in their respective approaches to statutory subject matter, the two offices resolved the issues of novelty and inventive step in virtually identical fashion and, consequently, arrived at the same results on the ultimate issue of patentability. All three Trilateral Offices concluded that their practices reflect consensus on two issues: “that a technical aspect is necessary for a computer-implemented business method to be eligible for patenting” and that “to merely automate a known human transaction process using well known automation techniques is not patentable” (Trilateral Technical Meeting 2000). With respect to the first point, a footnote observed that the USPTO permits the technical aspect to be implicit in the claim, whereas the EPO

and the JPO require it to be explicit. With respect to the second, one wonders why the USPTO did not have it mind when it allowed Amazon.com's one-click on-line shopping patent. In any event, in light of this experiment, it is not surprising that one leading American source concludes that the JPO "appears to be following the lead of *State Street* in permitting patents on business methods" (Merges and Duffy 2002, 174).

Status of business methods under TRIPS. As noted in the introductory section, Article 27 of TRIPS requires WTO member countries to grant patents on "products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application." Such patents must be granted, moreover, "without discrimination as to . . . the field of technology." The question has been raised whether these provisions amount to a command that WTO nations recognize business method patents or risk trade sanctions from those that do (Taketa 2002, 964–67).

This very argument was raised by the appellant in the EPO Boards of Appeal's 1998 *IBM* decision (see footnote 7), which dealt with a patent on a "computer program product." Interestingly, "[t]o a large extent the Board share[d] the appellant's opinion about the significance of TRIPS." The problem, however, was that the board, "for the time being," was "not convinced that TRIPS may be applied directly to the EPC," since it is an agreement among individual states. Despite its unwillingness to apply TRIPS directly, the board thought it "appropriate to take it into consideration." The board concluded "that it is the clear intention of TRIPS . . . not to exclude programs for computers as mentioned in and excluded under Article 52(2)(c) EPC." TRIPS, in other words, seems to require a *State Street* rule of patentable subject matter.

This is a rather startling statement: The EPC and TRIPS are in direct conflict. Presumably, if TRIPS did apply directly to the EPO, Article 52(2)(c) would be invalid and the EPO would have to adopt the U.S. approach. It is not clear how this could happen unless the EPC members were to decide to adopt TRIPS directly; such a fundamental revision of the EPC's text through indirect means seems unlikely at best. But in so-called monist countries, where treaties such as TRIPS immediately become part of national law, accession to TRIPS may already

(albeit stealthily) have effected the adoption of the *State Street* regime.⁹ The effect of TRIPS, whether direct or indirect, is a legal theme to be watched in the coming years.

Future Legal Trends

USPTO: Trends, practices, and initiatives. In March 2000, the USPTO announced a major plan "to improve the quality of the examination process in technologies related to electronic commerce and business methods" (USPTO 2000). In a white paper issued in conjunction with this announcement, the USPTO reviewed the history of business method patents as well as current trends and described several initiatives designed to add examiners, improve their competence, provide better access to relevant prior art, and insure quality control. Progress on these initiatives was the subject of a "Partnership Meeting" with USPTO "customers" in the summer of 2002 (USPTO 2002).

According to the white paper (USPTO 2000), the trend that was already in progress before the *State Street* decision has accelerated. For example, in Class 705 (data processing: financial, business practice, or cost/price determination), the USPTO received 330 applications in 1995, 584 in 1996, 927 in 1997, 1,340 in 1998, 2,821 in 1999, 7,800 in 2000, and an estimated 10,000 in fiscal year 2001. The number of allowed patents, which, of course, will lag behind applications, has also gone up steadily, from 203 in 1995 to 1,062 in 2000 although the most recent data for fiscal year 2001 suggest that allowances will drop into the 500 to 600 range. This drop is likely to be the result of more examiners giving each application greater scrutiny. The number of examiners in the work group that handles business method-related applications has almost doubled over the last two years, and those hired are said to have greater expertise in both business and computer applications. In addition, examiners are being furnished and encouraged to use wider resources for locating potentially disabling nonpatent prior art.

All allowed applications in Class 705 are now subjected to a second-level review "to ensure compliance with the mandatory search requirements, clarity and completeness of reasons for allowance, and to determine whether the scope of the claim should be considered." In addition, there is in-process review of randomly selected pending

9. Civil law countries commonly follow the monistic approach. Most common law countries are "dualist," meaning that national implementing legislation is required. The United States is a hybrid: the supremacy clause of Article VI of the Constitution provides that "all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land," but Congress regularly enacts implementing legislation (Taketa 2002, 960.)

cases.¹⁰ Two measures of this heightened scrutiny are that the average time from filing to first office action (the initial notice of allowance and/or rejection of claims) in Class 705 is 23.5 months, versus 14.6 months for the entire USPTO, and that the average time to final disposition is 28.5 months in Class 705, versus 25.6 months for the entire USPTO (USPTO 2001).

