E-Commerce Patents and Shifting Balances in Patent Law

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ABSTRACT

The rules with respect to the patentability of software and business method inventions have loosened over the last decade to allow a broader range of patentability. Many patents issuing today are in the e-commerce area, and there is often a close relationship between what is being patented and generation of wealth. Critics of the surge of e-commerce patents argue these patents may stifle development of e-commerce. The level of concern of critics may be unwarranted since the broader range of patentability that has occurred has been balanced somewhat against a narrower scope of protection occurring during the same time period as a result of more restrictive claim interpretation during enforcement of patents. This more restrictive claim interpretation has created an onus on patent owners to effectively draft and prosecute patents to obtain protection commensurate with the scope of the inventions.

INTRODUCTION

The patent system recently has drawn increased attention, much of it critical, as several high-profile patents in the Internet arena have been in the news. Most notably, internet leader Amazon.com recently won a preliminary injunction against online bookseller Barnesandnoble.com over patent rights for its "one-click" technology that allows Internet customers to buy products with a single mouse click. Despite Amazon.com's victory, Amazon.com CEO Jeff Bezos has called for patent reform, citing concerns over whether the current patent system could potentially be harmful to the Internet industry. In a three-page letter posted on Amazon.com's Web site, he offered suggestions for reforming the patent system. His suggestions include reducing the patent term from 20 to five years for software and business method patents, and establishment of a one-month public comment period before a patent could issue.

Articles criticizing the patent system have appeared in news sources such as the *Wall Street Journal* and the *New York Times Magazine*. An article entitled "Online Patents: Leave Them Pending" [1] appeared in the *Wall Street Journal*. A spotlighted excerpt of the article asserts that "Congress should declare a moratorium on the offensive use of software and business method patents. Only when we are reasonably confident that regulation will do some good should Congress allow regulation to go forward." An article entitled "Patently Absurd" [2] appeared in the *New York Times Magazine*. The article argues that the granting of patents for ideas in cyberspace could kill e-commerce. It cites a common complaint that many of today's Internet "inventions" were performed offline, and therefore do not meet the novel and nonobvious requirements for patentability.

This article discusses the changes in patent law that have occurred over the last several years which have resulted in the present controversy and spotlight on the patent system. Table 1 summarizes changes in the nature of subject matter rules for acquiring patents for software and business methods, and the resultant change in the nexus between these patents and the bottom line goal of business which is to generate wealth. Table 1 also illustrates significant changes in the rules for interpreting the scope of protection provided by patents.

The following will explain the expansion in the scope of patentable subject matter to encompass computer software and business methods. This expansion has occurred at the same time that the Internet created a new platform for a proliferation of new software-based business models. Not surprisingly, this confluence of an expansion of the reach of the patent system and the development of completely new ways of creating wealth through online transactions that fall within the new reach of the patent system has stirred significant controversy. However, the participants in this controversy generally fail to consider a contrary trend in the patent system, a trend toward a more restrictive interpretation of the scope of coverage afforded to patents by the courts. Finally, we consider yet another viewpoint, that the problem is not e-commerce patents per se, or a changing balance in the rigor involved in issuance and enforcement of patents, but rather involves the procedures used by the Patent Office to decide whether or not a purported invention is nonobvious and deserving of patent protection.

PATENT ACQUISITION RULES GOVERNING SOFTWARE AND BUSINESS METHOD INVENTIONS

Over the last several years, the rules for obtaining patents for software and business method inventions have loosened to allow easier

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	Rigor of the subject matter rules governing software and business method inventions	Rigor of the patent enforcement rules governing claim interpretation	Nexus between patents at the frontiers of protection for software and business methods and the bottom line, creating wealth
10 years ago	Stringent	Loose	Distant
Today	Loose	Stringent	Direct

Table 1. *Patent system changes over the last decade.*

Through a series of cases, the Court of Customs and Patent Appeals developed a test, called the Freeman-Walter-Abele test, to determine whether computer-related subject matter constituted patentable subject matter.

patentability. This section first discusses the landmark *State Street Bank & Trust Co. v. Signature Financial Group Inc.* case (hereinafter *State Street*), which culminated a gradual shift over the last decade, and then discusses the cases leading up to *State Street*.

