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Do Business Method Patents Hurt or Help?: *A Financial Industry Perspective*

CAMERON H. TOUSI AND RALPH P. ALBRECHT[†‡]

"The logic of words should yield to the logic of realities."

Justice Louis Brandeis
Supreme Court Justice, 1856-1941[§]

ABSTRACT

The *State Street Bank*[**] decision of 1998 affirmed U.S. business method patents. Along with the subsequent downpour of patent filings came a shower of commentary from the legal and business communities alike. The literature has generally been thoughtful and well-reasoned, or at least well-meaning. But as practitioners in the fields, we have found the commentary at times too focused on the trees of discord rather than the forest of potential. Having passed the decade anniversary, we take a closer and deeper look at the provocative subject–attempting to present a balanced view of the subject removed from the generically overbroad criticisms as well as the unbridled enthusiasms, supplemented by experience in the field.

† **Cameron H. Tousi**, Of Counsel, Intellectual Property Lawyer, Venable LLP, Washington, DC, chtousi@venable.com, (703) 760-1913; and **Ralph P. Albrecht**, Partner, Intellectual Property Lawyer, Venable LLP, Washington, DC, and recently past President of the Bar Association of the District of Columbia, rpalbrecht@venable.com, (703) 760-1681.

‡ The authors are Intellectual Property attorneys in the Technology Division of Venable LLP, and also members of Venable's Banking and Financial Services practice area. The opinions expressed in this article do not necessarily reflect the views of other partners or employees of Venable LLP, or any of its clients. The authors welcome your comments and questions at their email addresses noted above.

§ Di Santo v. Pennsylvania, 273 U.S. 34, 43 (1927).

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

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I. INTRODUCTION

Economists have wrestled with whether patents spark business innovation, whether exclusive rights hurt or benefit businesses in general, and whether the current legal system is capable of issuing valuable, enforceable patents without too great a burden on companies. While a number of objections have been vocal, proponents and advocates who place much value behind their own patent portfolios have remained silent, lest they be subjected to highbrow disparagement because of their obvious conflicts of interest. Many of the vocal critics, however, also have conflicts of interest—often unstated.

In our view, much commentary has been shielded from the light of the realities of the present intellectual property system. Legal scholars have not contributed significantly to business' concerns that the costs imposed by such patents may hurt well-established organizations without fostering the innovation they profess to propound. Little analogy has been drawn between business method patents (BMPs) and the rich history of intellectual property jurisprudence, which has expanded to include innovations in all endeavors, including software patents, the predecessor to BMPs. Little has been articulated as to *why* it is valuable for business, though much has been written on *what* it means to business, as counsel have carefully deciphered every word laid down by judges, and anticipated how the wisdoms of these Oracles at Delphi benefit their clients.

In the decade since *State Street Bank*, neither the fears of the harshest critics nor the hopes of the greatest advocates have come true. The problems cited against BMPs are generally systemic to the entire patent system, not specific to *State Street Bank* and its progeny. Too few business professionals were immersed in the patent system long enough to have a feel for its strengths and an understanding of its inherent shortcomings. And the rush to judgment by numerous commentators facilitated neither empathy nor understanding of the dynamics at issue. Consequently, when the business community giant awakened in 1999, each issued patent, each lawsuit, and each judicial act in the field was put under an electron microscope. Unlike other fields, however, with business

methods the financial stakes were often large, so the innovations often appeared more obvious than in the pure technologies, regardless of their inherent value.

In response, patent systems, legislators, and courts have increased scrutiny, reduced allowance rates, and whittled away the scope of protection, often down to the very bone. Perhaps this broad brush has tipped the balance, as it has simultaneously reduced opportunities for abusers while in turn reducing the legitimate rights of innovators. While critics may view the recent changes as a safeguard against unnecessary legal action, innovators may view them as reducing the incentive to explore new ideas, more easily expropriated without recompense.

The BMP proponents' side of the story should not be excluded from the equation. First, patents and their underlying social values are founded on constitutional principles. The realms of patentable protection rightly reside in all avenues of innovation, espoused by Congress as "anything under the sun that is made by man,"[1] not as so many items in a buffet chosen based on one's economic appetite. Lasting, valuable laws are not subject to loopholes and manipulation by moneyed interests and clever counsel, but rather internally consistent and founded on Jeffersonian principles. In fact, business methods have been around since the first Patent Statute of the 1790s, and evolved from machine implementation to their modern software format.

Secondly, BMPs do not reside in a vacuum from the intellectual property of other fields, but rather offer advantages and corresponding disadvantages, like any other class of patents. While certainly not perfect or even close, they provide a valuable device to protect early pioneers, particularly those without benefit of early capital. Well established, objective criteria for protection have been universally reflected in the majority of patent systems.

Where competition is keen and entry-level capital requirements are high, patents are a key defensive component to block and defend against quick copy and entry by firms possessing superior market positioning, capital, and brand recognition. Further, the ability to protect innovation sparks entry level investment funds where they would not otherwise flow, fostering, and expanding the rates of innovation. For example, Edison's first economically successful invention was an improved stock ticker (for which he received several patents), which helped him get funding for his first laboratory and factory.[2] The use of patents to secure capital investment has been well known in the

[1] Diamond v. Chakrabarty, 450 U.S. 303, 309 (1981) (holding that genetically modified microorganisms qualify as patentable subject matter).

[2] MICHAEL P. RYAN, KNOWLEDGE DIPLOMACY: GLOBAL COMPETITION AND THE POLITICS OF INTELLECTUAL PROPERTY 21 (1998). Edison's improved stock ticker in 1869 was entitled the "Universal Stock Printer." The successful sales of the Universal ticker in the 1870s and partnering with Wall Street funded Edison's first research think tank, laboratory, and manufacturing facility in Newark, NJ, five years before his move to the storied Menlo Park location. Edison's relationships forged in the financial community helped investment in his future, storied innovations. Edward Calahan is the original inventor of the stock ticker. In 1867, he patented the first stock telegraph printing instrument. Edison began as a telegrapher. His first patent was on a voting telegraphy machine, but it was a commercial failure.

technology arts for decades.[3] No rational pharmaceutical manufacturers would invest hundreds of millions of dollars in research, development, and governmental approvals were it legally permissible for competitors to copy that innovation in the production of generics without being offered limited monopoly.

Despite objections that the patent world belongs to technology, walking among researchers and scientists as opposed to financiers and business owners, in truth it has always been of, for and by the business—a fact better understood by the entrepreneurs seeking seed funding to create their Cisco than the engineers tasked to "design around" existing patents of competitors. The same real-world concerns are expressed daily to patent prosecutors, licensing counsel, and litigators by their innovative financial services clients, just as frequently as Goliath clients with competitive market share seek counsel to reduce their potential infringement liabilities and patent transaction costs.

As in other endeavors, BMPs were never, in fact, intended to be the exclusive end-all solution for innovators, but rather one of an arsenal of tools to protect pioneers of bona fide innovation. Many firms value superior rates and service, lead time and secrecy, not to mention market capability and branding, at least as highly as patents to secure innovation and retain market share. Yet, patent protection is sufficiently crucial to the latter bundle that few venture firms would consider funding high technology or biotechnology companies without it. Business innovators are increasingly required to secure patents, or have a very good reason for not having them, such as adequate lead time, ability to keep innovations or client data confidential, or substantial roadblocks to patenting business methods in their respective markets.

In this article, we trace the history of patents from their early days through the modern era, and review BMPs in relation to technological advances, the size, and scope of the relevant issues, and their impact on the financial industry.

II. EARLY HISTORY

The first patent laws date back at least to the Venetian Statute of 1474, and scholars contend perhaps as far back as the ancient Greeks.[4] The first recorded patent was granted to Italian Renaissance architect Filippo Brunelleschi in 1421 for a method of transporting goods down the river Arno in Florence.[5] Over three centuries later in the United States, the Constitution awarded the early Congress the power "to promote the

[3] Startup software companies have complained that a mere whisper by a large software company that it would enter into their market space was enough to shut down their fledgling operations, even if the Goliath had created little more than mere "vaporware." So patents can provide an equalizing force for obtaining investment for companies such as Stac Electronics. *See* John Burgess, *Microsoft Found Guilty of Patent Infringement; Software Giant Ordered to Pay $120 Million*, WASH. POST, Feb. 24, 1994, at D11.

[4] RYAN, *supra* note 2, at 22, 23.

[5] *See* Frank D. Prager, *Brunelleschi's Patent*, 28 J. PAT. OFF. SOC'Y 109 (1946). Brunelleschi (1377-1446) refused to share his idea until granted exclusive rights to the idea for three years. His idea involved a paddle-wheeled boat. He obtained the right to burn any infringing ship for three years. Apparently he was only able to exploit the idea in 1428 (well after expiration of his patent), when the ship dubbed Il Badalone "The Monster" was launched with fifty tons of Marble from Pisa. It sunk twenty-five miles later. Brunelleschi never recovered financially.

Progress of Science and useful Arts"[6] by granting for limited time exclusive rights to inventors. The first patent laws were enacted by Congress on April 5, 1790, and signed into law on April 10, 1790, by President George Washington.

Despite a common misconception that BMPs did not exist until the 1990s,[7] they in fact date back to the 1790s. The U.S. Patent Office granted forty-one such patents in its first fifty years, including its first two, "Detecting Counterfeit Notes," granted to Jacob Perkins in March 1799, and "A Mode of Preventing Counterfeiting" in April 1815 to John Kneass.[8] The earliest stock printing communications systems arrived with Edward Calahan's stock telegraph printing instrument in 1867,[9] two years before Edison's universal stock ticker. Business functions were implemented on data processing systems since at least the 1870s. The earliest systems were operated by mechanical registering devices.[10] Herman Hollerith invented the first electromechanical data processing systems, and in January 1889, was granted three patents on automating and tabulating statistical information for businesses. This watershed invention signaled the birth of business data processing and secured the future of his company, Tabulating Machine Company, renamed International Business Machines by Thomas J. Watson, Sr. in 1924.[11]

So was born the world of business data processing. In the progression of business processors, the electromechanical switches of Hollerith tabulators were replaced by individual transistors in the late 1940s,[12] by the first integrated circuit in the 1950s,[13] by the small and medium scale integrated circuits of the 1950s and 1960s, and by the large scale and very large scale integrated circuits of the 1970s and 1980s.[14] Each technological advance was documented and secured by patent protection.

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[6] U.S. CONST. art. I, § 8, cl. 8.

[7] *See* Robert M. Hunt, *You Can Patent That? Are Patents on Computer Programs and Business Methods Good for the New Economy?*, 1 BUS. REV., FED. RES. BANK OF PHILA. 6 (2001) ("[P]rior to 1980, most patent attorneys believed these exceptions precluded the possibility of patenting computer software or methods of doing business.").

[8] U.S. PAT. & TRADEMARK OFF., U.S.P.T.O. WHITE PAPER, AUTOMATED FINANCIAL OR MANAGEMENT DATA PROCESSING METHODS (BUSINESS METHODS) § II (1999), *available at* http://www.uspto.gov/web/menu/busmethp/index.html.

[9] U.S. Patent No. 87,242 (filed Feb. 23, 1869). Calahan's stock ticker built on Samuel Morse's U.S. Patent 1,647 (1840), which proved to be the first commercially successful telegraph and method of use. Morse himself built upon the work of Joseph Henry (1825) regarding communications using electromagnets (EM), and British inventor William Sturgeon of the EM. *See* MARY BELLIS, HISTORY OF THE STOCK TICKER, http://inventors.about.com/od/sstartinventions/a/stock_ticker.htm (last visited April 23, 2009).

[10] U.S. PAT. & TRADEMARK OFF., *supra* note 8, § II ("The development of today's business data processing systems follows an unbroken evolutionary path back to simple manually operated mechanical registering devices that predate electrically controlled Hollerith type machines.").

[11] *Id.* The company was incorporated as "Computing Tabulating Recording Corporation" on June 16, 1911, and five years later, listed on the New York Stock Exchange.

[12] T. R. REID, CHIP: HOW TWO AMERICANS INVENTED THE MICROCHIP AND LAUNCHED A REVOLUTION 88 (2001).

[13] *Id.* at 8. Integrated circuits were invented in 1958-1959 by Jack Kilby of Texas Instruments and Robert Noyce of Fairchild Camera.

[14] *Id.* at 176, 178.

