THE SHAKEDOWN ON STATE STREET

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"Everything that can be invented has been invented," or so the United States Patent and Trademark (PTO) Director, Charles Duell, thought in 1899. [FN1] Duell's ironic statement preceded discovery of most of the modern technological conveniences on which society currently relies. Largely due to Duell's prediction, when patent applications for devices such as the telegraph and telephone arrived at the PTO, examiners had no idea what to do with these new contraptions; to avoid the hassle of learning the new technology and personally fostering its progression through a cumbersome government agency process, PTO examiners quickly declared the inventions unpatentable subject matter. [FN2] Until recently, the PTO treated patent applications for computer- implemented business methods in much the same way. These inventions were considered unpatentable for three reasons: (1) algorithms, as basic scientific ideas, were considered unpatentable subject matter; (2) the judicially-created physicality requirement was not satisfied; and (3) the business method exception barred patentability. Internet patents are especially at risk of encountering these exceptions because they use algorithms to perform certain functions, they require use of the Internet as a means to implement the invention (thus the physicality requirement is not satisfied) and they exemplify methods of doing business. In State Street Bank & Trust Co. v. Signature Financial Group, Inc., [FN3] a 1998 Court of Appeals for the Federal Circuit (Federal Circuit) eliminated or significantly narrowed all three patentability requirements, opening the door for computer-implemented business method patents. [FN4]

*254 The decision came at an opportune time, since the Internet currently generates more than $300 billion in yearly revenue and has created more than one million jobs. [FN5] Knowing that these figures are just the tip of the iceberg, [FN6] corporate giants are rushing to obtain a piece of this lucrative market. For example, almost half of IBM's 2,657 utility patents were for network-related software inventions. [FN7] Until recently, obtaining patents on computer software which furthered a business method was risky because the patent applications had to claim the hardware on which the program operated or the medium on which it is stored rather than claim the software itself. Also, the claims almost always had to be written in means plus function language, [FN8] leading to very narrow coverage. Further, the validity of such patents was uncertain and issuance of the patent constituted public disclosure so corporations often lost their trade secret protection. [FN9] In the midst of the information revolution spurred by the Internet, many prominent software manufacturers found the inability to patent software- implemented business methods directly and with certainty debilitating. Such manufacturers lobbied the legislature to tweak the laws concerning patentable subject matter. Their ***255** efforts were rewarded when, in 1996, the PTO took heed of their demands and altered the Manual of Patent Examining Procedure (MPEP) to minimize limitations on patenting business method computer software. [FN10] However, since the MPEP is merely persuasive authority, much uncertainty existed as to the impact these amendments would have on patent practice.

Two years later, in State Street, the Federal Circuit alleviated much of this uncertainty by interpreting the MPEP amendments. [FN11] To the joy of software corporations and patent practitioners alike, the court eliminated the business method exception, abolished the physicality requirement, and greatly reduced the effect of the algorithm exception. [FN12] In the two years since the decision issued, the United States Supreme Court denied the PTO's appeal for certiorari [FN13] and a different Federal Circuit panel affirmed the reasoning used in State Street. [FN14] Thus, the door to a new field of patentable subject matter appears to have been opened.

Since patents typically have a two to three year gestation period before issuance, the full-blown ramifications of these decisions remains uncertain, and the cloud of uncertainty raised by State Street will likely not settle for another three to five years. Patent practitioners and legal commentators are split as to the effects occasioned by these recent events. Some argue that society is at the threshold of a new era in which businesses will seek patents as often as they write contracts. [FN15] Others suggest that the ***256** decisions merely judicially codified a practice that had

been present for years and thus will have little, if any, effect on how business is conducted. [FN16]

   This Article will (1) review the historical context of the State Street decision in light of the general tenets and policies underlying patent law; (2) survey the opinions of leading authorities concerning possible future consequences arising from the decision; and (3) discuss the author's opinion that the crucial issue in the wake of State Street is determining the proper scope of patent protection for computer-implemented business methods.

I A Summary of Patent Law

   In 1787, the Framers of the United States Constitution adopted without debate a clause suggested by inventor/legislator Thomas Jefferson which provided that "Congress shall have Power . . . to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." [FN17]   This clause, and the resulting Patent Act of 1793, embodied Jefferson's belief that "ingenuity should receive liberal encouragement." [FN18]   There are two major policy arguments supporting the government's willingness to allow an inventor a limited monopoly: the patent prospect encourages inventors to (1) invest in and conduct research and (2) publish and disclose scientific advancements made in the course of such research. Thus, in exchange for full public disclosure of a useful invention, the inventor receives the right to exclude others from the manufacture, sale, offer for sale, or **257** importation of the invention. [FN19] A full disclosure of the invention and the scientific principles behind it [FN20] enables the public to further experiment with the disclosed technology, and thereby assures the United States predominance in the lucrative field of scientific advancement. [FN21]

   Application for a patent must be made within one year of the first offer for sale or public disclosure.   [FN22] The application must contain an enabling disclosure, which discloses the best method for practicing the invention, as well as a set of claims which define the scope of the claimed legal rights. A PTO examiner will evaluate the application to determine: (1) whether the invention is patentable subject matter; [FN23] (2) whether the invention is sufficiently novel; [FN24] (3) whether the invention conveys some utility; [FN25] **258** and (4) whether the invention is so obvious that anyone with ordinary skill in the art could have created it. [FN26] Once these patentability hurdles are overcome, the PTO issues the application as a patent and the inventor or his assignee have a legal monopoly on the invention for twenty years from the filing date of the application. [FN27] In the event of infringement of these rights, patent owners may seek enforcement of the patent in a federal district court and may obtain preliminary or permanent injunctions, damages for lost profits, attorney's fees, and treble damages. [FN28]

II The Patentability Objections to Software Implemented Business Methods

   Faced with patent applications for software-implemented business methods, PTO Examiners historically denied patentability on the grounds of unpatentable subject matter under 35 U.S.C. ß 101. [FN29] Specifically, examiners made three objections: (1) that **259** the physicality requirement was not satisfied and thus the invention was not patentable; (2) that the application was in violation of the business method exception to patentability and was consequently outside the scope of patentable subject matter; and (3) that the application was merely a mathematical algorithm and therefore unpatentable subject matter.

A. The Physicality Requirement

   Prior to State Street, the predominant method of claiming software was to claim a series of steps to be performed on a computer using means plus function language. Examiners would attempt to categorize these steps in one of three ways: (1) a manipulation of abstract ideas; (2) a solution to a mathematical problem; or (3) a process for transforming physical material into a different state to achieve a practical application or an invention which was performed on a physical apparatus. [FN30] If the steps were categorized as either of the first two categories, the invention was deemed unpatentable subject matter. [FN31] However, if the steps fell into the third category, the invention was patentable because it had physical attributes. [FN32] Thus, computer software became a physical apparatus when run on a general purpose computer [FN33] and claimed using means plus function language because

the algorithm was linked to otherwise patentable subject matter; therefore the invention was considered a machine. [FN34] Because "the principal function of today's business systems is number crunching," satisfaction of the physicality requirement was difficult, if not impossible. [FN35] Consequently, corporations often argued that "[h]aving a physicality requirement only retards the advance of computer technology rather than encourag[ing] it." [FN36]

*260 B. The Business Methods Exception

The court in Hotel Security Checking Co. v. Lorraine Co. [FN37] created the business method exception when they ruled that a method to deter fraud among waiters was unpatentable subject matter because it was a mere business method. [FN38] Commentators argue that the ruling was an overly broad manner of stating that the physicality requirement was not satisfied in the instant case and thus the invention was an idea; further, "[n]o mere abstraction, no idea, however brilliant, can be the subject of a patent irrespective of the means designed to give it effect." [FN39] Consequently, patent practitioners have argued that Hotel Security created a "phantasmic body of law." [FN40] The fact that no court has ever denied a patent based solely on the business method exception supports this assertion. [FN41]

C. The Mathematical Algorithm Exception

The mathematical algorithm exception states that mathematical algorithms are not patentable subject matter because they are merely ideas and ideas are not patentable. Because software is essentially "a sequence of logical instructions that enable a computer to solve a problem or provide a desired output from input data . . . operat[ing] solely on the basis of numerical calculations," [FN42] logical instructions constitute mathematical algorithms and are not subject to patent protection.