In *State Street* the Federal Circuit examined whether a general-purpose computer which implements a business-oriented process is patentable subject matter under 35 U.S.C. Section 101. To be patentable an invention must fall into at least one of the following four statutory categories of patentable subject matter: process, machine, article of manufacture, or composition of matter. These statutory categories have outer boundaries beyond which an invention may fall into one of the following judicially created categories of unpatentable subject matter: abstract ideas, laws of nature, or natural phenomena. The *State Street* decision considered two subdivisions of the abstract idea category of unpatentable subject matter: mathematical algorithms and business methods.

The patent at issue in *State Street* was Signature Financial's U. S. Patent Number 5,193,056 (the '056 or *Boes* patent). The '056 patent disclosed a general purpose computer which executes a program that determines the percentage share that each of several funds hold in a portfolio, tracks any daily activity affecting the portfolio's assets, and allocates gains, losses, and expenses to each of the member funds. In writing the opinion for the Court, Judge Rich was not persuaded by *State Street*'s arguments that the '056 patent claims were invalid because they were directed to the unpatentable subject matter in the form of mathematical algorithms or business methods. Even assuming that the invention at issue did nothing more than present and solve a mathematical algorithm, the Court found patentable subject matter because of the *utility* of the claimed invention. More specifically, 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, 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 and even accepted and relied upon by regulatory authorities and in subsequent trades."

With regard to the business method exception to statutory subject matter, the Federal Circuit stated that it would take the "opportunity to lay this ill-conceived exception to rest." The *State Street* Court noted that the "business method exception has never been invoked by this Court, or the CCPA (predecessor court to the Federal Circuit), to deem an invention unpatentable." The significance of *State Street* lies in its departure from past authority, which required satisfaction of a "physicality" requirement in order for computer software to cross the statutory subject matter threshold. Under past authority, computer software involving mathematical calculations had to involve some "transformation or conversion of subject matter representing or constituting physical activity or objects."

Prior to *State Street*, a series of cases governed the patentability of computer-related inventions under 35 U.S.C. Section 101. The question of patentable subject matter for computer-related inventions under 35 U.S.C. Section 101 began to be answered when the Supreme Court handed down its decision in *Gottschalk v. Benson* in 1972. This Court held that the mathematical algorithm involved had no substantial practical application and stated that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to patentability of a process claim that does not include specific machines."

In 1980, the Supreme Court in *Diamond v. Chakrabarty* directed the courts to the broad language of Section 101 to find statutory subject matter. In *Chakrabarty* the Court noted that Section 101 has been described by the legislature as encompassing "anything under the sun that is made by man." In 1981, the Supreme Court in *Diamond v. Diehr* stated that "a mathematical formula as such is not accorded the protection of our patent laws." However, the Court noted that "when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., *transforming or reducing an article to a different state or thing*), then the claim satisfied the requirements of Section 101. Through a series of cases, the Court of Customs and Patent Appeals (CCPA) developed a test for whether computer-related subject matter constituted patentable subject matter. The test, Freeman-Walter-Abele, has been described as follows.

It is first determined whether a mathematical algorithm is recited directly or indirectly in the claim. If so, it is next determined whether the claimed invention as a whole is no more than the algorithm itself; that is, whether the claim is directed to a mathematical algorithm that is not applied to or limited by *physical elements or process steps*. Such claims are nonstatutory. However, when the mathematical algorithm is applied to one or more elements of an otherwise statutory process claim … the requirements of Section 101 are met [3].

By eliminating any form of physicality requirement, e-commerce business method patents are issuing with claims that have a closer nexus to actual business and generation of revenues. No longer are patents restricted to the rarified realm of technology. Now, e-commerce patents can hit the bottom line more directly.

