

Financial Innovation Patents: The Future of the Futures Markets, or Old Wine in New Bottles?

by
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~ It takes a thousand men to invent a telegraph, or a steam engine, or a phonograph, or a photograph, or a telephone, or any other Important thing—and the last man gets the credit and we forget the others. He added his little mite—that is all he did.¹

~ To promote the progress of science and the useful arts by securing for limited times to . . . inventors the exclusive right to their . . . discoveries.²

~ Big will not beat small anymore. It will be the fast beating the slow.³

I. INTRODUCTION

Electronic exchanges and electronic trading are the future of the futures industry. Since the landmark case *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, the volume of trading on electronic exchanges has grown at ten times the pace of open outcry trading.⁴ Institutions and brokerage houses have rushed to the patent office to protect business methods, and an industry of Independent Software Providers (“ISPs”) has sprung up to meet the demand for new trading technologies. These developments have reshaped the commodity and futures landscape. In response, the Commodity Futures Trading Commission (“CFTC”) passed regulations regarding order routing and issued no-action letters to foreign exchanges, embracing the concept of real-time, twenty-four hour a day exchanges that operate seamlessly across time zones, leading the commodity and futures industry into a new era of increasing globalization. All of these developments are based on a need for speed, efficiency, and innovation that is intricately tied to technological development.

This note will argue that the future of the futures industry lies in efficiency enhancing patents. Part I suggests the CFTC should adopt even more liberal rules for electronic exchanges and standardize order uptake procedures, while the Federal Circuit Court of Appeals should continue to uphold patent grants for innovative business methods in the financial industry. Part II of this note discusses recent litigation regarding financial innovation patents. Part III reviews the prior decisions on the patentability of business methods. Part IV describes the regulation of electronic exchanges. Part V argues that the CFTC, the United States Patent and Trademark Office (“USPTO”), the judiciary, and Congress should all adopt liberal rules creat-

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1. MARK TWAIN, LETTER TO ANNE MACY, *reprinted in* ANNE SULLIVAN MACY, THE STORY BEHIND HELEN KELLER 162 (Doubleday, Doran, & Co., 1933).
 2. U.S. CONST. art. I, § 8, cl. 8.
 3. Brainy Quote, *Rupert Murdoch Quotes*, available at http://www.brainyquote.com/quotes/authors/r/rupert_murdoch.html (last visited Nov. 14, 2005).
 4. *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

ing low barriers for electronic exchanges and products entry, while vigorously upholding the exclusionary rights of innovators.

II. THE NEW FRONTIER: FINANCIAL INNOVATION PATENTS, LITIGATION, AND POLICY

A. Business Method Patents Peek the Interest of Congress

On October 26, 2004, the Commissioner of the CFTC told an intellectual property panel that the two most significant trends affecting the futures industry today are technology and competition.⁵ While these twin forces have come together recently to define business in the new millennium, the underpinnings of change have been foreshadowed by industry leaders for some time. In 1997, Joseph B. Dial, then Commissioner of the CFTC, met with industry leaders to discuss the outlook of the futures industry.⁶ At the time, Mr. Dial envisioned screen-based systems that threatened open outcry, over-the-counter order matching systems, automated order transmission systems, and one-stop clearing and margining.⁷

Mr. Dial's imaginings would not be long in coming to fruition. Soon after his speech, the Federal Circuit Court of Appeals decided *State Street Bank and Trust Co.*, invalidating the longstanding "business method" exception to patentability that prohibited business processes patents like those envisioned by the Commissioner.⁸ The removal of this prohibition cleared away the last hindrance, leaving corporations free to invest in innovative process technologies that would create unimagined efficiencies in the business models of large corporations, leading to an aftermarket of ISPs eager to bring technological expertise into the equation.