D. A Historical Overview of the Case Law Regarding Patentability of Software- Implemented Methods

A summary of the judicial decisions concerning the patenting of computer software "is really the story of a multi-decade long, ***261** titanic struggle waged between the executive and judicial branches" over the scope of 35 U.S.C. ß 101, which defines patentable subject matter. [FN43] The struggle began in the 1960s when the PTO, fully aware of the rapid advances in computer technology, was reticent to issue computer software patents because it feared the difficulty that shouldering the burden of reviewing such applications would represent in light of the dearth of qualified examiners, the financial instability of the PTO, and the floodgate of patents that would flow into the office. The PTO knew that it would need a federal subsidy to handle the inflow of software applications and also knew that, in the midst of a political climate where the government emphasized antitrust law enforcement and downplayed the encouragement of innovation, such a subsidy was highly unlikely. [FN44] As a result, the PTO adopted a strong anti-computer software patent position. The Court of Customs and Patent Appeals (CCPA), [FN45] since it was protected from the fiscal and budgetary problems that constrained the PTO, offered a friendlier environment for software patent applications. [FN46] In 1966, the executive branch attempted to resolve the tension created by these differing opinions by conducting an independent study of the patent system. [FN47] After twenty months of study, the President's Commission on the ***262** Patent System rejected the proposal to grant patent protection to computer software because:

The Patent Office now cannot examine applications for programs because of a lack of a classification technique and the requisite search files. Even if these were available, reliable searches would not be feasible or economic because of the tremendous volume of prior art being generated. Without this search, the patenting of programs would be tantamount to mere registration and the presumption of validity would be all but nonexistent.

It is noted that the creation of [computer] programs has undergone substantial and satisfactory growth in the absence of patent protection and that copyright protection for programs is presently available. [FN48]

In 1968, the CCPA heard "the first significant judicial decision to consider the subject-matter patentability of computer program-related inventions." [FN49] The CCPA held that the fact that a useful process could alternatively

be carried out by a process of mental steps did not preclude patent protection. [FN50] Thus, the decision opened the door for the patentability of novel math processes, such as algorithms. However, the door was quickly slammed shut when, on rehearing, the court declared all claims unpatentable for failure to meet the requirements of 35 U.S.C. ß 112. [FN51] The CCPA again attempted to open the door to patentability for software when it held that programmed computers constituted statutory subject matter. [FN52] In 1970, the court stated that when considering the patentability of a process with many steps, "it is immaterial to the question whether the combination is a statutory 'process' that individual steps are old." [FN53] Finally, in 1971, the court reached a high watermark for showing its support for the patentability of software related inventions by allowing ***263** claims that were directed solely to data processing. [FN54]

Frustrated with the CCPA's trend toward patentability, the PTO appealed its next case to the Supreme Court. [FN55] In Gottschalk v. Benson, [FN56] the PTO argued that software implemented processes and mathematical algorithms were, at their core, a new category of technology that fell outside of 35 U.S.C. ß 101. Further, the PTO reminded the Court that it did not have properly trained examiners or an adequate body of prior art to examine the new technology. [FN57] The Court found for the PTO and, in dicta, stated that it was within Congress's sole dominion to amend 35 U.S.C. ß 101 to include the new technology. [FN58] The effect of this decision was that if Congress altered the statutory language, it would effectively be forced to grant a PTO request for money to implement the change. [FN59] Also, the Court was careful not to state that software-related inventions were per se unpatentable. [FN60]

Because the Court left undiscussed its underlying motives, Benson created a state of confusion. Further, Benson failed to define "algorithm" and reserved for the CCPA the arduous task of creating a workable definition. Over the next four years, the CCPA formulated the Freeman-Walter-Abele test for determining both a definition of algorithm and a clear test for software patentability. The first case to aid in formulating this test was In ***264** re Freeman, [FN61] in which the CCPA introduced a two-part test for software application patentability: (1) does the claim recite an algorithm and (2) if so, does the claim entirely preempt the algorithm? [FN62] This test was applied in In re Flook, [FN63] wherein the CCPA held that a mathematical algorithm plus the step of using the solution of the algorithm to update a process alarm limit was patentable. [FN64] However, the claims in Flook were deemed unpatentable on another basis. [FN65] The second portion of the Freeman-Walter-Abele test was added in 1980 when the CCPA held that "[i]f it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between the physical elements of the claim . . . or to refine or limit claim steps . . ., the claim being otherwise statutory, the claim passes muster under ß 101." [FN66] Thus, the court held that if the claim's end product was a number, it was unpatentable; however, if the end product was a physical result, it was patentable. [FN67] The final step of the test was determined in In re Abele when the CCPA stated that "if the claim would be 'otherwise statutory,' albeit inoperative or less useful without the algorithm, the claim likewise presents statutory subject matter when the algorithm is included." [FN68] Therefore, the resulting test for patentability of algorithms was as follows: the court first determined whether the invention recited a mathematical algorithm, formula, or mental step; if none was found, then the subject matter was not excluded by the algorithm exception. However, if an algorithm, formula, or mental step was involved, the court considered the second prong: whether the invention involved the application of the algorithm to specific physical elements or processes in such a way that the claimed application of the algorithm would wholly preempt its use. [FN69] If preemption was found, the invention qualified as unpatentable subject matter under the algorithm exception.

While quite strict, the Freeman-Walter-Abele test suggested that some computer software was patentable subject matter. The ***265** practical effect of the test was that claims directed to an apparatus or process including an algorithm and carrying out a function were patentable. [FN70] As a result, computer software patents were disguised as hardware patents, often using means plus function language. Critics found this test awkward because it required dissection of the claims into algorithmic and non-algorithmic components, a process directly at odds with the patent rule that claims should be read as a whole [FN71] and the analyzing party must determine whether some or all of the language of the claim constituted a mathematical algorithm. [FN72]

With these recent decisions, the CCPA was beginning to gain a lead in the battle over software patentability. Several events in the 1980s cemented their victory. President Ronald Reagan took office in 1980. His administration ended the era of antitrust dominance and recognized that innovation was a critical American "product." [FN73] To strengthen the patent system, Reagan's administration established the Federal Circuit to foster

uniform patent law. [FN74] Thus, by 1981, the historically feared influx of patent applications for software was not as tremendous a concern because the Reagan administration's support of the PTO suggested that it would be capable of obtaining the funds necessary to handle the increased workload. [FN75] Also, an overhaul of the PTO fee structure enabled it to become fully self-funded. [FN76] Finally, the computer software industry had sufficiently developed ***266** to create a pool of skilled programmers who could be recruited as examiners. [FN77]

  As a consequence of these practical changes, the Federal Circuit issued broader pro-patent rulings, including Diamond v. Chakrabarty's oft quoted "Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" [FN78] In 1994, the Federal Circuit all but discarded the Freeman-Walter-Abele test for software patentability when it proposed a new test which simply considered the claimed invention as a whole and determined whether it covered a useful application of technology or whether it was directed to a disembodied mathematical concept, law of nature, or abstract idea. [FN79] Computer programs embodied in floppy discs were declared patentable subject matter in In re Beauregard. [FN80] Thus, while the trend was to allow patents for computer software, "[i]n the wake of these cases, patent practitioners were left with a series of convoluted rules to guide them in preparing patent applications directed to computer software." [FN81]

  In order to facilitate the patenting of computer software, the PTO released The Examination Guidelines for Computer Software (1996 Guidelines) in 1996, which minimized limitations on patenting business method computer software. [FN82] However, ***267** since the guidelines were merely persuasive authority, uncertainty still existed as to the impact these amendments would have on patent practice. [FN83] Thus, the stage was set for the Federal Circuit to once and for all clarify the issues relating to software patentability.

                     III State Street Bank & Trust Co. v. Signature Financial Group, Inc.