For many years, the Freeman-Walter-Abele test guided the Patent Office and the Courts in deciding which computer-related inventions comprised patentable subject matter. In 1989, the Patent Office promulgated guidelines [4] for use by patent examiners in determining the patentability of computer-related inventions that were based on the Freeman-Walter-Abele test. Unfortunately, the Freeman-Walter-Abele test proved difficult to apply, and in *In Re Alappat*, the Court noted that the Freeman-Walter-Abele two-part analysis is not the sole means for determining whether a computer-implemented invention is patentable, but that it remains a useful tool. Moreover, the *Alappat* Court held that a special-purpose computer programmed to solve a mathematical algorithm is patentable subject matter.

Soon after the *Alappat* decision, the Federal Circuit decision in *In re Lowry* set in motion a series of events that laid the groundwork for the *State Street* decision. The Court in *In re Lowry* held that data structures encoded in computer memory to permit a computer to run more efficiently "impart a physical organization on the information stored in memory." The Court held that a data structure stored in computer readable memory, therefore, constituted patentable subject matter. In reaching this decision, the Court did not even consider the Freeman-Walter-Abele test. Rather, it ruled that a data structure encoded in computer memory did not constitute mere printed matter, such as a checkbook stub with printed lines for balance and deposit amount [5], which was not patentable. After the *In re Lowry* ruling the Patent office quickly acknowledged the patentability of computer software [6].

In 1996, following the *Lowry* decision, the Patent Office assembled new guidelines for examining computer-related inventions. The *Examination Guidelines For Computer-Related Inventions* published by the U. S. Patent & Trademark Office [7] provide guidance to patent examiners in reviewing the patentability of computer-related inventions. The guidelines acknowledge that "claims to processes which do nothing more than solve mathematical problems or manipulate abstract ideas or concepts are more difficult to analyze [for patentability purposes]." Nevertheless, the guidelines indicate that to be statutory, a computer-related process must do one of the following:

- "Result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification (or would have been obvious)
- "Be limited by the language in the claim to be a practical application within the technological arts"

Furthermore, "what is determinative is not how the computer does the process, but what does the computer do to achieve a practical application."

Thus, even before the ruling in *State Street*, both the Courts and the Patent Office had loosened the rules governing the patentability of computer-related inventions. In fact, the *State Street* court cited the 1996 guidelines with approval. Even after the decision, however, questions remained as to whether a patent claim must recite the use of a programmed computer to solve a mathematical algorithm, as was the case in *State Street*, in order to constitute patentable subject matter. For instance, there was an open question as to whether a *process* to generate and store information in a physical medium constituted patentable subject matter. The Court in *Excell v. AT&T* answered that question in the affirmative.

The Court in *AT&T* affirmed the patentability of a software-process-based invention that produced a useful, concrete, and tangible result, this time claimed as a method. The invention at issue in U.S. Patent No. 5,333,184 involved an algorithm that identified a long distance telephone caller's primary inter-exchange carrier (PIC) and encoded a physical record with the PIC identifier. The record is useful for billing purposes, for example. The Court stated that although *State Street* involved claims for a programmed computer, the same subject matter analysis should apply to claims directed to a method. Significantly, the opinion specifically stated that the "physical transformation" of subject matter from one state to another is not a requirement for the existence of patentable statutory subject matter.

In the wake of the *AT&T* decision, which explicitly eliminates the *physicality* requirement, the Patent Office has decided to again modify its computer-related subject matter guidelines. In a Business Method Patent Initiative released on March 29, 2000, the U.S. Patent & Trademark Office stated that the *Examination Guidelines for Computer-Related Inventions* and the relevant training examples will be revised in light of the *State Street* and *AT&T* decisions. However, as of the date of this writing, no further details have been given.

The Effect of *State Street*: E-Commerce Patents that Have a Closer Nexus to Business and the Generation of Wealth

The potential impact of the *State Street* decision can be appreciated by examining several recent business method patents in the e-commerce arena. By eliminating any form of physicality requirement, e-commerce business method patents are issuing with claims that have a closer nexus to actual business and generation of revenues. No longer are patents restricted to the rarified realm of technology. Now, e-commerce patents can hit the bottom line more directly.