This Federal Circuit decision marked a shift in the U.S. patent world: now business methods were eligible for patent protection under 35 U.S.C. § 101, the portion of the U.S. Code creating congressional authority to grant patents.⁹ In July of 2000, the USPTO held a congressional roundtable in

5. Walt Lukken, *Patent Pending: The Role of the CFTC in Intellectual Property Disputes*, Address at the Intellectual Property Panel FIA Expo, (Nov. 12, 2004), available at <http://www.cftc.gov/opa/speeches04/opalukken-10.htm> (last visited Nov. 14, 2005).

6. Joseph B. Dial, *The Future of Futures*, Remarks before Forum on Risk Management and Commodity Futures Markets in Japan at Futures Industry Association Reception (Apr. 14, 1997), available at <http://www.cftc.gov/opa/speeches/opadial-75.htm> (last visited Nov. 14, 2005).

7. *Id.*

8. *State St.*, 149 F.3d at 1375.

9. *Id.*

Arlington, Virginia on issues surrounding the proliferation of computer-implemented business method patents.¹⁰

On March 29, 2000, just before the roundtable, the USPTO announced the “Business Method Patent Initiative” in response to the large number of business method patents filed.¹¹ As the Initiative evolved, the USPTO created new procedures requiring a second-level of review by the office, added examiners, and enacted higher standards for business method patents.¹² In April 2001, the Subcommittee on Courts, the Internet, and Intellectual Property heard formal congressional hearings (the “Hearings”) on the topic of business method patents.¹³ The Hearings, and much of the surrounding controversy, ignited because of the Business Method Improvement Act of 2000, a bill intended to address this surge of process patents. Representative Rick Boucher (D – Virginia) and Howard Berman (D – California), proposed the bill to prevent the computer-implementation or digitalization of previously known business methods from qualifying for patentability.¹⁴

Mr. Boucher, the Congressman from Virginia, began the Hearings by stating, “[i]n my view, something is fundamentally wrong with a system that enables individuals to get patents for doing the seemingly obvious.”¹⁵ As an example of such an obvious business process, Mr. Boucher pointed out that Priceline.com was awarded a patent for an electronic bid system where a party names his or her own price.¹⁶ Mr. Boucher argued business processes that have taken place for decades do not become novel merely because they

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10. Notice of Roundtable on Computer-Implemented Business Method Patent Issues, 65 Fed. Reg. 121 (July 22, 2000), *available at* <http://mail2.cni.org/Lists/ROUNDTABLE/Message/510000-P.txt> (last visited Nov. 14, 2005).
 11. *Id.*
 12. *Id.*
 13. *Business Method Patents: Hearing before the Subcommittee on Courts, the Internet, and Intellectual Property, of the H. Comm. on the Judiciary*, 107th Congress 1st Sess. (Apr. 4, 2001) [hereinafter *Hearing on Business Method Patents*], *available at* http://commdocs.house.gov/committees/judiciary/hjv72299.000/hjv72299_0.htm (last visited Nov. 14, 2005).
 14. *Id.* at 11, 18.
 15. *Id.* at 10.
 16. *Id.* See also Keith E. Maskus & Eina Vivian Wong, *Searching for Economic Balance in Business Method Patents*, 8 WASH. U. J.L. & POL’Y 289, 291-92 (2002) [hereinafter *Economic Balance*] (arguing Priceline.com’s reverse auction technique has its antecedents in Dutch auctions, and the single operation technology existed in a ten year old CompuServe patent for purchasing stock-price graphs by clicking on the screen); Jared Earl Grusd, *Internet Business Methods: What Role Does and Should Patent Law Play?* 4 VA. J.L. & TECH. 9 (1999); *Amazon.com, Inc. v. BarnesandNoble.com, Inc.*, 239 F.3d 1343, 1347 (Fed. Cir. 2001) (highlighting the Federal Circuit’s discussion of the “substantial questions” surrounding the patentability of Amazon’s one-click method).