III. THE SOFTWARE DILEMMA

Modern BMPs are a subset of computer programs. Computer programming languages—software, the mathematical algorithms and instructional codes for a computing device—had a chronological history parallel to the lineage of transistor technology, beginning with the machine language of Short Code in 1949,[15] to the scientific and business applications of FORTRAN[16] and COBOL[17] of the late 1950s, Pascal[18] and BASIC[19] of the 1960's, C[20] and object oriented programming of the 1970s and 1980s, to the modern descendants.[21] And the computer software advances continue, with applications functioning at every conceivable level and platform, from wireless personal digital assistants to nanostructures.[22]

Unlike transistor technology, software found itself orphaned from protection, as it did not fit neatly into the paradigm of patents. Understanding the reason requires a brief discussion of the founding principles of patent law in the United States, which have been echoed in one form or another in all modern patent systems.

From its inception, the patent system was devised to protect the useful arts, not the algorithms and instructions underlying utility separate from such utility itself. Under section 101 of the Patent Act,[23] only inventions involving a "process, machine,

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[15] Much of the earliest machine code arose from the work of John Von Neumann at the Institute of Advanced Study. *See* INSTITUTE FOR ADVANCED STUDY, JOHN VON NEUMANN: ELECTRONIC COMPUTER PROJECT, http://www.ias.edu/people/vonneumann/ecp (last visited October 8, 2009); s*ee also* R. F. CLIPPINGER, A LOGICAL CODING SYSTEM APPLIED TO THE ENIAC, BALLISTIC RESEARCH LABORATORIES REPORT NO. 673 § I (1948), *available at* http://ftp.arl.army.mil/~mike/comphist/48eniac-coding/ (based on the work of John von Neumann, the Electronic Numerical Integrator and Computer (ENIAC) operated on discrete variables and could perform arithmetic operations expressed in decimal form through the use of punched cards); *see also* William F. Schmitt, *The UNIVAC SHORT CODE*, 10 IEEE ANNALS HIST. COMPUTING 7, 7-18 (1988).

[16] The "FORmula TRANslating" language was developed by IBM in 1957 for scientific applications. *See generally* John Backus, *The History of Fortran I, II, and III*, *in* I HISTORY OF PROGRAMMING LANGUAGES 25-43 (Richard L. Wexelblat ed., 1981).

[17] The "COmmon Business Oriented Language" was developed in 1959 by the Conference of Data Systems Languages (CODASYL), a joint effort by universities and the U.S. Department of Defense to improve business computing. *See generally* Jean E. Sammet, *The Early History of COBOL*, *in* I HISTORY OF PROGRAMMING LANGUAGES 199-240 (Richard L. Wexelblat ed., 1981).

[18] Pascal was developed in 1968 by Niklaus Wirth as a teaching tool. *See generally* N. Wirth, *Recollections about the development of Pascal*, *in* THE SECOND ACM SIGPLAN CONFERENCE ON HISTORY OF PROGRAMMING LANGUAGES 333-42 (Apr. 20-23, 1993).

[19] BASIC was developed in 1964 by John Kemeny and Thomas Kurtz. *See generally* Thomas Kurtz, *BASIC*, *in* I HISTORY OF PROGRAMMING LANGUAGES 515-35 (Richard K. Wexelblat ed., 1981).

[20] C was developed in 1972 by Dennis Ritchie at Bell Labs. *See generally* Dennis M. Ritchie, *The Development of the C Language*, *in* THE SECOND ACM SIGPLAN CONFERENCE ON HISTORY OF PROGRAMMING LANGUAGES 201-08 (Apr. 20-23, 1993).

[21] *See generally* SOFTWARE ENGINEERING TECHNIQUES: REPORT ON A CONFERENCE SPONSORED BY THE NATO SCIENCE COMMITTEE 27-31 (J.N. Buxton & B. Randell eds., 1969).

[22] *See* DIMITRIS CHORAFAS, FOURTH AND FIFTH GENERATION PROGRAMMING LANGUAGES: INTEGRATED SOFTWARE, DATABASE LANGUAGES, AND EXPERT SYSTEMS (1986); June Verner & Graham Tate, *Estimating Size and Effort in Fourth-Generation Development*, 14 IEEE TRANSACTIONS ON SOFTWARE ENGINEERING 15 (1988).

[23] 35 U.S.C. § 101 (2006).

manufacture, or composition of matter" are patentable.[24] Laws of nature, physical phenomena, and abstract ideas were not, and presently are not patentable.[25] It has been argued that man's creations are not to be equated with God's, as the latter are much more valuable—too valuable to receive exclusive rights.[26] In the case of abstract ideas, the patent system's quid pro quo, namely openly disclosing one's ideas in exchange for a limited monopoly, weighs too heavily in favor of the inventor versus society.

This left two problems. First, Congress had clearly mandated as patentable "anything under the sun,"[27] hardly squaring with the section 101 exclusion.

Second, technology had evolved away from the patent system. Machines with working parts had always comfortably fit within section 101 as patentable subject matter. In the realm of earlier business methods, i.e., non-software based business methods, mechanical, electromechanical, and later transistor technology were sufficiently tied to utility through the actions performed by the machines that patentability had not been an issue. However, technology advanced so that software, namely pure instructions to generate a solution, or machine "thought," could now be separated from the "action" of the computing platform. Thus, it was the computing platform that came to provide utility. Microprocessors employing transistor technology would calculate and store data, and peripheral devices would receive inputs, perform outputs, and take on other required functions.

The patent system was left with a significant dilemma: Why should instructions be any less patentable as (i) software functioning on a microprocessor platform than as (ii) hardwired data etched on transistors of an outdated hardware machine? The dilemma begged for consistency.

The Courts answered. While mathematical algorithms or abstractions by themselves may not be patented, they may be patented if applied to physical elements or process steps,[28] such as a real-world utility or significant activity following the number crunching.[29] In 1981, the landmark Supreme Court case of *Diamond v. Diehr*[30] established that the physical transformation of a simple task of opening and closing an oven door to vulcanize rubber, following the calculation of a solution (where the actual

[24] *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 483 (1974) ("[N]o patent is available for a discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C. [§] 101."). In *In re Nuitjen*, 500 F.3d 1346, 1357 (Fed. Cir. 2006), the Federal Circuit declared that a signal, by itself, "cannot be patentable subject matter." Upon review, the Supreme Court may specify the patentable bounds of section 101.

[25] Diamond v. Diehr, 450 U.S. 175, 185 (1981).

[26] The tremendous importance of abstract ideas is frequently misunderstood and misstated by practitioners who equate utility with value, espousing that abstractions are unimportant because they lack utility.

[27] Diamond v. Chakrabarty, 447 U.S. 303, 309 (1981) (quoting S. REP. NO. 82-1979, at 5 (1952); H.R. REP. NO. 82-1923, at 6 (1952)).

[28] *See In re* Abele, 684 F.2d 902 (C.C.P.A. 1982).

[29] Examples include post-solution activity, field of use limitations, data-gathering steps, transformation of something physical and structural limitations in process claims.

[30] 450 U.S. 175.

innovation resided) was sufficiently significant "post solution activity" to deem the subject matter patentable.[31]

Thus, when instructions and utility are combined together in a patentable invention, as when software runs on a computing platform, current U.S. law permits patent protection—but what of pure software, without the impetus of the processor?

It bears mentioning that while business and the technology supporting it are generally prospective in nature, advancing to capture new ideas and new markets, law is generally retrospective, designed to fit current legal issues into preexisting, pre-established statutes and judicial case law. In the 1992 case of *Arrhythmia Research Technology v. Corazonix Corp.*,[32] a transformation of data, analyzing electrocardiograph signals to determine heart attack risk, was deemed patentable. In the 1995 case *In re Beauregard*, the Federal Circuit deemed patent claims covering pure software—when stored on a computer-readable storage device, such as a floppy disk or compact disk—patentable as an article of manufacture.[33] The Court of Appeals for the Federal Circuit (CAFC) is the penultimate patent authority, whose power is second only to the Supreme Court itself. Thus, the patent high Court placed software into an existing category having its own historically patentable jurisprudence.

Parallel conclusions have been reached in other patent systems despite their own early intentions to prohibit algorithms. For example, Articles 52(2)(c) and 52(3) of the European Patent Convention exclude from patentability "schemes, rules and methods for performing mental acts, playing games, or doing business, and programs for computers . . . as such."[34] The same has been reflected by national laws, such as the French law in L 611-10, which similarly prohibits patent protection of software.[35]

However, the Board of Appeal of the European Patent Office (EPO) has narrowed the statutory meaning to reflect that while computer programs by themselves may not be patented, they may if combined with a technical effect. In practice, patentability is more or less assumed if the invention as a whole refers to more than merely the mathematical method, mental act or business method. Likewise, France granted a patent on a computer

[31] The decision was intellectually honest. After all, if a machine performing the vulcanizing function in a single unit were patentable, while another machine that separates the task into machine instructions and a post-solution activity were not, then the law would fail to be logically consistent.

[32] Arrhythmia Research Tech. v. Corazonix Corp., 958 F.2d 1053 (Fed. Cir. 1992) (confirming that a transformation of data must occur, and processes entailing computer-performed calculations, described in mathematical symbols or words, do not themselves render a claim nonstatutory).

[33] *In re* Beauregard, 53 F.3d 1583 (Fed. Cir. 1995).

[34] European Patent Convention art. 52, Oct. 5, 1973, 1065 U.N.T.S. 199 (as amended Nov. 29 2001), *available at* http://www.epo.org/patents/law/legal-texts/epc.html.

[35] *See* Isabelle Liotard, *Software and Business Method Patents: Case Law Evolution and Market Strategies*, Presentation at the London Conference of the Intellectual Property Rights for Business and Society (Sept. 14, 2006), *available at* http://halshs.archives-ouvertes.fr/docs/00/11/34/49/PDF/Isabelle_LIOTARD-final-pour-hal.pdf; Stefan Wagner, *Business Method Patents in Europe and their Strategic Use – Evidence from Franking Device Manufacturers* (SFB, Working Paper No. 386, 2004), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=599743.

program in 1981.[36]

IV. MODERN BUSINESS METHODS ARISE FROM FINANCIAL SERVICES

The separation of computer instructions from the underlying functionality of microprocessing systems had spawned another orphan: *business methods*.[37] The software versus microprocessor (a.k.a. hardware) separation represented the first time that innovations in business processing could be produced entirely devoid of the underlying utility required by section 101, namely functional processors and accompanying transistor circuitry. Thus, innovations in the underlying business methods could be stored on software, isolated from the technology and accompanying innovations to facilitate the methods. Business methods, at least as used in the modern context, are perhaps the Siamese twin of software, as their reasons for existence and very fate are inextricably bound together.

The financial services industry found itself in the middle of the controversy. On March 9, 1993, Signature Financial Group, Inc. was issued a patent[38] entitled "Data Processing System for Hub and Spoke Financial Services Configuration." The technology could not be easily dismissed as simply a computer implementation of a well known process. The patent provides a data processing system for monitoring and recording information flow and data, and making calculations necessary for maintaining a partnership portfolio and partner fund in a "hub and spoke" configuration.[39]

When licensing negotiations broke down, State Street Bank initiated a declaratory judgment action to invalidate the patent.[40] In the resulting Federal Circuit appeal, the *State Street Bank* decision settled the question of whether modern business methods are patentable in the affirmative.[41] Judge Giles Rich, longtime advocate of inventor's rights and himself an author of the 1952 Patent Act,[42] answered that business methods, even in their modern software format, had never been proscribed, and had remained viable forms of protection, at least since the Act. So long as the results are "useful, concrete and tangible," the process is considered patentable. The decision was a reaffirmation of existing patent law, not an overthrow of bedrock intellectual property principles.

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[36] Liotard, *supra* note 35, at 10 ("[I]n France, the *Schlumberger c INPI* decision (1981) was the first one to grant a patent to an invention including a computer program.").

[37] *See* William Fisher & Geri Zollinger, BUSINESS METHOD PATENTS ONLINE, THE BERKMAN CENTER FOR INTERNET & SOCIETY AT HARVARD LAW SCHOOL 1 (2001), *available at* http://cyber.law.harvard.edu/ilaw/BMP/; U.S. PAT. & TRADEMARK OFF., *supra* note 8, § II.

[38] U.S. Patent No. 5,193,056 (filed Mar. 11, 1991).