  On March 9, 1993, Signature Financial Group Inc. (Signature), an administration and accounting agent for mutual funds, obtained a patent entitled "Data Processing System for Hub and Spoke Financial Services Configurations." [FN84] The patent contained six apparatus claims written in means plus function language and claimed an investment system that worked on a personal computer. [FN85] Specifically, the program allowed mutual funds (spokes) to pool their assets into an investment portfolio (hub) organized as a partnership. The software allowed daily computation of various factors including each spoke's percentage share of the hub's assets and expenses. [FN86] As a result of the program, the individual mutual funds realized various administrative and tax advantages. State Street Bank, a mutual fund ***268** powerhouse, commanding forty-four percent of the value of the U.S. mutual fund market, and with yearly revenues of $3.5 billion, [FN87] attempted to negotiate a license with Signature. Such negotiations were ultimately unsuccessful. State Street Bank then challenged the validity of the patent.

  Since Signature's patent was issued prior to the 1996 Guidelines andAlappat, the issue in State Street was whether patents not in conformance with the 1996 Guidelines, but prosecuted in good faith, would be upheld. [FN88] The district court granted State Street Bank's summary judgment motion, stating that Signature's patent was invalid under the mathematical algorithm and business method exceptions. [FN89] In so deciding, the court used the Freeman-Walter-Abele test. The court concluded that the apparatus was designed as a means for solving a mathematical problem with no physical activity sufficient to warrant patentability. [FN90] Commentators speculate that the decision was based largely on the fact that the claims were deemed to be so broad that they "foreclose[d] virtually any computer-implemented accounting method necessary to manage this type of financial structure." [FN91] While perhaps true, this objection falls under a ß ß 102, 103, or 112 analysis rather than the patentable subject matter analysis implemented. [FN92]

  After a year and a half of consideration, the Federal Circuit held that the Signature patent was valid. [FN93] In so doing, the Federal Circuit made three important rulings: the court significantly limited the mathematical algorithm analysis, greatly eroded the physicality requirement, and eliminated the business methods exception.

  First, the court addressed the mathematical algorithm exception.   ***269** The court stated that only those algorithms that are nothing more than abstract ideas are precluded from patent protection. [FN94] If reduced to an application with a "useful, concrete, and tangible result," the invention is patentable. [FN95] Further, the court allowed that "the transformation of data . . . by a machine through a series of mathematical calculations into a final share price,

constitutes a practical application of a mathematical algorithm . . . ." [FN96] Because the useful result could be expressed in numbers such as price, profit, percentage, cost, or loss, the decision also effectively eliminated the physicality prerequisite for patent protection. [FN97] Specifically, the court stated that "[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--process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility." [FN98] Thus, the court eradicated the emphasis placed on process versus apparatus claims. Additionally, the Freeman-Walter-Abele test of software patentability was determined to have "little, if any, applicability to determining the presence of statutory subject matter." [FN99] Instead, a practical utility test, whereby an invention is patentable subject matter if it produces a useful, concrete, and tangible result, would be used to determine patentability. [FN100]

  Finally, the court discussed the business method exception. Quoting Judge Newman from In re Schrader, the court characterized the business method exception as "an unwarranted encumbrance to the definition of statutory subject matter in Section 101, that [should] be discarded as error-prone, redundant, and obsolete." [FN101] Thus, the court officially laid this "ill-conceived ***270** exception to rest." [FN102] In doing so, the court relied upon the Patent and Trademark 1996 Examination Guidelines for Computer Related Inventions which states that "[c]laims should not be categorized as methods of doing business. Instead[,] such claims should be treated like any other process claims." [FN103] The court stated that neither it nor its predecessor, the CCPA, had ever relied on the exception as the primary ground for rendering an invention unpatentable. [FN104]

  Thus, after State Street, the path to patentability of software-implemented business methods appeared unobstructed. However, some uncertainty still existed as to whether the decision would be overturned by the Supreme Court or narrowed by future Federal Circuit panels. Both concerns seem to have been unfounded since the holding of State Street survived intense scrutiny in AT&T Corp. v. Excel Communications, Inc., in which a different Federal Circuit panel affirmed the State Street holding. [FN105] Also, the Supreme Court's decision to deny certiorari petitions in both cases suggests that it has deferred the task of interpreting the scope of ß 101 to the Federal Circuit. [FN106]

IV A Discussion of the Potential Long-Term Effects of the State Street Decision

  Since its August 1998 release, critics, patent attorneys and business professionals have been debating the effect that State Street will have on American business. Attorney Barry Rein feels that State Street marks the beginning of "a new era in banking and ***271** finance." [FN107] "Overnight . . . financial institutions have awoken to find their basic products now subject to the patent system." [FN108] Attorney Robert Kunstadt seems to agree. He predicts that State Street "will affect every company operating in this country" and "Madison Avenue will be fundamentally altered." [FN109]

A. Opinions Suggesting that the Hype of State Street Exceeds the Substance

  Many prominent patent professionals assert that State Street will have little long-term effect on the landscape of patent law. Renee Deger asserts that the ruling basically just sewed up the gaps in the law created by the software explosion. [FN110] Further, Deger and others point out that the PTO has already issued approximately 20,000 computer-related method patents [FN111] and the Federal Circuit has upheld the validity of a number of these patents. [FN112] For example, the PTO issued a patent to Merrill Lynch for a securities cash management system in 1982 and the patent was upheld by the Federal Circuit in 1983. [FN113]

  Further, many commentators note that interest in patenting computer- implemented business methods will be short-lived because the benefits of patent protection fail to outweigh the incumbent costs of obtaining a patent. Business methods have a short market time, [FN114] thus, time-consuming [FN115] and expensive [FN116] ***272** patent protection may not be obtained until after the market life of the innovation has expired, thereby leaving a company with a worthless patent. This is especially true of quantitative fund managers whose methods are continually in flux and whose innovations are obsolete within four to five years. [FN117] Also, many business method innovations are ineffective or unpopular and thus do not generate sufficient revenue to allow companies to patent all new innovations they create. Other critics argue that computer software patents are redundant because most innovations

are already protected by trade secret law. [FN118] Hence, obtaining a patent is nothing more than a very expensive marketing gimmick. Also, patent protection will most likely protect one's interest only in the United States since most foreign jurisdictions have statutes implementing the business method exception. [FN119] As a result, large companies with international markets who can afford to prosecute a patent before the PTO will not be greatly served by obtaining patent protection. Additionally, patents like the one issued to Signature fail to offer significant protection since the patents are written very narrowly and thus infringement is easily circumvented. Also, many patents are revoked once it is ***273** discovered that the patented material was already in use but was protected by trade secret.

B. The Author's Predicted Long-Term Effect of State Street

It is more likely that, rather than quickly dying away, the furor over State Street will result in a flood of patent application filings for software- implemented business methods. Recent filings support this assertion; the PTO granted over 20,000 patents for software-related inventions in 1998, the year the decision issued, representing a forty percent increase. [FN120] Similarly, nine Internet patents were granted in 1989, as compared to more than 1,500 in 1998. [FN121] History also supports this assertion. In 1981, when the Federal Circuit ruled that genetically engineered organisms could be patented, the PTO granted over 300 patents in that group the next year. [FN122] Similarly, in 1994, when the Federal Circuit ruled that computer- implemented technology was patentable, Microsoft received only twenty-six patents. [FN123] In 1998, it received 342. [FN124] Additionally, the country is experiencing one of the strongest continued economies in recent history. One benefit of this economy is that consumers and corporations have had money to invest and inventors are using that money to invest in their technology by securing patent rights. Thus, patent applications in general are at an all-time high. [FN125] Specifically, 250,000 patent applications were filed in 1998 and 154,579 of those issued. [FN126] Finally, one cannot underestimate the amount of money the Internet is currently generating. "Growth rates on the Internet are stupefying . . . . So anyone that [has] a patent that will stand up could make a lot of money." [FN127]

However, the oncoming flood of software-implemented business method patent applications will likely result in insufficient novelty searches because (1) PTO software examiners are too ***274** few and too inexperienced and (2) the PTO currently lacks the ability to conduct sufficient prior art searches. With respect to the PTO's software examiners, Robert R. Sachs states that "[e]xaminers, many of whom are young engineers, simply do not have sufficient expertise to evaluate patents which cover Internet business models." [FN128] "Either they don't realize that what is being patented is simply some old idea being done on the Net . . . or they don't have access to resources that would evidence this." [FN129] The PTO, in an attempt to address this concern, has approximately seventy-five computer scientists on staff [FN130] and recently hired twenty new examiners for the division that reviews e-commerce patents. [FN131] However, hiring twenty new examiners simply is not enough in light of the mass filings. [FN132] Also, the PTO lacks sufficient prior art to assess Internet innovations. [FN133] "Since software was not considered patentable until recently, there is no database covering the first thirty years or so of software development to help agencies make novelty and obviousness judgments." [FN134] Further, corporations are reticent to open up their software archives to the PTO because most software is currently protected by trade secret. [FN135]