are now transacted over the Internet.¹⁷ Mr. Berman, the then-ranking member from California, equated these obvious patent grants with giving out a reward for putting old wine in new bottles.¹⁸

Other commentators argue that business method patents enhance labor productivity, reduce transaction costs, and allow more efficient uses of labor. Federal Reserve economists agree that labor productivity must rise to create sustainable economic growth that leads to higher incomes.¹⁹ Economists Stephen Olinder and Daniel Sichel attribute two-thirds of the labor growth productivity to heavy investment in computer technologies.²⁰

The Commodities Exchange Act (“CEA” or “the Act”) recognizes, on one hand, the importance of technological innovation to the markets, and on the other, anti-competitive effects of allowing too many first mover monopolies. Section 5(b) of the CEA states one purpose of the Act is to “promote responsible innovation and fair competition among boards of trade, other markets and market participants.”²¹ In fact, section 19(b) of the Act states, “the Commission shall take into consideration the public interest to be protected by the antitrust laws and endeavor to take the least anti-competitive means of achieving the objectives of this chapter. . . in issuing any order or adopting any Commission rule or regulation.”²²

All of the developments after *State Street Bank and Trust Co.* converged to propel business method patents as the tech bubble grew and burst. Even as the economy entered a prolonged bear market, these new intellectual property developments continued to gather steam, barreling through forces of legislative and regulatory opposition like a juggernaut.

B. The Wagner Patent: What is at Stake?

At stake in the wave of trading-technology cases is the ability to navigate the complexities of the securities and futures environment, whether through automated bid matching, fund pooling, or through software that values interest rate swaps. Increasingly, new financial services companies add value to their company by harnessing the power of electronic systems to

17. *Hearing on Business Method Patents*, *supra* note 13, at 10-11; *see also Economic Balance*, *supra* note 16, at 292 (arguing that Sightsound.com is an example of an overly broad patent because the patent claims cover all electronic means for distribution of audio or video recordings on the Internet).

18. *Hearing on Business Method Patents*, *supra* note 13, at 13.

19. Robert Hunt, *You Can Patent That? Are Patents on Computer Programs and Business Methods Good for the New Economy?* BUS. REV., Q1 at 5 (2001).

20. *Id.*

21. 7 U.S.C.A. § 5(b) (2000).

22. *Id.* § 19(b).

create efficiency in their business model.²³ Companies are now patenting new trading-technology platforms for two reasons: (1) offensively, to create a niche market with a brand name, creating licensing revenues; and (2) defensively, to protect proprietary innovations from use by competitors.²⁴

eSpeed developed automated futures trading systems in which transactions are completed by a computerized matching of bids and offers on a first-come-first-serve basis.²⁵ eSpeed used this technology to create real-time electronic marketplaces for energy futures, interest rate futures, single stock futures, and equity index futures.²⁶ On April 5, 2001, eSpeed acquired the Wagner Patent for three million dollars in conjunction with its operation of the Cantor Exchange, the first fully electronic futures exchange.²⁷

Electronic Trading Systems Group (“ETS”) filed a patent infringement lawsuit against eSpeed, the Chicago Mercantile Exchange Inc., and the Chicago Board of Trade for infringement of the Wagner Patent.²⁸ eSpeed later became a plaintiff in the action after it settled with ETS, acquired the Wagner Patent, and adopted the pending lawsuits.²⁹ eSpeed, after acquiring the Wagner Patent, now counts as a competitive advantage its proficiency at “devel-