Prior to *State Street*, the patents involved in cases such as *In Re Iwahashi*, *In Re Freeman*, *In Re Walter*, and *In Re Abele* discussing patentability of computer software and mathematical algorithms were directed at true technological inventions. For example, the claims in the patent application at issue in *In Re Iwahashi* were directed at algorithms related to an auto-correlation unit for use in pattern recognition to obtain auto-correlation coefficients as for stored signal samples. The claims in the patent application at issue in *In Re Walter* were directed at the general area of seismic prospect-

ing and surveying, and involved a mathematical algorithm for unscrambling seismic source waves generated and transmitted downward into the earth which have been reflected by subsurface formations and anomalies. In *In Re Freeman*, the claims of the patent application at issue were directed at a system for typesetting alphanumeric information, using a computer-based control system in conjunction with a phototypesetter of conventional design. The invention in *In Re Abele* was in the field of image processing in the area of computerized axial tomography (CAT) scans. The claims at issue were directed at an improvement in computer tomography whereby the exposure to X-ray is reduced while the reliability of the produced image is improved.

More recently, patents have been issuing in e-commerce areas such as online buying, online reverse auctions, and online advertising. As mentioned earlier, U.S. Patent Number 5,960,411 issued to Amazon.com is directed at a method for placing a purchase order over the Internet. Specifically, the patent is directed at the use of a single action, such as single mouse click to place the purchase order. U.S. Patent Number 6,041,308 issued to Priceline.com is directed to a reverse auction process that allows buyers to submit conditional purchase orders for potential acceptance by one or more sellers. Also issued to Priceline.com is U.S. Patent Number 5,897,620, which is directed at providing a system and method whereby an airline may create and sell unspecified-time airline tickets corresponding to special fare listings. In the advertising area, Cybergold has been issued U.S. Patent Number 5,855,008, directed at systems and methods that pay individuals to view advertisements over the Internet.

Why have e-commerce patents fomented so much controversy lately? It seems that patents in this arena are perceived as failing in their essential purpose: to promote the progress of science and the useful arts [8]. E-commerce is often considered to be synonymous with the Internet. In essence, the Internet is a vast communications medium. It is the culmination of decades of technological innovation and millions of dollars spent on a Pentagon-funded communications project. In 1994, Timothy J. Berners-Lee created the World Wide Web's seminal client and server software, including hypertext markup language (HTML) and the protocol responsible for moving information around the global system (HTTP) [9]. At the time, Berners-Lee was working at CERN, the European Laboratory for Particle Physics in Switzerland.

However, e-commerce patents generally are not directed to technology innovations within this communication medium. Rather, they often are directed to the manner of communications made possible by this communication medium. The Priceline.com reverse auction patent addresses a new way for people to conduct reverse auctions on a network. The Cybergold patent covers a way to encourage people to view advertising materials on a network. Although these inventions are implemented with computers, they are not in the same high technology category as the auto-correlation unit of *In Re Iwahashi* or the computerized axial topography of *In Re Abele*, for example. Rather, e-commerce inventions often build on prior technology innovations.

Therefore, it is not surprising that e-commerce patents are perceived by many commentators as antithetical to the promotion of innovation. If the natural outgrowth of this communications medium called the Internet is to encourage new forms of communication and new business models, what is the benefit to society of smothering these natural results under a layer of business-related e-commerce patents? After all, these commentators might argue, science and technology already have put the medium in place. No further encouragement, through patents, is needed to convince people to actually use it.

The Trend Toward More Restrictive Claim Interpretation

As patent acquisition rules for computer-related inventions have become less stringent during the past decade, rules governing claim interpretation in patent litigation have moved in the opposite direction. It is the claims of the patent, much like the metes and bounds of a real estate deed, that define the technology that the owner of a patent containing those claims may exclude others from utilizing. The invention, as well as the process of making and method of using the technology, recited in any given claim must be disclosed in full, clear, concise, and exact terms in the specification.