[39] The data processing system makes a daily allocation of assets of two or more funds ("spokes") invested in a portfolio ("hub"). The system would then calculate the percentage share that each fund has in the portfolio. Daily changes in the value of the portfolio's investment securities and in the amount of each fund's assets would also be taken into account. The system would calculate each fund's total investments based on the book capital account. The system tracks the relevant data as well.

[40] *See, e.g.*, MedImmune, Inc. v. Genetech, Inc., 549 U.S. 118 (2007). The declaratory judgment may be filed as a defense to infringement, to prove the USPTO erred in granting the patent.

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

[42] Codified as Title 35 of the *Unites States Code*.

As with software patents, the dilemma over patentability had been focused on form over substance. What critics of business methods often miss is that it would have been logically inconsistent to forbid patenting a business method, allowable since 1799, merely because it was implemented on software running on a computing platform instead of solely on a machine. Aside from bearing internal ambiguities and inconsistencies, similarly to software patents, such formal distinctions could be overcome by skilled patent practitioners. Thus, they are particularly vulnerable to appellate level challenges through the legal system as well.

The *State Street Bank* decision itself provides as solid an explanation as any for rendering modern business methods patentable, if for no other reason than to assuage the fears of the business community. For one, simply because they are implemented by a computer, inventions directed to such subject matter as bookkeeping operations and accounting principles would not likely pass muster, because they lack novelty[43] and non-obviousness[44] in view of hundreds of years of business operations.

Before and after *State Street Bank*, all inventions, not merely business methods, were and are required to be novel over known systems, as well as not obvious variations of them. References that bear on patentability, termed "prior art," are used by patent examiners to prevent applications with overly broad claim scope from issuing as patents, and by accused infringers to invalidate patents already issued.

Simply using a computer to perform a known function is not considered patentable unless the legal fiction called the "person having ordinary skill in the art" (PHOSITA), would have considered it novel and non-obvious. Financial services, like most fields, had obtained enough technical sophistication that simply adding a computer to a known technique should not deem it patentable in the eyes of the PHOSITA. Similar conclusions have been reached in other sophisticated patent systems, including in Europe and Japan.

V. QUALITY AND STRUCTURAL ISSUES

The financial services industry has questioned patent quality and its ramifications since *State Street Bank*. Some of the challenges have merit in that the quality of patents issued over the past decade is questionable. But the quality and related structural issues related to certain patents do not invalidate the basis for BMPs in the industry.

Despite the fact that patentable inventions must pass muster under novelty and non-obviousness to the PHOSITA, which was true before and after *State Street Bank*, a number of alarmingly simplistic inventions were issued and subsequently litigated.[45]

[43] 35 U.S.C. § 102 (2006).

[44] 35 U.S.C. § 103 (2006).

[45] *See* Rodney Sullivan, *Patents on Intangibles*, 63 FIN. ANALYSTS J. 6-8 (2007); Ashley Parker, Comment, *Problem Patents: Is Reexamination Truly a Viable Alternative to Litigation?*, 3 N.C. J.L. & TECH. 305, 307 (2002), *available at* http://jolt.unc.edu/sites/default/files/parker_v.pdf.

For example, Amazon.com's "one-click" patent, issued in 1999,[46] was the subject of litigation with Barnes and Noble. Amazon obtained a preliminary injunction against Barnes and Noble, which added an extra click to its ordering system, and had the injunction revoked.[47] The Federal Circuit found there were substantial questions regarding the validity of the patent, given the prior art references available at the time of the invention. Alarmingly, the Court also held there would be a substantial likelihood of infringement.

In 1998, Walker Digital obtained a reverse auction patent,[48] enabling computer implemented reverse auctions over a communications network. This was the infamous "name your own price" reverse auction of Priceline.com for selling airline tickets, hotel rooms and the like. Shortly after the patent was issued, Walker Digital sued Microsoft for its Expedia travel service, with the parties reaching a settlement and license agreement in 2001.

Additional contentious patents[49] have included Trading Technologies' futures trading software patents,[50] Merrill Lynch's computer system for financial transactions for investor cash management accounts,[51] New Jersey College Savings Bank's certificate of deposit that pays returns tied to increases in college tuition,[52] and Lincoln National Risk Management's system for underwriting life insurance.[53]

Because patent examiners have backgrounds in the technologies and the sciences, there has been well founded criticism that they lack the business sophistication for examination of BMPs, and also perhaps lack the required tools, namely the business databases, to conduct effective examination. Combined with the government's limited financial resources for salaries and teaching resources, quality was an initial issue. The U.S. Patent and Trademark Office (USPTO) responded quite effectively, however, by hiring examiners with significant industry experience,[54] adding a sizeable searching business database, and providing an extensive training program.[55]

Some issues, however, are so inherent to the structure of the patent system itself that they may never be resolved. For example, even an examiner skilled in financial

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[46] U.S. Patent No. 5,960,411 (filed Sept. 12, 1997).

[47] Amazon.com v. Barnesandnoble.com, 239 F.3d 1343 (Fed. Cir. 2001).

[48] U.S. Patent No. 5,794,207 (filed Sept. 4, 1996).

[49] *See* Hunt, *supra* note 7, at 5.

[50] U.S. Patent No. 6,766,304 (filed June 27, 2001); U.S. Patent No. 6,772,132 (filed June 9, 2000); *see, e.g.*, Trading Technologies Int'l, Inc. v. eSpeed Inc., No. 04C5312, 2008 U.S. Dist. LEXIS 60650 (N.D. Ill. July 24, 2008).

[51] U.S. Patent No. 4,346,442 (filed July 29, 1980).

[52] U.S. Patent No. 4,839,804 (filed Dec. 30, 1986).

[53] U.S. Patent No. 4,975,840 (filed June 17, 1988).

[54] "Fourteen (14) patent examiners working in Class 705 have business industry work experience that pertains directly to the examination of patent applications in Class 705. Of these, ten have three or more years of work experience in various fields including Banking, Securities, Business Development, Marketing Analysis, Real Estate Analysis, Business Consulting, Management, Sales, Insurance, Business Information Systems, and Financial Analysis." U.S. PAT. & TRADEMARK OFF., *supra* note 8, § IV(C)(2), *available at* http://www.uspto.gov/web/menu/busmethp/transition.htm.

[55] *Id.* at § V(C), *available at* http://www.uspto.gov/web/menu/busmethp/quality.htm.

services must make a judgment call regarding who the PHOSITA is. With new technologies like the Internet, there may be very few references available, and the examiner may be placed in a difficult predicament given the heightened public scrutiny.

Further, patent claims, which delimit the scope of protection and determine what products infringe the patent, are written in the English language instead of in precise mathematical formulas. In fact, the patent procurement process, termed "patent prosecution," involves a series of negotiations between the examiner and the patent attorney, where the examiner uses references to force the attorney to narrow the claim language, and the attorney attempts to minimize the narrowing limitations in the timely interests of the client.

Consequently, what constitutes allowable patentable subject matter, and what products infringe issued patents, are open to dramatically differing interpretations by examiners, judges, and juries, none of whom typically qualifies as a PHOSITA. In fact, the rate of reversals by the Federal Circuit of lower district court patent cases is quite high, at thirty percent to thirty-five percent.[56] Absent sweeping, possibly hurtful legislation to override the case law, the matter is immutable regardless of the talent of patent examiners and the quality of their examination.[57]

VI. NETWORK EFFECT ON FINANCIAL SERVICES INNOVATIONS

Financial services are significantly impacted by the network effect—that is, the vastly greater connectedness associated with local intranets and the World Wide Web over individual local machines. Across the gamut, from investment management, insurance, and financial services to real estate, all avenues of the industry are increasingly interconnected with clients, consumers, and financial exchanges, as well as with one another and other industries.

Once the critical mass of subscriptions is achieved in the network, the value of goods and services obtained equals, then exceeds, the price paid. Thus additional subscribers will enlist due to a positive utility to price ratio. Growth continues across the network until points of congestion and eventual saturation are achieved, where the value again equals the price paid, and the network stops growing unless it is then expanded.[58]

The network effect serves to amplify other factors inherent to BMPs in the financial services industries. First, unlike technical innovations that target specific problems, the processes may have wide scale application to a large pool of users. Thus, there may be applicability of claims across numerous applications.

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[56] Marcia Coyle, *Critics Target Federal Circuit: Reversals Cast Patent Court in Harsh Light*, NAT'L L. J., Oct. 19, 2006.

[57] As biotech patents are more mathematically precise in their claim language than other high tech patents, they may provide fewer ambiguities.

[58] Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects* in 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 1967-2056 (M. Armstrong & R. Porter eds., 2006), *available at* http://www.paulklemperer.org.

Second, because innovations in the finance industry are encapsulated in software and other high technology products, rather than in biotechnology products, financial industry BMPs resemble high technology patents in several ways. For one, the life cycles are short and evolution is rapid, as the industry quickly adopts faster, more efficient methods. For another, individual innovations are rather narrow, building upon one another. Where innovations are cumulative and sequential, as in the software and business method arts in general, patent crowding occurs.

An example of network effect is exhibited by financial exchanges.[59] The market liquidity is a major indicator of transaction costs in the purchase or sale of a security. A bid-ask spread exists between the price at which a purchase may be accomplished versus the price at which the sale of the same security may be accomplished. Liquidity increases and transaction costs decrease as the number of buyers and sellers on the exchange increases. The positive feedback attracts larger numbers of buyers and sellers to the exchange.

This network effect advantage barrier makes it extremely difficult for startup exchanges to compete with well established exchanges.[60] New innovators may not be able to compete with established exchanges until a critical mass is obtained. Consequently, innovations, no matter how valuable, may be easily replicated with no advantage to innovators, thus limiting the growth of industry innovation in general. Here, BMPs may provide an excellent remedy, namely additional security to startup innovators until critical mass is established.

On the other hand, it may be argued that the patent system's term of protection, namely twenty years from patent filing, is far longer than it would take to achieve critical mass, tipping the balance of justice toward innovators and away from established exchanges.[61] At the root of the issue is the patent system itself.[62] As noted, U.S. patent law, like that of Europe and other systems, was able to resolve the dilemmas imposed by software and business method patents by incorporating both forms of protection into the existing, uniform body of intellectual property law.

While it makes for sound, principled laws, less subject to manipulation, it also naturally imposes a one-size-fits-all approach. In the present case, all patents are entitled to twenty years of protection minus a few years of application pendency. The term of BMPs may not be changed based on the economic considerations of financial exchanges, excepting unilateral legislative action. Applied across many patent families, across many fields of the financial services industry, relatively narrow innovations with short shelf

[59] Hunt, *supra* note 7.

[60] Examples include the Chicago Board of Trade and the Chicago Mercantile Exchange, neither of which faced serious competition in futures contracts and interest rates futures, respectively, from Eurex and Euronext.Liffe.

[61] As pendency of the application is about 3 years, the term of the issued patent is about 17 years.

[62] *See* Alan Marco, *The Option Value of Patent Litigation: Theory and Evidence*, (Vassar College Economics, Working Paper No. 52, 2003), *available at* http://irving.vassar.edu/VCEWP/VCEWP52.pdf.

lives may receive relatively sizeable protection.[63] However, a body of patent law unique to business methods would have problems of inconsistencies and ad hoc enforcement.

Due to many narrow, cumulative innovations, patent crowding may cause lowering of incentives to innovate, since greater license fees must be paid to earlier inventors, unlike in the non-cumulative arts such as biotechnology.[64] Some sources have even alleged that in complex technologies, transaction costs may disparage inventions wholesale.[65]

The argument has some merit. However, logic would dictate that such lowered innovating incentives would reduce patent filings until a natural equilibrium is established. To quote Yogi Bera, it is "like déjà vu all over again," as the patent thicket argument was raised for software patents by Lessig[66] and others following the work of Heller and Eisenberg as stifling to newcomers. Some of the data contradicts the prediction. For example, in 2002 R&D as a percentage of revenues was 14.5% for the software industry as contrasted to 6.7% for computer hardware and 7.4% for electrical/electronics, and 8.1% for telecommunications.[67] Furthermore, in the years following software patenting, rates of R&D as a percentage of revenues continued to lead most industries: 19.3 (1997), 20.0 (1998), 16.8 (1999), 20.5 (2000), 19.4 (2001) and 21.5 (2002).[68] As BMP novelties are produced in software format, and as it is unlikely all innovation went toward technical innovations in a relatively low-tech field, at least a sizeable portion of R&D of software developed for the multibillion dollar financial services industry went toward increased innovation. Yet the cautions of software patents are often redirected for BMPs.[69]

Further, a number of measures would refute alleged declines in innovation. Studies on a countrywide basis have shown that the number of organizations active in a technology may indicate the ability and potential for innovation in an area of

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[63] Keith Maskus & Eina Vivian Wong, *Searching for Economic Balance in Business Method Patents*, 8 WASH. U. J.L. & POL'Y 289, 299 (2002), *available at* http://law.wustl.edu/journal/8/p289Maskusbookpages.pdf ("This situation rewards a thin edge of creation with a thick wedge of protection.").