As a result of these inadequate searches, the PTO is issuing, and will continue to issue, invalid patents. [FN136] For example, CyberGold asserts that it has the exclusive right to pay online consumers incentives to view advertisements [FN137] and Priceline. com argues that it has the exclusive right to run reverse seller auctions where the buyer sets the price. [FN138] Both of these software-related business methods are merely old methods of doing ***275** business implemented in a new forum--the Internet. [FN139] Thus, allowing patent protection for such methods basically ignores the novelty and non-obviousness patentability requirements. [FN140] Other examples include CyberGold's patents for electronic shopping carts, [FN141] Health Hero Network's on-line auctions with bid pooling, [FN142] Priceline.com's online brokerage system, [FN143] and Walker Digital's online connection of users of professional services to professionals who can offer the needed services. [FN144]

The logical consequence of invalid patents being issued at an alarming rate is an increase in patent litigation and a consequent decrease of confidence in the patent system. [FN145] Many lawsuits have already been filed, including Coolsavings.com's infringement suit over a method of distributing coupons over the Internet, [FN146] Priceline.com's October 1999 suit against Microsoft for infringement of its patent that allows consumers to bid for

plane tickets and hotel rooms, [FN147] and Amazon.com's accusation against its rival, Barnes and Noble, of copying its patented one-click technology. [FN148] One danger resulting from this "torrent of lawsuits" [FN149] is that litigation will result in an undeserved windfall to some and create delay and hassle to the majority. [FN150] Specific **276** concern surrounds smaller companies trying to stay afloat in a world of ever-changing e-commerce. While some commentators suggest that e-commerce patents will allow small companies to "protect themselves against large companies trying to steal their innovations," [FN151] others argue that e-commerce patents will place start-ups "at the mercy of large companies with software patents." [FN152] Patent litigation is expensive, thus a larger business's protracted challenge of validity and scope can effectively wipe out a smaller company.

Also, the lawsuit bonanza harkens back to the 1960s when patent protection meant little because litigated patents were invalidated more often than they were upheld. The Reagan administration's creation of the Federal Circuit and the subsequent court's establishment of a uniform body of law with a pro-patent slant ended the era of lack of consumer confidence. Mass invalidation of e-commerce patents will likely return the country to its pre-Federal Circuit mindset of distrust of the PTO and the patents it issues. This deterioration of the patent system may trickle down to the national economy since "patents are the backbone of much of the national economy." [FN153]

V In Light of the Potentially Negative Long-Term Effects of State Street, Was the Decision Correct?

Although experts disagree as to whether State Street marked the beginning of a new era of patent protection, the possibility that State Street will have a disastrous effect on the national economy forces one to consider whether the Federal Circuit's decision was the right one. Because the underlying goal of patent law is to foster innovation, a determination of whether the decision was correct requires an examination of whether patent protection **277** for software-implemented business methods was necessary to spur innovation. [FN154]

A. Forms of Intellectual Property Protection Available Before State Street

In order to judge the effect that patent protection will have on encouraging innovation in the area of software-implemented business methods, one must consider the various forms of intellectual property protection available before State Street.

The most commonly used form of protection was trade secret. Because it can protect an idea even if it does not rise to the level of inventiveness required by patent law [FN155] and lasts as long as the trade secret is not publicly known, [FN156] trade secret protection offers broad, long-term protection. Also, because no public document filings are required, obtaining trade secret protection is relatively inexpensive. [FN157] However, trade secret's requirement that the invention remain absolutely confidential places an onerous burden on the inventor. [FN158] This burden is especially large for software inventions since the value of software increases with distribution and because confidentiality agreements are tedious and cumbersome. [FN159] Finally, trade secret offers no protection against independent invention. [FN160]

Another common method of intellectual property protection which has historically been used for software is copyright. Copyright protects the expression of an idea (i.e., the specific software code language), rather than the idea itself. [FN161] Thus, in terms of software, copyright guards only against literal copying of the source code, whereas patents protect against use of the notion of the software (e.g., the notion of a spreadsheet application as opposed to the source code specifically used to implement the idea). [FN162] Since only literal copying represents infringement, **278** copyright protection does not protect against independent development or reverse engineering. [FN163] Yet, two benefits of copyright protection are that it lasts seventy-five years after the author's death and that it is available for a mere twenty-five dollars. In contrast, patent protection lasts only twenty years from the date of filing and costs thousands of dollars. [FN164] Due to the "awkward fit" [FN165] of copyright law to computer software, much legal uncertainty still exists as to the software elements that are available for protection. [FN166] This uncertainty causes apprehension for patent practitioners and corporations alike.

The remaining method of protection, trademark, has been rarely used because of its limited benefits. Specifically,

it does not protect the functional aspects of software and thus conveys limited protection. [FN167]

Patents offer many benefits that these forms of protection are unable to provide. Perhaps most importantly, patents allow corporations to license their technology and thus to share in the revenue of competitors. [FN168] Not only is cross-licensing prevalent in the world of business, [FN169] this practice has the potential to generate tremendous profits. For example, IBM generates over one billion dollars annually from licensing. [FN170] Also, obtaining patent protection can be especially beneficial to start-up companies seeking funding since many venture capitalists refuse to provide funding in the absence of such protection. [FN171] At a minimum, a patent portfolio allows fledgling companies to receive more funding since patents enhance a company's market value. [FN172] For example, Internet Incentives announced that it was awarded a ***279** patent and then received $17.25 million in new funding. [FN173] Finally, many corporations seek patent protection as a defensive strategy to deter others from entering their markets and to guard against infringement suits by other patent-laden companies. [FN174] No matter which benefit is sought, patent protection should be carefully considered by most businesses since "your competitors are using software patents to gain a business advantage, shouldn't you?" [FN175]

B. A Discussion of Whether Patent Protection is Necessary to Promot Innovation

Many patent commentators assert that these benefits, available only under patent law, are "critical to the growth of e-commerce." [FN176] In fact, some go so far as to state that "[w]ithout patent protection of the fruits of one's labor, there is no incentive to innovate." [FN177] Christopher Cantzler explains this reasoning as follows: greater predictability occasioned by national uniformity will result in greater predictability for protection, which results in increased incentive to innovate. [FN178] Thus, some argue, "protecting intellectual capital is the only way to generate more of it." [FN179] However, others disagree with this logic and argue that patent protection "grants an unreasonable advantage to the authors of existing software and unduly restricts future innovation in the field." [FN180]

It is difficult to deny that many corporations will derive beneficial short- term effects as a result of the State Street decision. Further, State Sreet represented strong precedent to allow truly novel and non-obvious software-implemented business methods patentable status. Such precedent, although long in the making, was the legally correct decision. However, the likely long-term effects of the decision include a flood of new patent applications that the PTO is "ill prepared to handle" and which "the PTO may be tempted to issue . . . too easily." [FN181] This may result in the ***280** mass issuance of invalid patents and a rapid deterioration of consumer confidence in the U.S. patent system. In order to avoid this detrimental result, the Federal Circuit must narrow the overly lenient State Street holding "in order to meet the complex and unique needs of the computer software industry." [FN182] The Federal Circuit must take into account the almost thirty-year lag time between the first uses of software-implemented business methods and the recent patentable subject matter precedent. The court's current blissful ignorance of the tremendous lag time and the resulting wholly inadequate prior art databases accessible to the PTO will result in a return to the weak patent system of the 1960s. Ignorance will not be blissful for long.