It is difficult for an outsider to discern qualitative trends in the USPTO's response to business method patents. There is no reason to suspect that there has been any rearguard action against *State Street*. On the contrary, as noted earlier, the USPTO's *Guidelines* and *Manual* reflected skepticism about

In the end, economics may have more to say than law about whether and when the business method patent flood finally crests.

the vitality of the business method subject matter exception even before *State Street*. Its more recent documentation, both internal and external, is entirely faithful to the Federal Circuit's party line. All evidence points to the USPTO's much-publicized heightened scrutiny being focused instead on the categories of novelty and nonobviousness. Examiners are being instructed—and are being given better resources—to determine whether claimed applications really are new and nonobvious. The USPTO has clearly recognized that traditional searches in prior patents and professional literatures are inadequate to this task.

This recognition does not mean that inventors have been—or are likely to be—deterred from filing highly aggressive patents. Nor has the USPTO ceased granting highly controversial patents. To cite just one example, on October 1, 2002, Ed Pool, owner of the one-room company DE Technologies, Inc., obtained U.S. Patent No. 6,460,020 on a “Universal Shopping Center for International Operation.” The purpose of Pool's system is to provide “a pre-transactional calculation of all charges involved in any international transaction,” including currency conversions, customs duties, freight, and insurance. The system is intended to do all the related paperwork electronically, in a language of the customer's choosing. Even before the patent

issued, commentators speculated that it might be worth \$2.4 billion in license fees from major Internet businesses; one predicted that “the patent will undoubtedly add to the uproar over business method patent policy” (Cronin 2000).

U.S. legislative prospects. The limits on enforcement of business method patents contained in the American Inventors Protection Act of 1999 have not satisfied some members of Congress. Subsequent sessions have seen the introduction of bills intended to impose even tighter restrictions. None has yet succeeded. Interestingly, the preferred approach has been not to attack *State Street* directly but to make the examination procedure more rigorous. Both H.R. 5634, the “Business Method Improvement Act of 2000” (106th Cong., 2d sess.), and H.R. 1322, the “Business Method Improvement Act of 2001” (107th Cong., 1st sess.), sought to give third parties and the public an enhanced opportunity to oppose business method patents as well as to raise the bar for novelty and nonobviousness. Both expired at the House subcommittee stage.

At the other extreme, some members of the patent bar have begun to argue for legislation to enhance enforceability. One recent article, for example, has pointed out that a U.S. business method patentee may be without a remedy under existing law “when the infringer has located part of the claimed process outside of the United States” and suggests ways in which Congress might “tweak the law” (Connor and Leak 2002, 1, 3). Even the authors concede, however, that there is no indication and little likelihood that Congress will act.

Future U.S. judicial issues. The Federal Circuit's opinion dissolving the preliminary injunction in the *Amazon.com* case (discussed earlier) may be the best predictor of future battles in the courts. The Federal Circuit focused not on the patentable subject matter issue but rather on novelty and nonobviousness. This is likely to be the pattern in cases to come: The subject matter issue has been laid to rest, and litigants will argue over how to apply Sections 102 and 103 in the business method field. One particular area to watch will be how the courts respond to the USPTO's increasing attention to nonpatent prior art. In most fields, novelty and nonobviousness litigation has focused overwhelmingly on previous patents. Relatedly, the USPTO has been making increasing use of “officially noted” subject matter to reject business method patents on novelty nonobviousness grounds. This subject matter, which does not involve statutory categories of prior art (other patents, printed publications, etc.)

at all, consists of “examples capable of instant and verifiable recognition, such as ATM machines” (USPTO 2002). Its relevance to business method applications is self-evident. As there is only limited case law dealing with officially noted subject matter (USPTO 2002), the judicial response will bear watching here as well.

Enforcement is another area in which de facto judicial limits on business method patents could emerge. Patent lawyers are sometimes heard to say that “what the Federal Circuit giveth on patentability, it taketh away on enforcement.” They mean that, since its inception in 1983, the Federal Circuit has tended to be more expansive than the “secular” courts in allowing patents (see *State Street*, for example) but somewhat stingier in its willingness to find infringement.¹¹ The Supreme Court has contributed to this trend in recent years with two decisions that have narrowed the “doctrine of equivalents” (*Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 [1997]; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 122 S. Ct. 1831 [2002]). This old, judicially created rule, whose purpose is to catch infringers who do not literally copy the patented invention, has shrunk almost to the point of disappearance. Perhaps this relative stinginess will creep into business method patent litigation.

A test of this hypothesis may be forthcoming. As noted in the previous section, some patent lawyers are suggesting that infringers may be able to take advantage of loopholes in the existing remedial section of the Patent Act (35 U.S.C. § 271) by conducting portions of their activities outside the United States (Connor and Leak 2002). Some lawyers also suggest that the Federal Circuit might close those loopholes by aggressive construction of the act. We will know more if and when these loopholes begin to be litigated.

EU initiatives. Within the European Union, two ongoing developments are noteworthy. First, the creation of a true EU patent continues to be a major priority. Motivated by concerns about the transaction costs of the EPO’s national patent bundle scheme, as well as the inconsistencies that can result from national enforcement, the European Commission proposed the creation of a Community

Patent in July 2000. In a May 2002 speech (EU 2002), EU Internal Market Commissioner Frits Bolkestein indicated that although “the Council has made progress on making such a Community Patent a reality,” there were still substantial roadblocks in the form of “the interests of a small number of specialists, judges, and lawyers that currently work in national patent courts.” However, press reports in March 2003 indicated that the EU ministers had reached a compromise on these remaining issues, paving the way to finalization of the EU patent.