[64] Suzanne Scotchmer, *Protecting Early Innovators: Should Second-Generation Products be Patentable?*, 27 RAND J. ECON. 322 (1996).

[65] *See* Michael Heller & Rebecca Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698 (1998), *available at* http://www.sciencemag.org/cgi/content/full/280/5364/698.

[66] Lawrence Lessig, *The Problem with Patents*, THE INDUSTRY STANDARD, Apr. 23, 1999, http://www.lessig.org/content/standard/0,1902,4296,00.html.

[67] Ronald Mann, *Do Patents Facilitate Financing in the Software Industry?*, 83 TEX. L. REV. 961, 1002 (2005).

[68] *Id.*; NATIONAL SCIENCE FOUNDATION, RESEARCH AND DEVELOPMENT IN INDUSTRY: 2000, at 72 (2001); NATIONAL SCIENCE FOUNDATION, RESEARCH AND DEVELOPMENT IN INDUSTRY: 2002, at 75 (2003).

[69] *See* Josh Lerner, *Trolls on State Street?: The Litigation of Financial Patents, 1976-2005*, at 5 (Harvard Business School, Working Paper, 2006), *available at* http://www.people.hbs.edu/jlerner/Trolls.pdf; *see generally* ADAM JAFFE & JOSH LERNER, INNOVATION AND ITS DISCONTENTS: HOW OUR BROKEN PATENT SYSTEM IS ENDANGERING INNOVATION AND PROGRESS, AND WHAT TO DO ABOUT IT (2006).

technology.[70] Innovation in groups called clusters may also be on par with higher rates of innovation, productivity growth, and formation of new business.[71] The United States has had the highest number of organizations filing patent applications in business methods since 1995. In fact, from 1997-1999, the United States had two to four times the number of patenting organizations as Japan. The number of citations to other patents is also considered indicative of technological significance, which the United States also led by 40% more than expected from the level of activity.

VII. EXPERIENCE WITH FINANCIAL INDUSTRY BMPS

BMPs in the financial services industry have been contentious. Lerner found the rate of litigation twenty-seven times greater than that of patents as a whole.[72] Combined with finding a higher rate of suits by smaller, patent holding types of entities, he concludes the issue is that patents of low quality, with no real innovations, are exacting sums from industry.[73] For example, Lerner compares business innovators,[74] patentees,[75] plaintiffs,[76] and defendants,[77] to show the lack of correlation between the groups.

Lerner's analysis is reflective of a number of criticisms of BMPs in general. Such analyses and resulting conclusions may have a number of problems. First, the number of lawsuits is no indicator of the revenues achieved from such lawsuits, or even of royalties customarily paid in an industry. It may result from the fact that the financial industry is relatively new to business methods and established royalties have not been set in place as in other industries, or that the industry has not had sufficient opportunity or motivation to deal with the issues. In addition, at least one study compiling suits filed across industries found fewer suits in business services and software than a number of other industries.[78]

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[70] *See* MICHAEL PORTER, THE COMPETITIVE ADVANTAGE OF NATIONS (1990); Lawrence Rausch, *International Patenting of Internet-Related Business Methods*, INFOBRIEF, Mar. 2003, http://www.nsf.gov/statistics/infbrief/nsf03314/nsf03314.pdf.

[71] MICHAEL E. PORTER & DEBRA VAN OPSTAL, COUNCIL ON COMPETITIVENESS, U.S. COMPETITIVENESS 2001: STRENGTHS, VULNERABILITIES AND LONG-TERM PRIORITIES 62 (2001), *available at* http://www.compete.org/images/uploads/File/PDF%20Files/Competitiveness%20Index%202001.pdf.

[72] Lerner, *supra* note 69, at 4.

[73] *Id.*

[74] *See* Josh Lerner, *The New New Financial Thing: The Original of Financial Innovations*, 79 J. FIN. ECON. 223-55 (Feb. 2, 2006) (concluding that business innovators are led by Merrill Lynch, Citigroup, American Express, Citicorp and McGraw-Hill).

[75] *See id.* (concluding that patentees are led by Hitachi, IBM, NCR, Citigroup and Fujitsu). *See generally*, Josh Lerner, *The Two-Edged Sword: The Competitive Implications of Financial Patents* (Harvard Business School, Working Paper, 2003).

[76] *See* Josh Lerner, *The Litigation of Financial Innovations* (Harvard Business School, Working Paper No. 09-027, 2008), available at http://hbswk.hbs.edu/item/6040.html (concluding that plaintiffs are led by Pangea Intellectual Properties, LLC, Divine Technology Ventures, Source, Inc., Meridian Enterprise Corp. and Travelers Express Co).

[77] *Id.* (concluding that these are led by American Express, Citigroup, Chicago Board of Trade, New York Mercantile Exchange and JP Morgan Chase).

[78] *See* James Bessen & Michael Meurer, *The Patent Litigation Explosion* 18, 23 (Boston Univ. Sch. of Law, Working Paper Series, Law and Econ., Working Paper No. 05-18, 2005), *available at* http://ssrn.com/abstract=831685; *see infra* Fig. 5.

Based on such analyses and anecdotal evidence of patent holding companies, pejoratively referred to as "patent trolls," the industry lobbied for reform in 2007.[79] Headed by the Financial Services Roundtable, and aided by the American Bankers Association, the Securities Industry and Financial Markets Association, some $20 million was spent on lobbying.[80] John Squires, Goldman Sachs' chief intellectual property counsel, has testified before the Senate Judiciary Committee on behalf of these associations.[81]

Despite concerns over such litigiousness, our empirical and anecdotal evidence shows that market forces and business interests will likely exert enough influence on the players that surprisingly uniform cross-licensing royalties are the likely end result.

The overwhelming majority of patents are held by the major industry players. Even if a relatively large proportion of these patents are of marginal quality, which is rarely the case, the combined power of families of patents, including continuations and divisionals, generates significant offensive and defensive positioning for patent holders—ultimately finding a reasonable middle ground.[82] For example, offensive use of patents against other major players may adversely impact or offend larger downstream customers, which in turn exerts sufficient business pressure on the patent-owning firm to act moderately. No customer enjoys hearing that one of its suppliers is facing litigation (and possibly higher transaction costs) from one of its other suppliers. Major customers are not shy about bringing significant pressure to bear, particularly if the "issue" could result in adverse downstream consequences. The bulk of valuable industry patents are thus cross-licensed to create interdependency relationships since business pressures outweigh potential profits from patent litigation.

The major players also find it difficult to enforce patents against relatively minor market participants, which typically possess their own patents, albeit in much smaller numbers. The reason here is that the relatively fewer patents held by a minor player may impact a much larger market share, so that the minor player's BB gun may resemble a machine gun to the major player. Assuming equivalent contributions to innovation in proportion to their respective size, uniform patent quality, and rational decision-making by management, major and minor players may find themselves at a stalemate. These conditions are perhaps only rarely true, however, a likely reason smaller firms are more likely to be plaintiffs or defendants in patent suits.[83]

As a result, competitive companies with significant market share and real clients generally favor mutually beneficial cross-licensing schemes as opposed to contention.

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[79] *See generally* Lisa Lerer, *Finance Industry Leads on Patent Reform*, POLITICO.COM, July 31, 2007, http://www.politico.com/news/stories/0707/5187.html.

[80] *See id*.

[81] "An industry has developed in which firms use patents not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees." eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, 396 (2006) (Kennedy, J., referencing FTC, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, 38-39 (2003)).

[82] Joseph Stalin is rumored to have said, "Quantity has a quality all its own."

[83] *See* Bessen & Meurer, *supra* note 78.

They also favor protection of innovation for at least defensive purposes. Despite the lack of litigation—itself a costly proposition in this arena—tremendous profits have been earned from licensing revenues.

Unfortunately, public data on the extent of licensing in the financial services industry is relatively non-existent, given its propensity for confidentiality and its recent awareness of patenting. Using the software industry as an analogy, analysts had initially expressed concern that network effects and narrow, cumulative innovations would yield patent thickets. But, despite grave concerns that software patents would ruin the industry, real players with unquestionable innovations have profited extensively from patents. For example, IBM is widely known to license its enormous portfolio for over a billion dollars per year in royalties.

This is not to say that patent holding companies do not create a problem, but the problem exists for all industries, and not just for financial services. Patents are fully alienable economic rights, not tied to an inventor, assignee, or area of business. A company accused of patent infringement cannot use its own core patents to defend or retaliate against a company with no customers.

The issue is not exclusive to holding companies, however. Businesses with real market share may, and do, use the concept to seek royalties outside their core areas. For example, a technology company with no market in financial services may, if it desires, purchase financial services BMPs, and seek royalties from the major financial services players; again, the would-be infringer lacks patents they could use for defense, cross-license, or retaliation. The clever, accused infringer would likely seek to acquire its own patents impacting the accuser, or use one of the other defenses outlined below.

The financial services firm threatened with litigation is not left without options. In fact, there are a large number of such defenses available, which may be used in any type of combination:

- *Business Level Remedies*. Customers often provide significant leverage against competitors alleging patent infringement.

- *Contractual Remedies*. As patent litigation has increased, customers have increasingly requested indemnification from patent infringement damages from their suppliers. The Uniform Commercial Code and equivalent international codes respecting sales of goods may provide default protection under a theory of an implied warranty.

- *Licensing Discussions*. The accused infringer may engage in licensing discussions toward a workable solution. The licensing strategy may include open discussions of tactical positions, applying positions of non-infringement and invalidity, as well as potential damages, toward entering a licensing agreement.

- *Declaratory Judgment*. The accused infringer may seek a declaratory judgment that it does not infringe. Many parties favor declaratory judgments because they

permit the accused infringer to pick the forum, i.e., the trial court.

- *Patent Retaliation*. Parties approached by direct competitors may use their own core patents defensively, either threatening to retaliate at the discussions level, or filing separate actions. Patents not core to the defendant's industry may also be acquired through third-party agents.

- *Patent Pools*. Often significant players across the industry form patent pools which may provide umbrella protection. Members are often provided affordable or free cross-licenses to essential patents.

- *Non-infringement*. In licensing discussions or during litigation itself, a defendant's strongest arguments are typically that its products do not infringe the plaintiff's patents. Every word of the claim language must be met by the product to establish direct infringement. Given that claims are viewed in light of the specification and prosecution history according to relevant case law, an infringement finding may be avoided by careful analysis and presentation of evidence.

- *Invalidity*. Prior art that may potentially invalidate the references may provide a valuable tool in the defendant's arsenal, as well as during licensing discussions.[84]

- *Reexamination*. In *Ex parte* reexamination, a party may anonymously present prior art to the USPTO and request that the patent in question be reexamined for validity. If sued, the defendant may file a motion for stay of proceedings to halt the litigation pending the outcome of the reexamination, which may itself take months or years. *Inter partes* reexamination is also available, where the party requesting reexamination is an active party to the proceedings.

As the system is inherently inexact, a balance of the equities is always present. If patenting is too easy and lax, more inventions qualify for protection and reduce the risk for imitation, but competition of technologies increases the royalty and litigation costs to industry. If too strict, fewer inventions qualify for protection, decreasing the risk to competitors, but fewer dollars will flow to innovation and new discoveries.[85]

The balancing issue may be seen with a simple example in the non-high tech field of preserving. John Landis Mason invented a shouldered glass jar with a threaded edge and a metal lid that revolutionized home preserving.[86] Mason patented his Mason jar but died a pauper. It may be argued that the patent expired before real commercial impact. However, larger companies, with little to fear from a weak patent system driven primarily

[84] *E.g.*, U.S. Patent No. 6,560,580, (filed Apr. 20, 1999). eSpeed Inc.'s patent for its electronic bond trading technology was held invalid by a federal court jury in Delaware, and affirmed by the Federal Circuit. eSpeed, Inc. v. BrokerTec USA, L.L.C., 417 F. Supp. 2d 580 (D. Del. 2006), *aff'd*, 480 F.3d 1129 (Fed. Cir. 2007).