Although some commentators assert that broad patent protection is necessary to foster innovation, the required precedential narrowing would not unduly impair such incentive because sufficient motivation for creativity lies in the prospect of profit. This is evidenced by the precedent-setting rate of Internet growth in the past ten years, during which time patent protection for software-implemented business methods was not generally available. Further, the support of innovation through a limited monopoly was originally intended to allow the inventor sufficient time to recoup his research and development expenses and make some profit from his technological advancement. E-commerce does not require the depth of research and development necessitated by many schisms of technology. In fact, Internet businesses can be started for $100 or less. [FN183] Thus, perhaps the original intent of patent law is not served by granting broad protection rights where limited recoupment is necessary.

The PTO appears to recognize its current inadequacies and has taken steps toward remedying them by hiring more examiners and issuing training manuals specifically for use when examiners consider the patentability of computer-related inventions. [FN184] Either the Federal Circuit or Congress must provide the PTO with sufficient time to remedy the thirty-year lag in prior art access. ***281** Without such patience, the current stability of the United States patent is in jeopardy.

[FN1]. Walter Isaacson, Who Mattered and Why, Time, Dec. 31, 1999, at 48, 54.

[FN2]. Teresa Riordan, E-Commerce Patents Reopen Legal Questions from the Past Debate: Should a Business Method be Made Property?, Chi. Trib., Jan. 11, 1999, at 2.

[FN3]. State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1375 (Fed. Cir. 1998).

[FN4]. In 1982, Congress passed the Federal Courts Improvement Act, which created the Court of Appeals for the Federal Circuit. The Federal Circuit handles many types of cases, but one of its primary purposes is to hear all appeals from the federal district courts involving patents. Having a single court devoted to patent law scholarship has allowed for unification of patent doctrine as well as subtle changes to the doctrinal fabric of patent law in order to enhance the stature of the patent system. Robert Patrick Merges, Patent Law and Policy 12 (2d ed. 1997).

[FN5]. Michael D. McCoy, Patents.com: Exclusivity for E-Commerce, Computer Law., Dec. 1999, at 10, 10.

[FN6]. E-commerce, in general, is predicted to generate over one trillion dollars in 2002. Id. McCoy notes that it took television and radio thirteen and thirty-eight years, respectively, to acquire as many users as the Internet has gained in its five year existence. Id.

[FN7]. Brian L. Longest's Software Patent News, What is the Value of a Software Patent? (visited July 15, 2000) <http:// www.softwarepatentnews.com/case10.stm> [hereinafter Software Patent].

[FN8]. These claims find their basis in section 112, paragraph 6 of the Patent Act. 35 U.S.C. ß 112 (1994 & Supp. 1998). The provision authorizes claims in the form "means for doing X" where "doing X" is the function or a step in the process of doing. For example, the claim element "means for fastening" would include the apparatuses Velcro, staples, tape, nails, glue, and any other means for fastening one thing to another. However, the patent statute states that claims will be "construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." Id. Thus, at least in the U.S., means plus function claims are very narrow in scope since they claim only those means identified in the specification and reasonable equivalents. Merges, supra note 4, at 19.

[FN9]. The PTO currently keeps patent applications confidential until issuance only. Under the most recent amendments, applications will remain confidential until the application is published.

[FN10]. Request for Comments on Proposed Examination Guidelines for Computer-Implemented Inventions, 60 Fed. Reg. 28,778 (1995). The PTO officially adopted the Guidelines on March 29, 1996. Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7479 (1996) (available at < http://www.softwarepatent.com> or <http://www.uspto.gov>) [hereinafter Examination Guidelines]; see also Andrew J. Dillon & Brian F. Russell, Software Patentability - Not as New as You Think, Texas Law., Sept. 14, 1998, at 24 (discussing history of software patentability).

[FN11]. State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1375 (Fed. Cir. 1998).

[FN12]. Id.

[FN13]. 525 U.S. 1093 (1999).

[FN14]. AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1355 (Fed. Cir. 1999).

[FN15]. Ernest D. Buff et al., Protection and Exploitation of Financial Services Software,153 New Jersey L.J. 1252, 1252 (Sept. 21, 1998); William T. Ellis & Aaron C. Chatterjee, 'State Street' Sets Seismic Precedent, Nat'l L.J., Sept. 21, 1998, at B13 (asserting that the decision sets a "seismic precedent"); Andrew B. Katz, 'State Street' May Place Start-Ups in Peril, New York L.J., Jan. 19, 1999, at C1 (stating that "intellectual property attorneys everywhere hailed the [State Street] decision as a matter of tremendous importance"); Sari Gabay, Comment, The Patentability of Electronic Commerce Business Systems in the Aftermath of State Street Bank & Trust Co. v. Signature Financial Group, Inc., 8 J.L. & Pol'y 179, 181 (1999) (calling State Street an "astounding decision"); Tony V. Pezzano, State Street Court Case Opens News World for Tech Patents, Sec. Industry News, Jan. 18, 1999, at 2 (calling the decision "groundbreaking").

[FN16]. Renee Deger, Court Reverses State St. Bank Patent Ruling, (visited July 15, 2000) <http://www.callaw.com/hotdocs/stories/edt0727c.html>; John B. Farmer, A battle is brewing for Internet patents (visited July 15, 2000) < http://www.insidebiz. com/hamptonroads/law/law100798.htm>.

[FN17]. U.S. Const. art. I, ß 8, cl. 8. However, note that Jefferson later wrote "The abuse of frivolous patents is likely to cause more inconveniences than is countervailed by those really useful." Silvio A. Bedini, Thomas Jefferson: States-man of Science 209 (1990).

[FN18]. Letter from Thomas Jefferson to Oliver Evans (May 2, 1807), in 5 The Works of Thomas Jefferson 75, 76 (H.A. Washington ed., 1884).

[FN19]. 35 U.S.C. ß 271(a) (1994 & Supp. 1998).

[FN20]. Note that what is disclosed in a patent but not claimed is dedicated to the public. Thus, it is important to remember that only the claims define one's legal rights to the invention.

[FN21]. The authority of Congress is exercised in the hope that the "productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens." Diamond v. Chakrabarty, 447 U.S. 303 (1980) (quoting Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974)).

[FN22]. If international protection is sought, filing must precede public disclosure.

[FN23]. Patents are granted only to whomever "invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. ß 101 (1994 & Supp. 1998). The Supreme Court, in Diamond v. Chakrabarty, interpreted this statute to "include anything under the sun that is made by man." Diamond, 447 U.S. at 309. However, the definition of patentable subject matter was later narrowed to exclude laws of nature, physical phenomena, or abstract ideas, since these are all basic scientific

principles. Allowing patents on basic scientific ideas would hinder the purpose of Article I, Section 8's promotion of science because basic principles should be freely accessible to all. For example, "a new mineral discovered in the earth to a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that E=mc2; nor could Newton have patented the law of gravity." Buff et al., supra note 15, at 1254 (quoting Diamond, 447 U.S. at 309). Note that courts have interpreted these broad limitations to include two more narrow exceptions to patentable subject matter; algorithms and business methods were traditionally deemed to be abstract ideas and thus were considered unpatentable.

[FN24]. Patents are granted only to whomever "invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof." 35 U.S.C. ß 101. The novelty requirement assures the government that the public receives something of value in exchange for a limited monopoly. If the invention was already in the hands of the public at the time of filing, the government would be allowing a monopoly in return for divulgement of an invention it had already secured for the public. As a result, inventions sought to be patented may not have been published, sold, publicly used, or previously invented. 35 U.S.C. ß 102 (1994 & Supp. 1998).

[FN25]. The United States Code mandates that patented inventions be both new and useful. 35 U.S.C. ß 101. Traditionally, utility was thought to involve three major issues. Merges, supra note 4, at 190. The first, called general utility, requires that the invention be capable of some use. Id. The second, specific utility, concerns whether the invention works to solve the problem it was designed to combat. Id. Finally, beneficial utility asks whether the intended purpose of the invention has some intended social benefit. Id. In 1995, the PTO passed new guidelines allowing that deficiencies in utility arise in only two circumstances: (1) when the invention's utility is not apparent and (2) in the rare instance that the asserted use is not credible. PTO Examination Guidelines on Utility Requirement, 50 Pat. Trademark & Copyright J. (BNA) 295, 297-98 (July 20, 1995). As a result of this change, the utility requirement is a low hurdle to patentability.