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23. Bradley Lytle & Philippe Signore, *Finance Companies Rush to Patent Business Methods*, MANAGING INTELL. PROP. (Feb. 2004), at <http://www.oblon.com/files/news/211.pdf> (last visited Nov. 14, 2005) [hereinafter *Rush to Patent*].
 24. Paul E. Schaafsma, *A Gathering Storm in the Financial Industry*, 9 STAN. J.L. BUS. & FIN. 176, 187-88 (2004). This author suggests that the accessibility of patents for financial innovations presents both “threats and opportunities.” *Id.* For example, this article notes how Cantor Fitzgerald responded to the threat of competitors possibly patenting Cantor’s proprietary technologies by rushing to patent. *Id.* The author contends that employing this defensive strategy was a result of lessons learned from the eSpeed litigation. *Id.* The author goes on to point out that Cantor Fitzgerald has offensively accumulated 28 patents since November 2003 in an effort to create “competitive advantage.” *Id.*
 25. *eSpeed Receives Positive Preliminary Ruling on Wagner Patent for Electronic Futures Trading: Company Well Positioned for Electronic Futures Trading*, (Aug 1, 2001), available at <http://www.espeed.com/articles/article08012001c.htm> (last visited Nov. 14, 2005).
 26. *Id.*
 27. Press Release, *eSpeed Buys Important Patent for Futures Trading*, (Apr. 25, 2001), available at <http://www.espeed.com/articles/article20010425.htm> (last visited Nov. 14, 2005) (The Cantor Exchange was a joint venture between eSpeed and the New York Board of Trade).
 28. Daniel P. Collins, *Another Suit, Another Dollar, Nymex Settles with eSpeed*, FUTURES MAG., Feb. 2004, at 17, available at http://www.futuresmag.com/library/2004/02/0204_toc.html (last visited Nov. 14, 2005).
 29. *Id.*

oping and deploying electronic marketplaces and related trading technology.”³⁰

eSpeed entered into a settlement agreement resolving the litigation over the Wagner Patent and is reported to have collected approximately fifty million dollars protecting the Wagner Patent.³¹ Both of the Chicago Exchanges settled the lawsuit for fifteen million dollars, and the final holdout, Nymex, finally settled in February of 2004 for eight million dollars to be paid over three years.³² Nymex held out in order to attempt to invalidate the original patent, seeking to present evidence that Richard Sandor, noted for developing Treasury Bond futures, wrote an article in 1970 which outlined the concept of a computerized commodity exchange.³³ This highlights the uniqueness of the business method patent: innovation is not only the idea that adds to prior art, but the technological form that implements that idea in lines of code and in an assortment of hardware, which together brings efficiency to an age-old process such as futures trading.

C. The Role of Independent Software Vendors

Independent Software Vendors (“ISVs”) are companies like eSpeed and Trading Technologies, who develop systems that FCMs use to execute their trades. According to Harris Brumfield, the CEO of Trading Technologies, ISVs provide the portal that allows traders to access multiple exchanges and make “the world their pit.”³⁴ Mike Ryan, General Counsel for Trading Technologies, views the ISV as the innovator who finds more efficient ways to execute trades.³⁵ Furthermore, Mr. Ryan believes in a vigorous defense of those patented technologies – leading to healthy competition among ISVs and an incentive to continually innovate, creating liquidity and meeting demand for new financial instruments.³⁶ Some commentators believe that in

30. eSpeed, Form 10-K, pursuant to § 15(d) of the Securities and Exchange Act of 1934, p. 1, (Mar. 31, 2003), available at <http://pro.edgar-online.com> (last visited Nov. 14, 2005).

31. Mark Young & Gregory Corbett, *Futures Patent Litigation: A New Competitive Force*, FUTURES INDUSTRY MAG., Outlook ‘05 Issue, at 1, available at <http://www.futuresindustry.org/fimagazi-1929.asp?v=p&iss=149&a=979> (last visited Nov. 14, 2005).

32. Collins, *supra* note 28, at 17.

33. *Id.*

34. Jeremy Grant & Alex Skorecki, *Software Vendors Globalise Pit: ISVs are becoming Important Players in Derivatives*, FIN. TIMES, Capital Markets & Commodities Section, Mar. 3, 2004.