[85] *See* Hunt, *supra* note 7, at 11.

[86] The Old Foodie, http://theoldfoodie.blogspot.com/2006/11/mason-jar-story.html (Nov. 30, 2006).

by access to capital, had little incentive to take an early license on the idea. In fact, the Ball Brothers, though not a licensee, had the audacity to manufacture millions of the jars into the 1920s, with the caption "Mason's Patent."

Today, Mason might well be able to benefit from the commercial uses of his idea. Perhaps he would have joint-ventured with industry players against competitors, or begun a licensing and litigation program, possibly funded on a contingent fee basis. Industry players, fearing sizable damages or injunction, and living in a time where lawsuit forum shopping is less prevalent, may have taken licenses to make Mason quite wealthy. The licenses may have had limited effect on profits, or alternatively constituted a sizable tax and possibly hurt the industry. Perhaps the industry players would have refused a license after conferring with their own counsel, and the matter would have gone to litigation where the stakes were higher. Perhaps Mason's success would have fostered notable innovations in the home-preserving field and even expanded the market.

It is unlikely consumers would have paid more or less for Mason jars depending on whether Mason made a profit. But, if the transaction costs were distributed throughout the entire industry, and the bulk of products were affected, perhaps consumers would have paid more. Added innovation bolstered by patenting may have drawn numerous other players to the field, perhaps hurting the Ball Brothers' market share. The Ball Brothers may have been incentivized to generate their own innovations and patent them, both for offensive royalties and to defend against competitors.

Although it is hard to say what may have happened, it is fair to say that Mason's success would have been tied to the scope of claims permitted by the USPTO, his ability to raise capital, the ability and strategy employed by his counsel to license or litigate, and the relative rational business dealings of his competitors. Today's landscape is thus considerably more complex than when patents were mere mantle trophies. It is inherently more just for patentees and less predictable for large industry as the system has decidedly shifted to promote protection. However, the present system is not easily dismissible as better or worse for either industry or society without benefit of predilection.

VIII. THE SCALE OF FINANCIAL SERVICES BMPS

The USPTO created the modern business processing class 705[87] in 1997 from the business and cost/price sections of the computer classes 395 and 364. As shown in Figure 1, there has been a slow, steady increase in BMP issues from 1987 until a jump in the 1997-1999 period, attributable to growth in the Internet and the *State Street Bank* decision. Despite the controversy that BMPs were rising out of control in the 1999-2002 period, where most critical articles were published, BMP issues showed relatively little

[87] Examination of financial business method inventions of Class 705 fall under Ms. Wynn Coggins, Director of Groups 3620 and 3690. Workgroup 3690 (Finance and Banking), includes four Art Units of examiners (3691, 3692, 3693 and 3694). Workgroup 3620 similarly includes various Art Units. Wynn Coggins, *Update on Business Methods for the Business Methods Partnership Meeting*, PowerPoint Presentation for the U.S. Pat. & Trademark Off., slide 2 (June 19, 2007), *available at* http://uspto.gov/web/menu/pbmethod/partnership.pps.

growth until 2005 and 2006, where issues doubled to just over 2000.

One reason is the backlog of patents, termed "pendency period," resulting from many more patent filings or patent rejections than issues, which the USPTO has recently attempted to alleviate as public pressure has dampened.[88]

Another reason was change in case law. Prior to 2005, patent examiners rejected BMP applications that did not require use of a computer or other electronic means. Therefore, any claimed process carried out without a computer was not deemed patentable, as it was not tied to a known science or technology. In 2005, the USPTO Board of Patent Appeals and Interferences rejected this technological arts rejection as inconsistent with existing case law.[89] Thus, practically, BMP applications may no longer be rejected because they recite method claims without requiring computer implementation.[90] However, the USPTO has continued to argue for the technological requirement, and has more recently found the Federal Circuit receptive. In *In re Comiskey*, the court explicitly held that purely mental business methods are unpatentable.[91]

On October 30, 2008, the Federal Circuit announced its decision of *In re Bilski*. Here, the applicant was attempting to patent a business method, claiming a method for hedging risks.[92] These claims were not tied to any machine or apparatus such as a computer. The Federal Circuit deemed as inadequate two long-standing patentability tests—the Freeman-Walker-Abele test and the useful, concrete, and tangible result test. Both these tests were previously used by the USPTO, district courts, and even the Federal Circuit to determine patentable subject matter. In the same breath, the Court reaffirmed that business methods are patentable and then held that the machine-or-transformation test must be applied to determine patentability.[93] Thus, a claimed process is only patentable if "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing."[94] After *Bilski*, a patentable business method must explicitly "'tie' to another statutory category."[95] With this "tie" to another statutory category, the Federal Circuit has effectively removed the term "process" from 35 U.S.C. § 101 leaving only "machine, manufacture, or composition of matter."

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[88] Average pendency length for business method inventions is unusually long compared to inventions in other areas of the USPTO. At mid-year 2007, the length of pendency to mailing of a first office action by the USPTO in Class 705 was forty-four months. Pendency to issuance or abandonment was fifty-four months, indicating an average active prosecution period of approximately ten months, once examination was commenced. *Id*. at slide 7.

[89] *Ex parte* Lundgren, (Bd. Pat. App. & Inter. 2004), *appeal docketed*, No. 2003-2088 (Apr. 20, 2004).

[90] The USPTO has provided its own reasoning. It has argued that many of the cases filed in 2000-2001 belong to Internet based start-ups which likely sought broad protection, while more recently filed cases have narrower claims, to which it attributes the recently increasing allowance rates. *See* Coggins, *supra* note 87, at slide 9.

[91] *In re* Comiskey, 499 F.3d 1365, 1378-79 (Fed. Cir. 2007).

[92] *In re* Bilski, 545 F.3d 943 (Fed. Cir. 2008) (relating to US Patent Application 08/833,892, claiming a method of hedging risk in commodities trading).

[93] *Id.* at 959.

[94] *Id*. at 954 (citing Gottschalk v. Benson, 409 U.S. 63, 70 (1972)).

[95] *Id*. at 990.

However, the Federal Circuit may be overruled. On June 1, 2009, the Supreme Court of the United States granted certiorari[96] based on a persuasive petition for a writ of certiorari on *In re Bilski*.[97] The petitioner argues four reasons why the Supreme Court should grant certiorari. First, the machine or transformation test does not comply with Congressional intent or Supreme Court precedent.[98] Second, this decision limits process patents only to manufacturing methods.[99] Third, this decision threatens innovation in modern technologies such as software and biotechnology.[100] Finally, because both the PTO and the Federal Circuit addressed and analyzed 35 U.S.C. § 101, this decision represents an exemplar case to restore clarity to section 101.[101]

Oral argument before the Supreme Court is currently scheduled for November 2009, and the Court will face two questions presented. First, "[w]hether the Federal Circuit erred by holding that a 'process' must be tied to a particular machine or apparatus, or transform a particular article into a different state or thing ('machine-or-transformation' test), to be eligible for patenting under 35 U.S.C. § 101, despite this Court's precedent declining to limit the broad statutory grant of patent eligibility for 'any' new and useful process beyond excluding patents for 'laws of nature, physical phenomena, and abstract ideas.'"[102] Second, "[w]hether the Federal Circuit's 'machine-or-transformation' test for patent eligibility, which effectively forecloses meaningful patent protection to many business methods, contradicts the clear Congressional intent that patents protect 'method[s] of doing or conducting business[103].'"[104]

The Supreme Court granting certiorari may bring some welcome clarity for business method patents. In fact, the allowance rate on business method applications at mid-year 2007 was 20%, less than half the rate of the 2001 45% high water mark, but almost double the 2004-2005 11% low water mark.[105] During the low allowance rate years, the USPTO had implemented a second-eye policy for issuances. In other words, a supervisory patent examiner (SPE) in a different technology area (termed "art unit") than that of the original examiner would have to sign off before a patent could be granted; the policy led to excessive second-guessing of the examiners' authority, leading to often lengthy prosecutions, some in excess of five years,[106] well over the average of approximately three years for the patent office as a whole.[107] Quality was also arguably

[96] Bilski v. Kappos, No. 08-964 (U.S. docketed Jan. 30, 2009).

[97] Petition for Writ of Certiorari, Bilski v. Kappos, No. 08-964 (filed Jan. 28, 2009), *available at* http://www.finnegan.com/files/upload/Finnegan_Bilski%20Petition%20for%20Cert.pdf.

[98] *Id*. at 16.

[99] *Id*. at 21.

[100] *Id*. at 25.

[101] *Id*. at 33.

[102] Questions Presented, Bilski v. Kappos, No. 08-964 (filed Jan. 28, 2009), *available at* http://origin.www.supremecourtus.gov/qp/08-00964qp.pdf (last viewed Aug. 26, 2009).

[103] 35 U.S.C. § 273 (2006).

[104] Questions Presented, Bilski v. Kappos, No. 08-964 (filed Jan. 28, 2009), *available at* http://origin.www.supremecourtus.gov/qp/08-00964qp.pdf (last viewed Aug. 26, 2009).

[105] Coggins, *supra* note 87, at slide 8.

[106] *See, e.g.*, U.S. Patent No. 7,054,830 (filed Oct. 5, 1999) (issued May 30, 2006).

[107] In fact, during this time period, the number of business method patent applications being appealed to the Patent Board of Appeals and Interferences swelled to in excess of all other cases being appealed in other classes, combined. In 2006, the Business Method Group shifted to a policy of second-eye review by

improved.[108]

A review of prolific patenting entities is instructive. Issued patents for the top ten entities decreased from 284 to 159 between the 1977-1989 and the 1990-1994 periods, and increased to 351 in the 1995-1999 period,[109] hardly exponential in nature. The figures are shown in Table 2.

The areas of innovation and market expansion made a difference. Before 1990, the bulk of the patents were in cash register and computer postage metering systems, which by 1994 moved to financial transaction systems. By 1999, with the propagation of the Internet, most patents were issued in either electronic shopping or financial transaction systems—notably two distinct categories..[110]

Since BMPs are subclasses of electrical systems, which are in turn subclasses of all utility patents, the relative proportion of the categories is illustrative of their effects. As seen in Figure 2, the total number of utility patent applications filed in 1999 to 2006 grew from 270,187 to 425,967, while issued patents grew at a much slower rate of 153,485 to 173,771.[111] In addition, Figure 3 demonstrates that in the same period, issued patents in all electrical classes rose from 51,400 to 83,995.[112] From the same figure, one can see that the number of issued BMPs are diminutive, with the mean teetering at less than 1,000 in recent years.[113]

As Figure 4 illustrates, the total number of business method applications filed in Class 705 for this period grew from 3,023 to 10,015, while issued patents grew from 493 to 1,191, small numbers in view of the aforementioned total utility and electrical class filings.[114]

Class 705 is but one of ninety-four classes in electrical systems, which at the time

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the SPE in the same art unit as the examiner responsible for a case, improving dramatically the process of prosecuting the case to issuance or abandonment. According to Ms. Coggins, today an examiner has an allowance conference or appeal conference with his or her own SPE to review the case prior to allowance or appeal. *See* Coggins, *supra* note 87, at slides 23-25.

[108] According to Ms. Coggins, the USPTO has developed in-house training for its examining corps which is specific to business method patents. *Id*. at slide 16. Increased hiring of examiners was planned to increase examiners in finance art units from forty-eight examiners in the beginning of fiscal year 2007 to 100 examiners by the end of fiscal year 2007 (midyear 2007 there were sixty-eight finance art examiners, with plans to add thirty-seven more by the end of the fiscal year), and the number of finance art units are to increase from four in 2007 to eight in fiscal year 2008. *Id*. at slides 12, 31. In aggregate, the USPTO employs about 4,800 examiners as of the end of the 2006 fiscal year.

[109] *See* U.S. PAT. & TRADEMARK OFF., *supra* note 8, § III(C).

[110] *Id*.

[111] *See* U.S. PAT. & TRADEMARK OFF., U.S. PATENT STATISTICS CHART, *available at* http://www.uspto.gov/go/taf/us_stat.htm (last visited Apr. 19, 2009).