[FN26]. Non-obviousness requires that, in light of the prior art, the invention would not have been obvious to one with ordinary skill in the art. 35 U.S.C. ß 103(a) (1994 & Supp. 1998). If a nexus is bridged between the invention and the prior art, the invention is not patentable. The underlying policy is that allowing a monopoly on an invention that was obvious benefits the inventor, while the public receives nothing it could not have independently created.

[FN27]. 35 U.S.C. ß 154(a)(1)-(2) (1994 & Supp. 1998).

[FN28]. Injunctive relief is authorized in 35 U.S.C. ß 283 (1994 & Supp. 1998). The claimant may receive damages adequate to compensate for the infringement, but no less than a reasonable royalty, with interest and costs under 35 U.S.C. ß 284 (1994 & Supp. 1998). For a discussion of what constitutes a reasonable royalty, see Georgia-Pacific Corp. v. United States Plywood Champion Papers Inc. Corp., 446 F.2d 295 (2d Cir. 1971). Damages for lost profits have been allowed under ß 284. Rite-Hite Corp. v. Kelley Co., 56 F.3d 1538, 1549 (Fed. Cir. 1995) (en banc). Attorney's fees and treble damages are also authorized under ß 284 where there has been willful infringement. 35 U.S.C. ß 284 ("[T]he court may increase the damages up to three times the amount found or assessed.").

[FN29]. 35 U.S.C. ß 101.

[FN30]. Id.

[FN31]. Id.

[FN32]. Id.; Indira Saladi, <u>Computer Software: Patentable Subject Matter Jurisprudence Comes of Age, 18 J. Marshall J. Computer & Info. L. 113, 124 (1999)</u>. As a result, a natural law such as E=mc2 was not patentable in that form. Yet, it becomes patentable subject matter when used in a machine, useful article of manufacture, process, or composition of matter. <u>Id. at 136.</u> Finally, note that this requirement was embodied in the second step of the Freeman-Walter-Abele test discussed infra.

[FN33]. <u>In re Alappat, 33 F.3d 1526, 1544-45 (Fed. Cir. 1994)</u> (en banc).

[FN34]. Stephen A. Becker, <u>Drafting Patent Applications on Computer-</u> <u>Implemented Inventions, 4 Harv. J.L. & Tech. 237, 255-56 (1991).</u>

[FN35]. Saladi, supra note 32, at 137.

[FN36]. Id.

[FN37]. <u>160 F. 467 (2d Cir. 1908)</u>.

[FN38]. <u>Id. at 472.</u> The method was as follows: the head waiter assigned every waiter a number and kept track of the food order that each waiter took from the kitchen; when the customer paid for the meal, the head waiter got the receipt; by comparing the list of food taken and the receipts, the head waiter could determine whether the waiter was pocketing the cost of a meal as his tip. <u>Id. at 467-68.</u>

[FN39]. <u>Id. at 469</u> (quoting <u>Fowler v. City of New York, 121 F. 747 (2d Cir. 1903)</u>).

[FN40]. Rinaldo Del Gallo, III, Are "<u>Methods of Doing Business" Finally Out of Business as a Statutory Rejection?, 38 IDEA 403, 407 (1998)</u>.

[FN41]. <u>State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1376 (Fed. Cir. 1998)</u>.

[FN42]. Gregory J. Maier & Robert C. Mattson, <u>State Street Bank in the Context of the Software Patent Saga, 8 Geo. Mason L. Rev. 307, 335-36 n.4 (1999)</u>; see also Saladi, supra note 32, at 134 n.154.

[FN43]. Maier & Mattson, supra note 42, at 308.

[FN44]. It is unclear what portion of the fees covered the examination costs in 1996, but in 1980 the PTO recovered only about twenty percent of the processing costs for patent applications and thirty percent for trademark applications. H.R. Rep. No. 96-1307(I) (1980) (1980 WL 12929); see also Suzanne R. Swanson, The <u>Patentability of Business Methods, Mathematical Algorithms and Computer-Related Inventions After the Decision by the Court of Appeals for the Federal Circuit in State Street, 8 Fed. Circuit B.J. 153, 161 n.55 (1999)</u>.

[FN45]. The CCPA was the predecessor to the Federal Circuit.

[FN46]. David T. Silverstein, Patents, Science, and Innovations: Historical Linkages and Implications for Global Technological Competitiveness, 25 Rutgers Computer & Tech. L.J. 261, 302-08 (1991).

[FN47]. Former Commissioner of Patents and Trademarks, Gerald J. Mossinghoff, stated that the Commission "was largely a battle between AT&T, which strongly supported the patenting of software, and IBM, which bitterly opposed it. IBM's position as a mainframe manufacturer and seller was that software should be unpatentable and should be given away free of charge. AT&T, as primarily a software developer, felt precisely the opposite." Maier & Mattson, supra note 42, at 336 n.63 (citing an interview with the Honorable Gerald J. Mossinghoff, former Commissioner of Patents and Trademarks, in Arlington, Va. (Sept. 13, 1999)). The position espoused in AT&T is ironic in light of the fact that for the sixth year in a row, IBM holds the most non- federal patents (2,657 utility patents, over 1000 of which were obtained for network related software). Software Patent, supra note 7.

[FN48]. Gottschalk v. Benson, 409 U.S. 63, 72 (1972) (quoting "To Promote the Progress of... Useful Arts," Report of the President's Commission on the Patent System (1966)). The Commission included high level government members including John T. Connor (Secretary of Commerce), Robert S. McNamara (Secretary of Defense), Bernard L. Boutin (Small Business Administrator), and Leland J. Haworth (National Science Foundation Director). Dean Rusk (Secretary of State) was an official observer. Swanson, supra note 44, at 161 n.52.

[FN49]. Diamond v. Diehr, 450 U.S. 175, 195 n.3 (1981).

[FN50]. In re Prater, 415 F.2d 1378, 1389 (C.C.P.A. 1968), modified, 415 F.2d 1393 (1969).

[FN51]. Prater, 415 F.2d at 1404.

[FN52]. In re Bernhart, 417 F.2d 1395 (C.C.P.A. 1969).

[FN53]. In re Musgrave, 431 F.2d 882, 893 (C.C.P.A 1970).

[FN54]. In re Benson, 441 F.2d 682, 688 (C.C.P.A. 1971).

[FN55]. This appeal to the Supreme Court was significant because it was only the third time since 1950 that the PTO petitioned a case to the Supreme Court. All three petitions were granted and all three were decided in the PTO's favor. See Gottschalk v. Benson, 409 U.S. 63 (1972); Brenner v. Hofstetter, 389 U.S. 5 (1967); Brenner v. Manson, 383 U.S. 519 (1966).
  Former Commissioner of Patents and Trademarks, Gerald J. Mossinghoff, commented that there was and has been a longstanding and continuous disagreement between the PTO and the Justice Department Antitrust Division, with [the latter] favoring weak intellectual property protection. Because the Justice Department ultimately controls which cases go to the Supreme Court, and because the Benson case appeared to be winnable as an anti- patent case, the Justice Department approved taking this case to the Supreme Court.
Maier & Mattson, supra note 42, at 315 n.56 (citing an interview with the Honorable Gerald J. Mossinghoff, former Commissioner of Patents and Trademarks, in Arlington, Va. (Sept. 13, 1999)).

[FN56]. 409 U.S. 63 (1972).

[FN57]. Id. at 72.

[FN58]. Id. at 73.

[FN59]. Maier & Mattson, supra note 42, at 316.

[FN60]. "It is said that [our] decision precludes a patent for any program servicing a computer. We do not so hold." Benson, 409 U.S. at 71.

[FN61]. 573 F.2d 1237 (C.C.P.A. 1978).

[FN62]. Id. at 1244-47.

[FN63]. 559 F.2d 21 (C.C.P.A. 1977), rev'd on other grounds, 437 U.S. 584 (1978).

[FN64]. 559 F.2d at 23.

[FN65]. Id.

[FN66]. In re Walter, 618 F.2d 758, 767 (C.C.P.A. 1980).

[FN67]. Id. at 769-70.

[FN68]. 684 F.2d 902, 907 (C.C.P.A. 1982).

[FN69]. In re Freeman, 573 F.2d 1237 (C.C.P.A. 1978); In re Walter, 618 F.2d 758 (C.C.P.A. 1980); In re Abele, 684 F.2d 902 (C.C.P.A. 1982).