At the same time, the EU Commission has presented a proposal for a Directive on the Patentability of Computer-Implemented Inventions (Comm. of the EC 2002). If adopted by the European Parliament and Council, commission directives require the harmonization of member state laws in accordance with their contents. The overall thrust of this directive is to solve the inconsistent enforcement problem by requiring the adoption of the EPC standards as the national law of the EU member states.

Under the current official text of the proposed directive, computer-implemented inventions are “considered to belong to a field of technology” (Art. 3). Like other inventions, they must meet the traditional European standards of industrial application, novelty, and inventive step. In order to meet the inventive step requirement, a computer-implemented invention “must make a technical contribution” (Art. 4[2]). This requirement means that the nonobvious contribution to the art must be in a technical area, whether it lies in the underlying problem, the solution, or the effects of the solution. Significantly, “if there is no technical contribution, e.g., if the contribution to the state of the art lies wholly in non-technical aspects, as would be the case if the contribution to the state of the art comprised purely a method of doing business, there will be no patentable subject matter” (p. 14 [Explanation of the Directive: Article 4]). Nonetheless, if the technical contribution requirement is met, the claim “may comprise both technical and non-technical features” (Art. 4[3]), meaning that the scope of the patent will not be limited to the technical contribution. The EU approach is consistent with the EPC, EPO *Guidelines*, and cases such as *Sohei*, which prohibit the patenting of business methods “as such” but find an ultimate business

10. At the 2002 Partnership Meeting, a participant asked why there was no second-level review of disallowed applications: Is the USPTO “telling examiners that they can do low quality examination for cases they do not want to allow?” (USPTO 2002). The USPTO’s response was to cite the random in-process review initiative.

11. See, for example, *Wang Laboratories, Inc. v. America Online, Inc.* (197 F.3d 1377 [Fed. Cir. 1999]), in which the court narrowly construed the claims in a software-based invention so as to affirm a lower court finding of no infringement. The Federal Circuit also declined to apply the doctrine of equivalents, discussed in the text above.

method objective to be irrelevant so long as the claimed invention is suitably technical in character.

UKPO review. Like its counterparts in the United States and Japan, the UKPO has recently reviewed its policies concerning business method patents (UKPO 2001). Its request for consultation with its various constituencies produced 285 formal submissions by both individuals and organizations and 11,000 Web site hits. Not surprisingly, “[t]here was no consensus among respondents on how far software ought to be patentable” (§11). With respect to software, the UKPO’s position was “to reaffirm the principle that patents are for technological innovations. Software should not be patentable where there is no technological innovation, and technological innovations should not cease to be patentable merely because the innovation lies in software” (§19). This conclusion seems consistent with the EPO position and, arguably, somewhat more restrictive than the *State Street* rule. With respect to business methods, the UKPO concluded that those advocating patentability “have not provided the necessary evidence that it would be likely to increase innovation. Unless and until that evidence is available, ways of doing business should remain unpatentable” (§24). The latter position is consistent with that taken by the British courts. It is thus less favorable to patents than the position taken by the EPO and, of course, the USPTO and the U.S. Federal Circuit.

Conclusion

There is at present a substantial rhetorical gap between the United States on the one hand and Europe and Japan on the other concerning the patentability of business methods. Under the *State Street* decision, business methods clearly constitute patentable subject matter. Europe and Japan, with their “technical character” requirement, see themselves (as reflected in their official literatures) as

imposing significant barriers to patentability both at the subject matter and inventive step stages of the examination. They view the United States as having come down strongly and perhaps irrevocably in favor of ready patentability. The EU, for example, has characterized the United States as a “test case,” conducting a potentially dangerous experiment with its “negligible” restrictions on business method patents (Comm. of the EC 2002, 5).

The theme that emerges from this paper, however, is that the differences that seem so striking at the theoretical level might not be so profound in practice. While the Federal Circuit has forced the USPTO to renounce subject matter objections to business method patents (something it was probably on the way to doing anyway), the USPTO has taken significant steps to scrutinize novelty and nonobviousness more rigorously. In its *Amazon.com* decision, the Federal Circuit showed an inclination to do the same. Thus, while the American patent system may be perceived abroad as having given a blank check to business method applicants, the reality may prove to be considerably more restrictive.

Europe and Japan, by contrast, may in practice be somewhat more liberal than their policy pronouncements would indicate. In the EPO, cases such as *Sohei* and the two *IBM* decisions suggest that the technical character barrier might be a matter more of form than substance, at least at the subject matter stage. And in Japan, the trilateral experiment revealed no differences with the United States in examination outcomes. Although the inventive step distinction remains material, the eventual outcome may nonetheless be convergence, with the United States turning out to be permissive in theory but perhaps demanding in practice, while Europe and Japan display precisely the opposite tendency. In the end, economics may have more to say than law about whether and when the business method patent flood finally crests.

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