[112] *See id. See* U.S. PAT. & TRADEMARK OFF., CLASS 705 APPLICATION FILING AND PATENTS ISSUED DATA, *available at* http://www.uspto.gov/web/menu/pbmethod/applicationfiling.htm (last visited Apr. 19, 2009); U.S. Pat. & Trademark Off., TECHNOLOGY WORKLOAD REPORT, ELECTRICAL CLASSES, §§ A1, A2, B, *available at* http://www.uspto.gov/go/taf/stelec.htm (last visited Apr. 19,2009)

[113] *See* U.S. PAT. & TRADEMARK OFF., *supra* note 8, § III(D).

[114] *See id.* (The numbers are fewer than in Figure 1 as the USPTO has removed redundancies and double counts.).

of contention in 1998-1999 represented merely 1% of total patent filings. In fact, of the 57,000 applications filed in communications and information technologies for 1999, less than 5%[115] were filed in Class 705.

Re-filings due to re**j**ections must also be taken into account. Of the 10,015 filings, approximately 25% were continuations, or re-filing of the applications initially rejected by the USPTO. Whether there was any real growth may be disputed, though difficult to tell from the raw data, since preceding creation of Class 705 in 1997, business methods were simply classified in other areas.[116]

With respect to patent litigation of BMPs, most studies have used the rates of litigation per patent or viewed aggregate rates, which do not necessarily reflect the cost of litigation imposed on the parties or the impact left by the suits. Bessen and Meurer performed an analysis of litigation across industry groups.[117] The recent analysis differed from others in that the firm was taken as the unit of analysis. As shown in Figure 5, their study shows suits defended and filed were significantly less for business services/software than for other industries, with the rate of filings and defense on equal par.[118]

Financial services undeniably receive their share of innovations. As Figure 6 shows, real estate, insurance and finance R&D expenditures in the United States peaked at about $4 billion in 2000, with a downward trend in years 2001-2003, followed by an upward trend in 2004-2005. The trending roughly parallels BMP filings. But the correlation may or may not be causal for a number of reasons, one being that business method innovations are often categorized in other areas, such as software, computer and electronic products, and computer system design and related services. It is worth mentioning that R&D spending in these other categories, like the patent filings, is significantly greater than in real estate, insurance, and finance.[119]

The data shows that the financial asset management industry has been a leader in exploiting information technology to manage and invest capital. In this arena, numerous patents have been granted to highly cited and cross-referenced innovators relating to asset management, asset creation, financial index construction and weighting, customer service delivery, money management, asset allocation methodologies, portfolio selection, and the like. Table 1 lists a number of influential patents granted since 1987.[120] Examples include Atkin's patents for investing equity from real estate, Champion's financial asset management system, Barr's work with predictive neural networks, Fernholz's dynamic re-weighting of capitalization based index by a constant function, Sharpe's financial

[115] In 1999, 2,658 patent applications were filed in Class 705.

[116] As noted, prior to Class 705, business methods occupied business and cost/price sections of the computer classes 395 and 364. *See* U.S. PAT. & TRADEMARK OFF., *supra* note 8, § III(C).

[117] *See* Bessen & Meurer, *supra* note 78.

[118] *Compare id. with* Lerner, *supra* note 69.

[119] NATIONAL SCIENCE FOUNDATION, *supra* note 68.

[120] Examples include a patent for using a neural network for portfolio selection to Barr and Mani, patents related to actively managed ETF to Gastineau and Weber, a patent for using re-sampled efficient frontiers to optimize a portfolio to Michaud et al., and a patent protection process of asset allocation during retirement using fixed and variable life annuities to Peng and Milevsky.

advisory system, Michaud's optimization of portfolios by resampled efficient frontiers, Karp's tax-efficient investment using long and short positions, Gastineau's system for calculating intraday net asset value for actively traded ETFs, Arnott's virtual mutual fund, and Chen and Milevsky's optimal asset allocation in retirement using annuities. The financial asset management industry has clearly evolved from historical use of trade secrets to patents as a default choice to protect financial industry innovations.

It has been argued that the American financial services sector is reaching the end of the beginning in its adoption of BMPs.[121] That may be true, but certain pockets of the financial services industry have been more aggressive in obtaining patent protection than others. The pace of competition in the credit card and banking industries has led such companies to develop patent portfolios.[122] Credit card, banking and investment institutions have actively sought patent protections, as provided in Tables 3-5.

IX. POLICY ISSUES

As the overwhelming majority of countries have established patent systems, there is universal recognition that a system is needed to support and foster innovations in industry. When innovations are quickly emulated, the incentives for R&D are substantially diminished. Particularly benefited by patents are industries where large capital is required, such as the biotechnology and complex information technologies.[123] However, also benefited are fields where innovations are easy to reverse engineer or replicate, and trade secret protection is difficult. Consequently, BMPs and software industries have real need of such protection.

Despite a number of criticisms directed at BMPs, the recognition of the importance and adoption of patent protection in the financial services industry has grown in recent years. The proliferation of BMP applications speaks volumes of their importance, if not for offensive use, at least for defensive purposes. So does market reaction. In the period following *State Street Bank*, the granting of a BMP has been shown to evoke a positive average stock price reaction.[124] As examples, the financial services sector and asset management industries in particular have produced an enormous amount of innovation, particularly as information technology and computers have played an ever increasing role in these endeavors.

Traditionally many financial and asset management innovations were maintained in confidence using trade secret protection as competitive barriers to entry. Trade secret law has drawbacks, however, as secret innovations must be maintained in confidence.

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[121] Robert M. Hunt, *Business Method Patents for U.S. Financial Services* (Fed. Res. Bank of Phila. Working Paper No. 08-10, 2008), *available at* http://www.philadelphiafed.org/research-and-data/publications/working-papers/2008/wp08-10.pdf.

[122] Thomas J. Scott, Jr. & Stephen T. Schreiner, *Planning for the Brave New World: Are Business Method Patents Going to be Second Class Citizens?*, 19 INTELL. PROP. & TECH. L.J. 6 (2007).

[123] Bronwyn H. Hall, *Business Method Patents, Innovation, and Policy* (Econ. Dep't., Univ. of Cal., Berkeley, Working Paper E03-331), *available at* http://repositories.cdlib.org/iber/econ/E03-331.

[124] Brian Boscaljon, Greg Filbeck, & Tim Smaby, *Information Content of Business Methods Patents*, 41 FIN. REV. 387 (2006).

There is also risk of loss due to independent invention and reverse engineering, both permissible under existing laws. The new world, however, shares information at the speed of the Internet. Once an idea, or even customer data supporting the idea, are taken to a market, maintaining the confidentiality of the idea may be nearly impossible. Lost ideas may be costless to imitate and have surprisingly low marginal costs.[125]

Furthermore, today's dynamic workforce has also replaced a once immobile one, so that insulation of firm information is no longer a viable option. In fact, a number of studies directed to establish that BMPs are not necessary for profits and innovation implicitly assume secrecy of innovations and customer information.[126]

To borrow patent law's own phraseology, criticism here is not novel or unobvious, as legal and economics scholars alike have questioned the basis for the system since its inception. The very concept of offering individuals a limited monopoly over their ideas was troubling even to the patent system's early advocate and first commissioner Thomas Jefferson, who characterized the limited monopoly as a necessary embarrassment for society rather than a natural right.[127]

The financial value of patents has also been drawn into question since well before the Internet. Graham and Dodd deemed valuation of patents too complicated for meaningful analysis, as their value cannot be calculated as against other assets, and as the effect of their expiration on business cannot be predicted.[128]

Economists and business professionals have questioned BMPs as a viable source of protection, but perhaps too much has been made of patent trolls and a flood of critical articles, and not enough regarding underlying policy and a need for a uniformly principled set of laws. Wholesale exclusion of business methods would be difficult, if not impossible. This is true not only because of the historical jurisprudence, but also for the practical realities. Practitioners may simply draft to emphasize the technology and deemphasize the underlying business method. As testament, few practitioners winced at the *State Street Bank* decision, since they had been drafting business method patents for years to overcome mathematical algorithm issues. Practitioners were effectively hiding the business innovations behind computers, circuitry, and the types of subject matter the patent system finds comfortable and the public-at-large finds palatable.

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[125] Sullivan, *supra* note 45, at 6.

[126] Helios Herrera and Enrique Schroth, *Profitable Innovation Without Patent Protection: The Case of Derivatives* (Centro de Investigacion Economica, ITAM, Working Paper No. 302, 2003), *available at* http://econpapers.repec.org/paper/ciewpaper/0302.htm.

[127] Letter from Thomas Jefferson to Isaac McPherson (August 13, 1813), *in* 13 THE WRITINGS OF THOMAS JEFFERSON, at 326 (Albert Ellery Bergh ed., The Thomas Jefferson Association 1907) (1905) ("Inventions . . . cannot, in nature, be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility, but this may or may not be done, according to the will and convenience of the society, without claim or complaint from anybody . . . . Considering the exclusive right to invention as given not of natural right, but for the benefit of society, I know well the difficulty of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.").

[128] BENJAMIN GRAHAM & DAVID L. DODD, SECURITY ANALYSIS: PRINCIPLES AND TECHNIQUE 422-423 (5th ed., McGraw-Hill Book Co., Inc. 1988) (1934).

The legal history lacks any examples of where laws applied ad hoc, or sui generis forms of protection, proved effective. Internally inconsistent laws are slave to easy manipulation by lawyers, the judicial system, and affluent parties;[129] such laws also yield indeterminable results. They would be a greater bane to business owners and economists, who place value on economic predictability.

Like the United States, other nations have struggled with patentability of BMPs in treaties and international laws, and like the United States, faced with the impracticability of distinguishing BMPs from other forms of protection and the potential downfall of innovations, protection has generally been afforded, whether in words or in actions.[130]

Finally, but importantly, a number of recent cases and proposed legislation have significantly impacted BMP patentees. These measures are sweeping reforms that may take the wind out of the sails of BMPs for years to come.

- *Rendering patentee's claims obvious made easier*: *KSR International v. Teleflex*[131] makes it much easier to reject or invalidate patent applications or patents on obviousness grounds, an effect particularly pronounced for BMPs where novelty bearing sources are difficult to find, and where the technology at play is not of high sophistication.

[129] The reader may recall John Donne's phrase from *Death Be Not Proud*: "Thou art slave to fate, chance, kings, and desperate men."

[130] The International Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), administered by the World Trade Organization (WTO), provided certain minimal standards for protection of intellectual property by member states. Though not specifically addressing business method patents, TRIPS requires that "patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application." Accordingly, scholars have noted that if the tests are met, BMP protection must be afforded. The International Chamber of Commerce has taken a strongly supportive view of BMPs so long as such classical tests of novelty, non-obviousness and industrial applicability under TRIPS are met. Similarly to TRIPS, the European Patent Office does not protect business methods per se, but affords protection to software patents implementing business methods—so long as there is a "technical effect." In Canada, like Europe, though officially unpatentable, BMP software patents directed to a useful end result have been granted, as opposed to those solely making calculations or presenting solutions. Like the U.S., Japan explicitly recognizes business methods as patentable subject matter, with the legal standard that the method constitutes "a highly advanced creation of technical ideas by which a law of nature is utilized." Hideo Furutani, *Patentability of Business Method Inventions and Inventions with Non-technical Features in Japan versus the US and Europe*, at 9, *available at* http://www.furutani.co.jp/office/ronbun/Business_method_patents_in_Japan.pdf (last visited Apr. 19, 2009) (presented at USPTO, Arlington, Virginia, Nov. 3, 2003). The business method is considered patentable when it contains a sufficiently technical or tangible aspect, which may be satisfied by use of a computer. However, though the patent includes technical subject matter, Japan has gone to lengths to improve the sophistication of its searches and involvement with experts in the business community. Additionally, the relative level of obviousness, termed "inventive step," has been set relatively high to prevent well known procedures from becoming patentable despite combination with a computer. "An invention enabling receipt of orders via the Internet, for instance, which were taken by fax or telephone in the past, will not be regarded as having inventive step." International Chamber of Commerce Policy Statement: Software and Business Method Patents, http://www.iccwbo.org/id485/index.html (last visited Apr. 19, 2009).

[131] KSR Int'l v. Teleflex, 550 U.S. 398 (2007).