The general parameters of claim interpretation have been redefined by recent cases. *Markman v. Westview Instruments* established that claim interpretation is a matter of law decided by a judge rather than a jury. Prior to the *Markman* ruling, there was some doubt as to the extent of jury involvement in claim interpretation. Juries were considered by many to be more likely to interpret patent claims broadly. The *Markman* decision held that any infringement analysis involves first interpreting the claim language to discern its meaning and then comparing the claim language as interpreted to an accused infringing device. Significantly, the court held that the interpretation step is to be performed by the judge. In effect, the interpretation step controls the comparison step since an interpretation that fails to encompass the accused infringing device must inevitably lead to a finding of noninfringement. Courts following the *Markman* case have made the interpretation of the scope and meaning of the claims of a patent a threshold question in patent enforcement proceedings.

The central question of the post-*Markman* era has been what relative weight should be given to the various materials that courts use to interpret claims. This question was addressed shortly after *Markman* by *Vitronics Corp. v. Conceptronic, Inc*. In *Vitronics*, the Federal Circuit made unmistakably clear the primacy of *intrinsic* evidence over *extrinsic* evidence. Intrinsic evidence is the evidence created during the preparation of a patent application and its prosecution before the United States Patent and Trademark Office, and includes the claims

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and specification of the patent application as well as the file history of the application. Extrinsic evidence refers to all evidence other than intrinsic evidence, including expert testimony. The *Vitronics* Court held that intrinsic evidence will be of foremost importance in claim interpretation during enforcement, stating that "intrinsic evidence is the most significant source of the legally operative meaning of disputed claim language … In most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term. In such circumstances, it is improper to rely on extrinsic evidence." The Court particularly emphasized the importance of the specification (the portion of the patent application containing a written description of the invention) [10]: "[T]he specification is always highly relevant to the claim construction analysis. Usually it is dispositive; it is the single best guide to the meaning of a disputed term." The Court also made it clear that prosecution history (all application papers and communications pertaining to a patent between an applicant and the Patent Office, which may contain statements made by an applicant limiting the scope of his/her invention) should also be looked to whenever it is in evidence, and noted that such history "is often of critical significance."

The effect of the *Markman* and *Vitronics* decisions has been more rigorous, and, in many cases, more restricted claim interpretation during patent enforcement. In light of these decisions, e-commerce companies attempting to obtain patent protection should ensure that their patent applications are well drafted and skillfully prosecuted to issuance. *Vitronics* makes clear that skillful drafting and prosecution are the best methods to obtain the widest possible breadth of interpretation from courts. Patent holders attempting to rely on subsequent extrinsic evidence such as expert testimony may find themselves unpleasantly surprised that their e-commerce business method patent is not as broad as they believed.

A Question of Balance or Procedure?

The present concern over e-commerce patents is well placed. E-commerce is an engine of economic growth. However, the solution proposed by many commentators, curtailing patent protection for business method patents, might just miss the point. Innovations in business methods are innovations just the same, and they deserve protection pursuant to Article I, Section 8, of the Constitution. The expansion in the scope of patentable subject matter in the software and business method domains is balanced somewhat by a corresponding restriction of the scope of claim interpretation during patent enforcement in the courts. Nevertheless, the e-commerce patents are perceived by many as problematic. Perhaps the problem has to do more with administrative process than with patentable subject matter. The patent system is ponderous and slow, and the Internet economy is lightning fast.

One scholarly critic of the patent system has observed that the problem is not so much the issuance of business method patents *per se*, but rather the issuance of *bad* business method patents [11]. Specifically, the problem is the issuance of patents that never should have been issued in the first place because they are obvious in view of the prior art. Moreover, our system of enforcement in the courts is so slow, expensive, and unpredictable that even an improvidently issued patent can be a significant impediment to progress. One proposed solution is to overhaul the patent system to encourage the Patent Office to more closely scrutinize the more important patent applications and to encourage participation by third parties in pregrant patent office proceedings so as to point out prior art that the Patent Office otherwise might have missed.

Thus, although changes in patent claim interpretation by the courts somewhat balances the increased scope of patentable subject matter, the burden imposed by questionable patents is great. The solution may be to roll back patent protection to exclude certain types of business methods, or to implement procedures to improve the examination of patents by the Patent Office, or some hybrid combination of these solutions. In any case, the debate is far from over. Stay tuned!

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