[FN70]. Buff, supra note 15.

[FN71]. Diamond v. Diehr, 450 U.S. 175, 188 (1981).

[FN72]. Id. at 203.

[FN73]. See Lawrence G. Kastriner, The Revival of Confidence in the Patent System, 73 J. Pat. [& Trademark] Off. Soc'y 5 (1991).

[FN74]. For a history of the factors leading up to the creation of the Federal Circuit, see The Honorable Gerald J. Mossinghoff's essay, Side Bar: The Creation of the Federal Circuit in Donald C. Chisum et al., Principles of Patent Law 29-30 (1998).

[FN75]. Maier & Mattson, supra note 42, at 323.

[FN76]. Resources, Community, and Econ. Dev. Div. et al., Intellectual Property--Enhancements Needed in Computing and Reporting Patent Examination Statistics, S. Rep. No. 96-190 (1996), available in 1996 WL 468489.
  In retrospect, it is interesting to note that until the early 1980s, the PTO suffered from a prominent dearth of funding which led to much of the current debate over software patentability. Yet, once the Reagan Administration created the self-funded PTO, the PTO has generated substantial revenues and has become something of a "cash cow for other federal programs." IPO Daily News (last visited June 8, 2000) <http://www.ipo.org/whatsnew.html>. The agency has been so profitable that on June 8, 2000, the House Subcommittee announced its intention to "drastically increase[ ] the amount of USPTO fees proposed to be withheld and diverted to unrelated government programs." Id. The proposed amount to be withheld in 2001 is $295 million, approximately twenty-five percent of the estimated 2001 PTO income. Id. "The largest amount ever withheld before in one year is the $116 million being withheld in 2000." Id.
  IPO President Ronald Myrick testified in Congress on March 9 that fee withholding in the range of $113 to 116 million a year already is threatening the quality of patent examining and causing pendency times for patent and trademark applications to rise toward unacceptable levels. Withholding at the $295 million level at a time when workloads are rising rapidly will be far worse.
Id. PTO Director, Q. Todd Dickinson, authored a letter to Congress on June 9, 2000 outlining the expected effects of the proposed twenty-five percent cut in PTO funding. Expected effects included a hiring freeze and reduction in the printing and granting of patents. "The Office will be unable to hire or replace more than 1,000 employees including more than 600 patent and trademark examiners." Id. Further, Dickinson expected that 68,000 patents and 60,000 trademark applications that would otherwise issue in 2001 would not issue due to the budget cuts. Id. Finally, the new system of electronic and database searching programs would be ceased. Id. Dickinson's letter is available at http://www.ipo.org.

[FN77]. Maier & Mattson, supra note 42, at 323.

[FN78]. 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952); H.R. Rep. No. 82-1923, at 6 (1952)).

[FN79]. In re Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc).

[FN80]. 53 F.3d 1583 (Fed. Cir. 1995).

[FN81]. Buff et al., supra note 15.

[FN82]. See Examination Guidelines supra, note 10.

[FN83]. Id.

[FN84]. U.S. Patent No. 5,193,056.

[FN85]. Claim 1 of the patent reads:
  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) computer processing means for processing data;
  (b) storage means for storing data on a storage medium;
  (c) first means for initializing the storage medium;
  (d) second means for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds assets and for allocating the percentage share that each fund holds in the portfolio;
  (e) third means for processing data regarding daily   incrementalincome, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;
  (f) fourth means for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and
  (g) fifth means for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.
U.S. Patent No. 5,193,056.

[FN86]. Id.

[FN87]. Ellis & Chatterjee, supra note 15, at B13.

[FN88]. Saladi, supra note 32, at 137.

[FN89]. State St. Bank & Trust Co. v. Signature Fin. Group, Inc., 927 F. Supp. 502, 515-16 (D. Mass. 1996), rev'd 149 F.3d 1368 (Fed. Cir. 1998).

[FN90]. Id. at 515.

[FN91]. Id. at 516.

[FN92]. State St., 149 F.3d at 1375. 35 U.S.C. ß 102 (1994 & Supp. 1998) requires inventions seeking patents to be novel; 35 U.S.C. ß 103 (1994 & Supp. 1998) considers whether the technical accomplishment of an invention is substantial enough to merit the award of a patent; 35 U.S.C. ß 112 (1994 & Supp. 1998) requires that the patent provide adequate disclosure of the invention. In order to obtain a valid patent, all of these must be considered after the PTO decides that the invention is patentable subject matter.

[FN93]. State St., 149 F.3d at 1368. The unusually long time required to write the opinion highlights the highly controversial nature of the decision.

[FN94]. Id. at 1373 (construing Diamond v. Diehr, 450 U.S. 175 (1981)).

[FN95]. Id.

[FN96]. Id. Since the useful result could be expressed in numbers, such as price, profit, percentage, cost, or loss, claims to financial vehicles were held to be statutory subject matter under ß 101. Id. at 1377.

[FN97]. Id. at 1375.

[FN98]. Id. (footnote omitted).

[FN99]. Id. at 1374. Note, however, that the court's "little, if any" language means that the test may still be applied on a case-by-case basis. Katherine Kelly Lutton, Fish & Richardson P.C., Federal Circuit Eviscerates "Business Method" and "Mathematical Algorithm" Exceptions: State St. Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368 (Fed. Cir. 1998) (visited July 16, 2000) <http://www.fr.com/publis/kelstate.htm>.

[FN100]. State St., 149 F.3d at 1375.

[FN101]. Id. (quoting In re Schrader, 22 F.3d 290, 298 (Fed. Cir. 1994)).

[FN102]. Id.

[FN103]. Id. at 1376 (quoting the Examination Guidelines, 61 Fed. Reg. 7478, 7479 (1996)).

[FN104]. Id.

[FN105]. AT&T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1355 (Fed. Cir. 1999). Specifically, the panel reversed the lower court's summary judgment invalidation of the patent's claims and remanded for further proceedings in light of the State Street holding since the lower court did not have the benefit of that decision when it authored its opinion. Id. The State Street panel consisted of Judges Rich, Bryson, and Plager while AT&T was rendered by Judges Plager, Clevenger, and Rader. Note that Judge Plager, the only judge to sit on both panels, wrote the opinion in AT&T. Christopher S. Cantzler, State Street: Leading the Way to Consistency for Patentability of Computer Software, 71 U. Colo. L. Rev. 423, 454 (2000).

[FN106]. State St., 149 F.3d 1368, cert. denied, 525 U.S. 1093 (1999); AT&T, 172 F.3d 1352, cert. denied, 120 S.Ct. 368 (1999).

[FN107]. Barry D. Rein, A New World for Money Managers: Circuit Upholds Financial Patent, N.Y.L.J., Sept. 21, 1998, at S1.

[FN108]. Id.

[FN109]. Robert M. Kunstadt, Sneak Attack on U.S. Inventiveness, Nat'l L.J., Nov. 9, 1998, at A21.

[FN110]. Deger, supra note 16.

[FN111]. Id.; Swanson, supra note 44, at 189.

[FN112]. Id.; Gabay, supra note 15, at 215 n.168.

[FN113]. Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 564 F. Supp. 1358, 1369 (D. Del. 1983) (ruling that the claims to the business method were not invalid); see also Lynne B. Allen, Note, The Patentability of Computer Programs: Merrill Lynch's Patent for a Financial Services System, 59 Ind. L.J. 633 (1983).

[FN114]. The shelf life of software averages one year. If that year is spent waiting out a preliminary injunction, no matter the ultimate resolution of the dispute, the benefits that a patent confers are lost.

[FN115]. The average time required to obtain a software patent is currently more than two years. Cantzler, supra note 105, at 443. Note that this is five months longer than most patents take to issue, largely due to the complexities required to avoid ß 101 rejections. Id. Also, patent litigation in general is very time-consuming. In fact, some patent litigation suits have taken twenty-seven years to resolve. Tom Arnold, Why ADR, 572 PLI/Pat 1013, 1016 (1999). This is especially detrimental to software companies since time spent litigating results in both lost technological opportunities and depletion of the useful life of the IP right. Christine Lepera & Jeannie Costello, Benefits of Mediating Intellectual Property and Entertainment-Related Disputes, 605 PLI/Lit 621, 623 (1997).