- *Invalidating a patent license made easier*: In *MedImmune v. Genentech*,[132] on constitutional grounds the Supreme Court made it possible for a licensed party paying royalties on a patent to sue for declaratory judgment to invalidate the same patent.

- *Injunctions against patent infringers made more difficult*: In *eBay v. MercExchange*,[133] the Supreme Court rejected the customary granting of an injunction following a finding of patent infringement, instead requiring application of a four-prong balancing of equities test.[134] Also, in a concurrence, four Justices linked a public interest portion of the test to concerns about the validity of business method patents.

- *Willfulness made difficult to prove*: If infringement is willful, the infringer is required to pay threefold damages. In *In re Seagate Technology*,[135] the affirmative duty of care was raised to objective recklessness, lessening the burden on infringers and making it much more difficult for the patentee to prove infringement was willful.

- *Is State Street Bank even good law, or law for how long*?: In *Lab Corp. v. Metabolite*,[136] the Supreme Court denied appeal, but Justice Breyer dissented to the decision, joined by Justices Stevens and Souter. In the dissent, Breyer notes that the Supreme Court had never accepted the "useful, concrete and tangible result" test set forth by the Federal Circuit in *State Street Bank*. If new appointments were to alter the make-up of the high court, there is the real possibility that *State Street Bank* could be overturned.

- *Purely mental business methods are not patentable*: In *In Re Comiskey*,[137] the Federal Circuit explicitly held that purely mental business methods are unpatentable.[138] Mental processes, standing alone without practical application via computers or other machines, were deemed unpatentable.

- *Removing long-standing section 101 tests for patentability:* In *In re Bilski*, the Federal Circuit removed two bedrock tests for patentability, the Freeman-Walker-Abele test and the useful, concrete, and tangible result test.[139] The Court held that the only test for patentability is the machine-or-transformation test, arguably rewriting 35 U.S.C. § 101 by removing standalone process patents and bringing the validity of BMPs into question.

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[132] MedImmune v. Genentech, 549 U.S. 118 (2007).

[133] eBay v. MercExchange, 547 U.S. 338 (2006).

[134] The test includes: demonstration of injury, that monetary damages will not be sufficient, that the hardships favor injunction, and that public interest would be best served.

[135] *In re* Seagate Tech., 497 F.3d 1360 (Fed. Cir. 2007).

[136] Lab Corp. of Am. Holdings v. Metabolite Labs., Inc., 548 U.S. 124 (2006) (Breyer, J., dissenting from dismissal, joined by Stevens, Souter, JJ.).

[137] *In re* Comiskey, 499 F.3d. 1365 (Fed. Cir. 2009).

[138] *Id.* at 1377. The patent involved a process for implementing mandatory arbitration.

[139] *In re* Bilski, 545 F.3d 943 (Fed. Cir. 2008).

- *Reform Legislation*: Reform legislation was introduced in both the House of Representatives[140] and the Senate.[141] Proposed provisions would broaden the use of appeals, generate more stringent criteria for willful infringement, and revise reexamination procedures to ease contesting of patent validity by third parties. In addition, the legislation would alter the U.S.'s first-to-invent system to a first-to-file system, eliminating the ability of patentees to swear behind references via sworn affidavits and documentary evidence, and eliminating interference practice, considered unique to U.S. patent practice.

X. CONCLUSION

We have sought to separate the facts from the myths in the contentious area of intellectual property law seeking to protect financial related innovations. Our journey included a consideration of the historical jurisprudence, the association with software patents, the criticisms respecting quality and capability, the uniqueness of the financial industry, and the quantitative data available. We concluded with balancing the policy implications with well intentioned if not convincing advocacy.

In a world devoid of dishonest practices, perhaps patent and trade secret law would be largely unnecessary. But in the one in which we live, there are two principle ways to protect and develop new ideas in order to spur innovation. One is to keep a closely-guarded secret—the formula for Coca-Cola—while the other is to broadcast your secret to the world in a patent application. Each has its advantages, although in the information age, trade secrets are going the way of the vacuum tube and buggy whips.

Winston Churchill described democracy as "the worst form of government except all the others that have been tried." His oft quoted saying is perhaps apropos of the patent system as a whole, and not just the modern BMP. To the surprise of early critics, the patent system has shown much elasticity and resilience in responding to criticism, in recent years even swinging the pendulum too far in the direction away from patentees.

As a society, we have moved largely from moral norms to legal norms, no different for business-related intellectual property than business as a whole.[142] The contention is the basis for the current controversy regarding business methods. But we should not always confuse the abused system with its abusers. The basic ethical tenets that underlie good business practice should be equally applied by companies procuring, licensing, and enforcing their business method intellectual property.

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[140] Patent Reform Act of 2009, H.R. 1260, 111th Cong. (2009), *available at* http://www.govtrack.us/congress/billtext.xpd?bill=h111-1260.

[141] Patent Reform Act of 2009, S. 515, 111th Cong. (2009), *available at* http://www.govtrack.us/congress/billtext.xpd?bill=s111-515; Patent Reform Act of 2009, S. 610, 111th Cong. (2009), a*vailable at* http://www.govtrack.us/congress/billtext.xpd?bill=s111-610.

[142] Robert Arnott, *Ethics and Unintended Consequences*, 60 FIN. ANALYSTS J. 6, 6-8 (2004).

Listing of Figures

Fig. 1: Issued US Business Method Patents

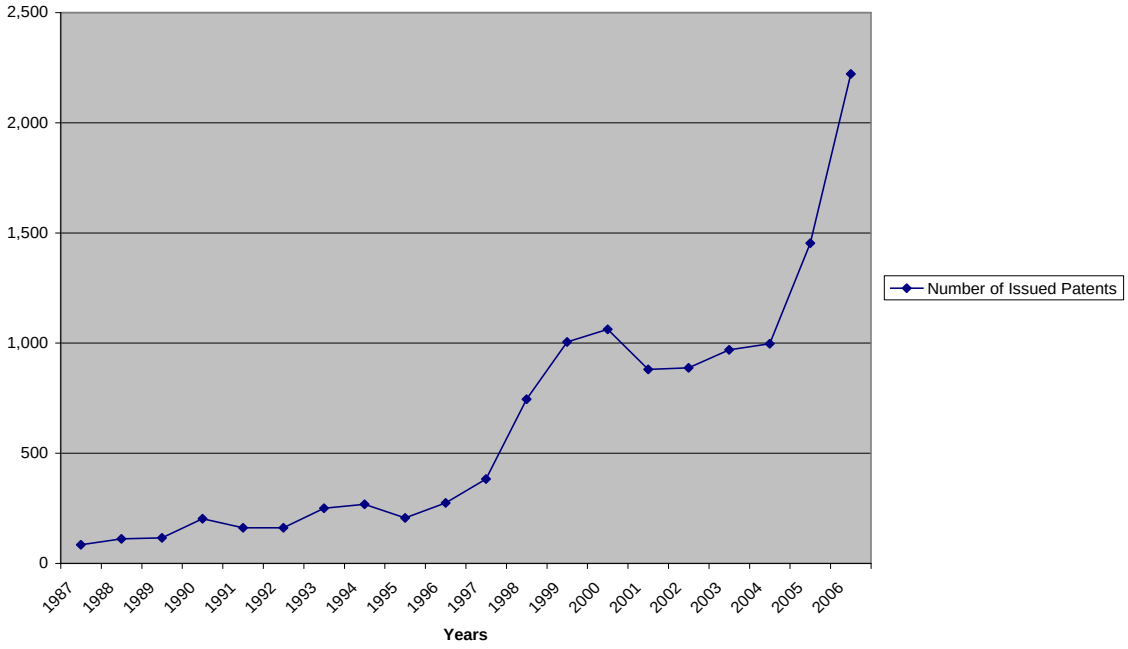


Fig. 2: US Utility Patents

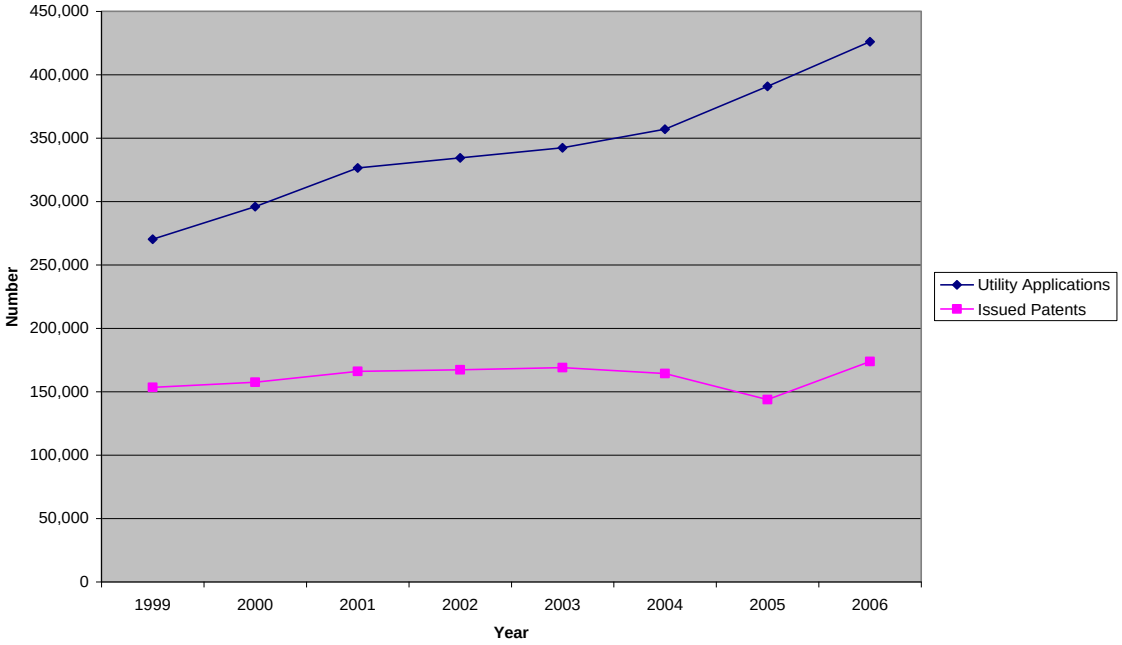


Fig. 3: US Issued Patents

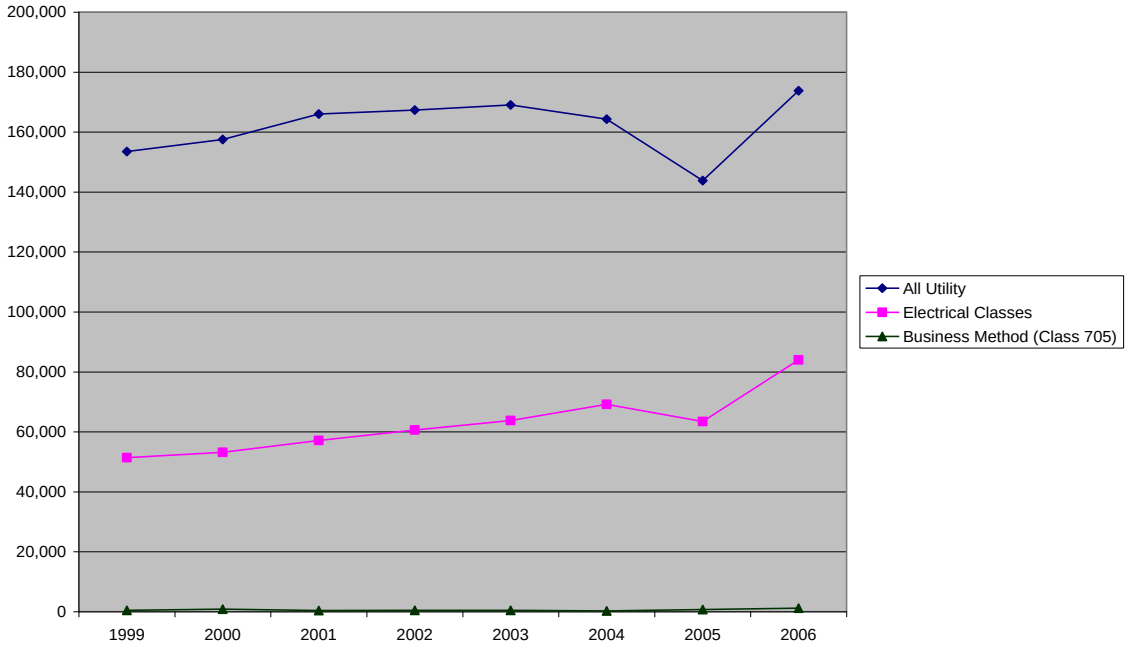


Fig. 4: US Business Method Patents

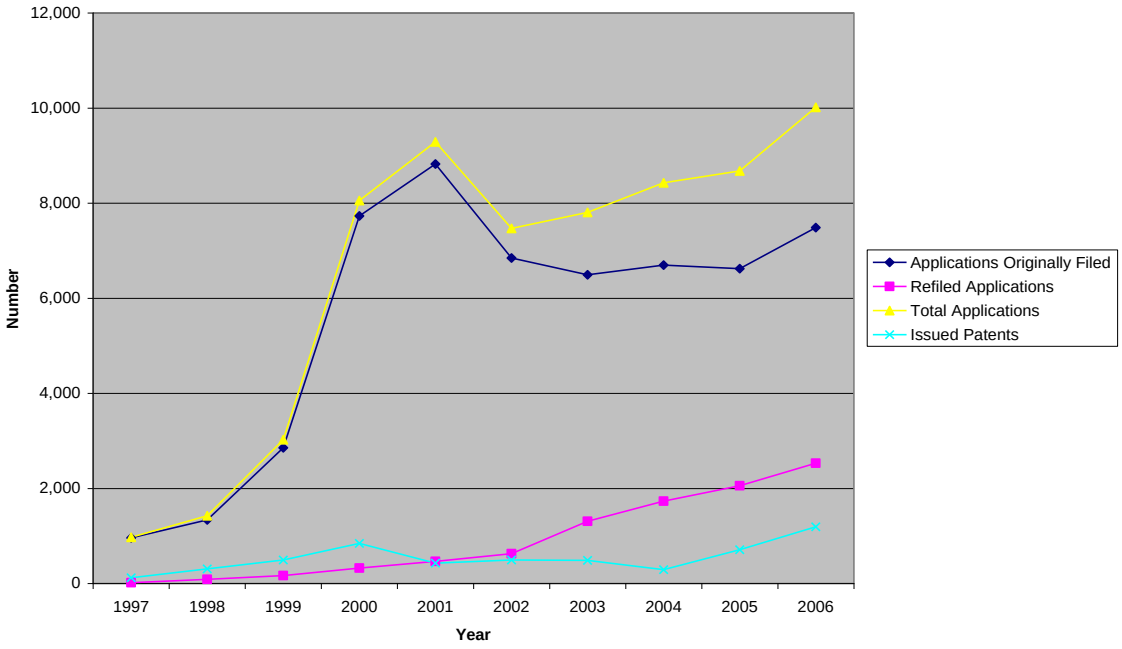


Fig. 5: Expected Patent Suits Per Year

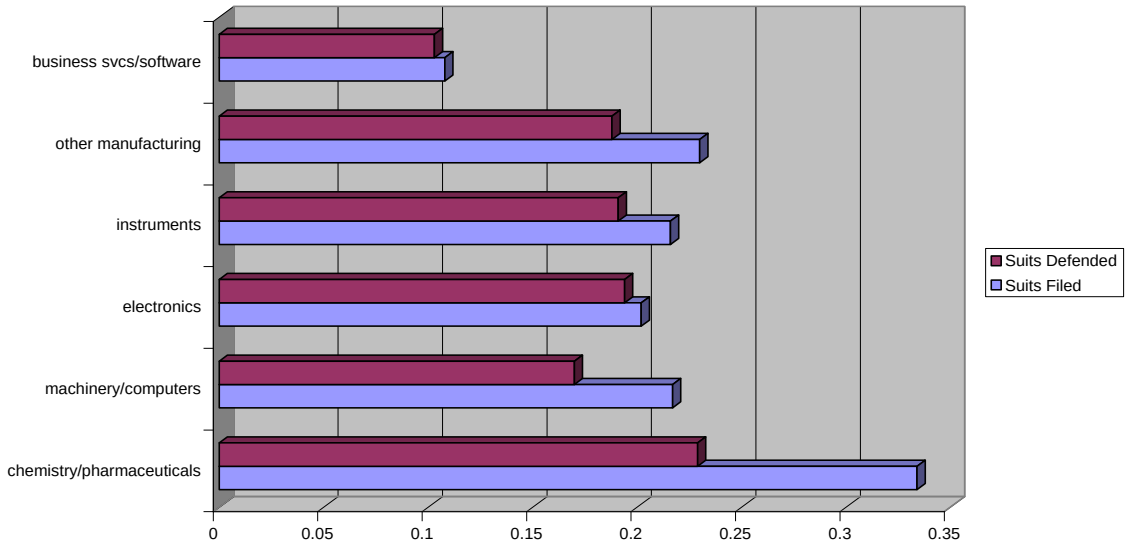
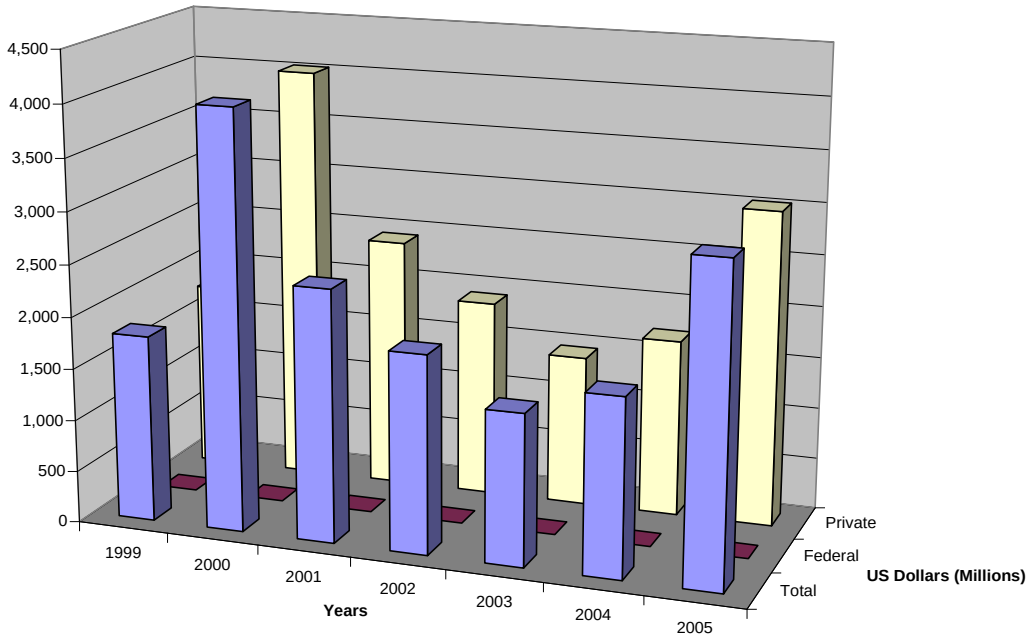


Fig. 6: R&D for Real Estate, Insurance and Finance



Listing of Tables

Table 1. – Exemplary Financial Asset Management Patents

Inventor(s)	***Title***	***Filing Date***	***Patent No.***	***Grant Date***
Atkins, Charles A.	System for the Operation of a Financial Account	April 15, 1987 December 6, 1994 August 27, 1991 April 15, 1997 January 16, 1992 April 16, 1991 March 26, 1997	4,953,085 5,644,727 5,864,828 5,875,437 5,884,285 5,911,135 5,911,136	August 28, 1990 July 1, 1997 January 26, 1999 February 23, 1999 March 16, 1999 June 8, 1999 June 8, 1999
Champion, Robert R. and Twist Jr., Basil R.	Goal-Directed Financial Asset Management System	September 1, 1989	5,126,936	June 30, 1992
Barr, Dean S. and Mani, Ganesh	Predictive Neural Network Means and Method for Selecting a Portfolio of Securities wherein each network has been trained using data relating to a corresponding security	August 31, 1994	5,761,442	June 2, 1998
Fernholz, Erhard R.	Apparatus and Accompanying Methods for Automatically Modifying a Financial Portfolio Through Dynamic Re-weighting based on a Non-constant Function of Current Capitalization Weights	December 13, 1996	5,819,238	October 6, 1998
Maggioncalda, Jeff N., Sharpe, William F., Jones, Christopher L., Fine, Ken, Tauber, Ellen, Scott, Jason, Grenadier, Steven R., Park, Ronald T.	Financial Advisory System	December 10, 1997 May 25, 1999 December 2, 1997 February 1, 2000 July 12, 2001	5,918,217 6,012,044 6,021,397 7,016,870 7,062,458	June 29, 1999 January 4, 2000 February 1, 2000 March 21, 2006 June 13, 2006
Michaud, Richard O. and Michaud, Robert	Portfolio Optimization by Means of Resampled Efficient Frontiers	September 9, 1998 October 25, 2002	6,003,018 6,928,418	December 14, 1999 August 9, 2005
Giansante, Joseph E.	Investment Portfolio Selection System and Method* **Expired for failure to pay maintenance fee.*	November 27, 1996	6,275,814	August 14, 2001
Baker, Nardin L.	Rapid Method of Analysis for Correlation of Asset Return to Future Financial Liabilities	August 2, 1989	6,336,103	January 1, 2002
Karp, Ronald A. and Karp, Jeffrey M.	Method and Apparatus for Tax-Efficient Investment Using both Long and Short Positions	October 6, 1999	6,832,209	December 14, 2004
Lear, James A.	Investment Portfolio Selection	January 27, 2000	6,912,509	June 28, 2005
Gastineau, Gary L. and Weber, Clifford, et al.	Determining Intra-Day Net Asset Value of an Actively Managed Exchange Traded Fund	March 27, 2000 March 27, 2000 April 16, 2002	6,941,280 7,099,838 7,305,362	September 6, 2005 August 29, 2006 December 4, 2007
Green, Paul T.	Financial Instrument Filtering System and Method Therefor	September 3, 1999	7,013,291	March 14, 2006
Kihn, John	Momentum Investment System, Process and Product	August 26, 2000	7,020,629	March 28, 2006
Usui, Masaaki	Method and System for Unified Management of Plurality of Assets Using Computer Networks	October 6, 2000 based on May 24, 2000 (JP)	7,069,241	June 27, 2006
Arnott, Robert D.	Method and apparatus for Managing a Virtual Mutual Fund	September 23, 2002	7,117,175	October 3, 2006
Chen, Peng and Milevsky, Moshe A.	Optimal Asset Allocation During Retirement in the Presence of Fixed and Variable Immediate Life Annuities	June 18, 2002	7,120,601	October 10, 2006
Philip, Karun and Maini, Harpal	Segregation and Management of Financial Assets by Rules	October 20, 2000	7,181,422	February 20, 2007

Table 2: Leading Patentees					
Leading Patentees 1977-1989		Leading Patentees 1990-1994		Leading Patentees 1995-1999	
Company	*Issues*	*Company*	*Issues*	*Company*	*Issues*
Pitney-Bowes	134	**Pitney-Bowes**	47	**Pitney-Bowes**	77
Sharp Corporation	39	**IBM**	32	**Sharp Corporation**	64
Omron Technologies	31	**Hitachi**	23	**Omron Electronics**	58
IBM	26	**Sharp**	11	**IBM**	30
Casio	21	**Omron Electronics**	9	**Casio**	27
Tokyo Electric	21	**Alcatel Business System**	9	**Tokyo Electric**	22
Hitachi	10	**NCR**	6	**Hitachi**	21
NCR	7	**AT&T**	6	**NCR**	20
Toshiba	6	**Unisys**	6	**Toshiba**	16
Merrill Lynch	5	**Casio**	5	**Merrill Lynch**	16

Table 3: Credit Card Companies	Number of Patents	Number of Patent Publications
American Express	146	340
Capital One	37	80
First Data	465	200
MasterCard	42	14
Visa	92	14

Table 4: Banking Institutions	Number of Patents	Number of Patent Publications
Bank of America	50	29
Citibank	109	2
JP Morgan / Chase	15	16
Wachovia	7	8
Wells Fargo	18	3
Bank of New York	0	6

Table 5: **Major Investment Institutions**	**Number of Patents**	**Number of Patent Publications**
Merrill Lynch	39	8
Vanguard Guard	9	6
Charles Schwab	17	1