[FN116]. The average patent litigation costs one million dollars per side, and spending fifteen million dollars to litigate is not unusual. Miriam R. Arfin, The Benefits of Alternative Dispute Resolution in Intellectual Property Disputes, 17 Hastings Comm. & Ent. L.J. 893, 895 n.2 (1995); see also Konstantinos Petrakis, The Role of Arbitration in the Field of Patent Law, 52- FALL Disp. Resol. J. 24 (1997). For example, in Polaroid v. Kodak, attorneys fees alone were $100,000,000 for both sides (and the litigation lasted 12 years). Arnold, supra note 115, at 1017. One reason intellectual property disputes are so expensive to litigate is that they are very fact-intensive and technically and legally complex. Lepera & Costello, supra note 115, at 623. Their fact-based nature results in poor budgeting predictions and an uncertain discovery timeline. For example, one patent attorney stated that, in his experience, "in 50% of the patent cases lawyers do not succeed in budgeting the case with an accuracy of plus half a million dollars or minus a quarter of a million, within plus two years or minus one year." Arnold, supra note 115, at 1017.

[FN117]. Tam Pui-Wang Tam, What's Next? Getting Patents for Cold Calls? Wall St. J., Nov. 2, 1998, at C1.

[FN118]. Id.

[FN119]. Rein, supra note 107, at S1. The European and Japanese Patent Offices generally follow the U.S. PTO. While both patent offices currently implement a business method exception, it will be interesting to see whether this changes to conform with the new U.S. law; Maier & Mattson, supra note 42, at 318 n.72; see also Eoin Licken, U.S. Firms Move Quickly to Patent Technology, The Irish Times, Sept. 11, 1998, at 58.

[FN120]. McCoy, supra note 5, at 11.

[FN121]. Id.

[FN122]. Fish & Richardson P.C., Patenting Methods of Doing Business: After State Street, It's the Law, (visited April 11, 2000) <http:// www.fr.com/about/new/state street.htm>.

[FN123]. Id.

[FN124]. Id.

[FN125]. Gabay, supra note 15, at 183.

[FN126]. Id.

[FN127]. Beth Lipton Krigel, Floodgates Open for Patent Cases (visited August 28, 1998) <http://news.cnet.com/news/0-1003-200-332599.html?tag=> (quoting Carl Oppedahl of Oppedahl & Larson).

[FN128]. Id. (quoting Robert R. Sachs of Fenwick & West).

[FN129]. Id.

[FN130]. Scott Thurm, Online: A Flood of Web Patents Stirs Dispute Over Tactics, Wall St. J., Oct. 9, 1998, at B1; Swanson, supra note 44, at 192 n.262.

[FN131]. Tony V. Pezzano, State Street Court Case Opens News World for Tech Patents, Sec. Industry News, Jan. 18, 1999, at 2.

[FN132]. Cantlzer, supra note 105, at 455-56.

[FN133]. Seth Ostrow, Trying to Issue Better Net Patents, Computer L. Strategist, July 1999, at 8.

[FN134]. Krigel, supra note 127.

[FN135]. Maier & Mattson, supra note 42, at 309 n.10; Swanson, supra note 44, at 176; Cantzler, supra note 105, at 457.

[FN136]. Cantzler, supra note 105, at 455-57.

[FN137]. U.S. Patent No. 5,794,210.

[FN138]. U.S. Patent No. 5,794,207.

[FN139]. Farmer, supra note 16; Edith Updike, What's Next--A Patent for the 401(K)?, Bus. Wk., Oct. 26, 1998, at 104.

[FN140]. Id.

[FN141]. U.S. Patent Nos. 5,715,314 and 5,729,697.

[FN142]. U.S. Patent No. 5,794,219.

[FN143]. U.S. Patent No. 5,794,207.

[FN144]. U.S. Patent No. 5,862,223.

[FN145]. Cantzler, supra note 105, at 457.

[FN146]. Gabay, supra note 15, at 197 n.71.

[FN147]. The Standard Intelligence for the Internet Economy, Microsoft to Priceline.com: You Wanna Piece O'Me? (visited Nov. 1, 1999) <http:// www.thestandard.com>.

[FN148]. Leslie Kaufman, Amazon Sues Big Bookseller Over System For Shopping, N.Y. Times, Oct. 23, 1999, at C1 (Amazon currently seeks an injunction and money damages).

[FN149]. Updike, supra note 139.

[FN150]. For example, it turns out that British Telecom (BT) has owned a U.S. patent covering hyperlinks for the last fourteen years, but up until now has made no attempt to exploit the patent commercially. The patent, which expires in 2006, was buried among 15,000 other global patents owned by the telecom giant until it was rediscovered "a few years ago" during a routine review of the company's intellectual property. BT has now decided to commercialize the technology, which allows Web surfers to move between pages by clicking on pictures or text--a move that could earn BT hundreds of millions of pounds.
  We are not trying to stop anybody using the Internet, we simply want some reasonable royalties based on the revenues other organisations are enjoying from using this intellectual property. We are not trying to take anything away from Tim Berners-Lee... but (BT) did invent a way of structuring information to make it easily accessible.

[FN151]. Thorold Barker, BT Finds Forgotten Crucial Web Patent, Fin. Times (London), June 20, 2000, at 1 (quoting a BT representative).

Krigel, supra note 127 (quoting Carl Oppedahl of Oppedahl & Larson).

[FN152]. Andrew B. Katz, 'State Street' May Place Start-Ups in Peril, N.Y.L.J., Jan. 19, 1999, at C1.

[FN153]. Hughes Aircraft Co. v. United States, 148 F.3d 1384, 1385 (Fed. Cir. 1998) (Clevenger, J., dissenting).

[FN154]. For a more in-depth discussion, see Gregory J. Maier, Software Protection--Integrating Patent, Copyright and Trade Secret Law, 69 J. Pat. [& Trademark] Off. Soc'y 151 (1987).

[FN155]. Mark C. Dukes et al., Software Patent Protection: State Street Puts Businesses on "Easy Street", S.C. Law., Mar.-Apr. 1999, at 32.

[FN156]. Cantzler, supra note 105, at 434.

[FN157]. Dukes et al., supra note 155.

[FN158]. Id.

[FN159]. Cantzler, supra note 105, at 434.

[FN160]. Id.

[FN161]. Krigel, supra note 127.

[FN162]. Id.

[FN163]. McCoy, supra note 5, at 11.

[FN164]. Krigel, supra note 127.

[FN165]. Id. (quoting Jeffrey Kuester of Thomas, Kayden, Horstemeyer & Risley in Atlanta).

[FN166]. Dukes et al., supra note 155.

[FN167]. Cantzler, supra note 105, at 435-36.

[FN168]. Tim Clark, Will Patents Help E-Commerce? (visited August 26, 1998) <http://news.cnet.com/news/0-1003-200-332600.html?tag=>.

[FN169]. John Farmer asserts that 95% of litigation settles with a cross- licensing scheme which allows the competing products to duke it out on the market. Farmer, supra note 16. But one must have a patent in order to avoid being bullied. Clark, supra note 168.

[FN170]. Software Patent, supra note 7.

[FN171]. Gabay, supra note 15, at 222.

[FN172]. Id. at 221. For example, the PTO announced issuance of three patents to Open Market, Inc. and the company's stock reached a record high. Id. at n.195.

[FN173]. Krigel, supra note 127.

[FN174]. Software Patent, supra note 7.

[FN175]. Id.

[FN176]. Gabay, supra note 15, at 221.

[FN177]. Id.

[FN178]. Cantlzer, supra note 105, at 441.

[FN179]. Jay S. Walker, How Patents Spur Innovation, Bus. Wk., Nov. 16, 1998, at 11.

[FN180]. Carey R. Ramos & David S. Berlin, Three Ways to Protect Computer Software, 16 NO. 1 Computer Law., 16, 18 (1999).

[FN181]. Cantzler, supra note 105, at 426.

[FN182]. Id.

[FN183]. Gabay, supra note 15, at 188 n.38.

[FN184]. Training Materials are Issued for Applying Computer Invention Examination Guidelines, 56Pat., Trademark & Copyright J. 756 (1998).

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