35. Telephone Interview with Mike Ryan, General Counsel, Trading Technologies, Inc. (Nov. 22, 2004).

36. *Id.*

the derivatives industry exchanges and traders must “update or die.”³⁷ As illustrated later in this Note, exchanges face considerable competition to establish themselves as the benchmark in a particular product area. ISVs both retain exchanges as clients and put significant capital towards research and development. Most often, it is the ISV bringing patent infringement lawsuits to protect the developments they have made available to the market.

Recently, Trading Technologies sued eSpeed for infringing on its recently patented software platform MD Trader. MD Trader is a component of Trading Technologies’ X_Trader trading software, which allows screen traders to see bids and offers on futures contracts in real time. The MD Trader trading platform is a graphical interface allowing participants to evaluate market depth.³⁸ eSpeed, in its defense to the suit, is attempting to prove that the invention was not “novel” and was known in the industry prior to being patented in 2000. Ironically, this was the same strategy employed by Nymex against eSpeed with regard to the Wagner Patent prior to their settlement.³⁹ Trading Technologies contends that its software is “radically different” from what was on the market prior to 2000.⁴⁰ Harris Blumfield explains that Trading Technologies “intend[s] to protect” its intellectual property and has not offered its software “to the world out of sheer generosity.”⁴¹

Critics claim that the paradigm of patent protection Harris Blumfield and Trading Technologies endorse stifles competition and increases transaction costs. Actually, the era of electronic trading has reduced the costs of execution.⁴² The new era of business patents has increasingly incentivized innovation, causing leading firms such as Cantor Fitzgerald to create patent portfolios and research new ways to add efficiency into their business models. Additionally, the rising volume of commodity and futures trades, growing twenty-one percent annually, is reflective of the greater flexibility and ease of execution that electronic trading has provided.⁴³

37. Grant & Skorecki, *supra* note 34, at 2.

38. For a demonstration of how this interface measures market depth, see <http://www.tradingtechnologies.com/FlashDemo/PropSIMS/PUMD-TraderWindow.htm> (last visited Nov. 14, 2005).

39. Young & Corbett, *supra* note 31.

40. *Id.*

41. *Id.*

42. Raymond Tsang, *Open Outcry and Electronic Trading in Futures Exchanges*, BANK OF CAN. REV., at 6 (Spring 1999), citing Maguire, *Best of Both Worlds*, BANKING TECH., 44-46 (November 1997), available at <http://www.bankofcanada.ca/en/review/1999/r992b.pdf> (last visited Nov. 14, 2005). This author cites Maguire’s study which reported that electronic trading is between four and seven times less expensive than open outcry, largely due to the absence of fixed and overhead costs. *Id.*

43. Galen Burghardt, *FIA Annual Volume Survey: The Invigorating Effects of Electronic Trading*, FUTURES INDUSTRY MAG., March/April 2005, available at

III. PRIOR LAW

A. Patent Basics

To qualify for patent protection, an invention must satisfy the requirements of utility, novelty, and non-obviousness.⁴⁴ Alternatively stated, the invention must be useful, new, and must take a reasonable step forward from other similar inventions. The requirement of non-obviousness usually demands that the innovation be differentiated from ideas existing in the popular literature of the area or the “prior art.”⁴⁵

The Supreme Court, in the classic case *Diamond v. Diehr*, held that an invention using temperature sensors and computer software to calculate the ideal curing time for a batch of rubber was patentable.⁴⁶ Originally, the patent office denied patentability for this business method because the chemical equations involving thermodynamics at the foundation of the programming

<http://www.futuresindustry.org/fimagazi-1929.asp?a=1026> (last visited Nov. 14, 2005). Since 1984 the volume of commodity and future contracts traded annually rose from 188 million to 8.9 billion, representing an annualized growth rate of 21% over the last 20 years and a doubling of trade volume every three to four years. *Id.* The Futures Industry Association reports that the most recent wave of trading increases from 2001 to the present was significantly attributable to “the invigorating effects of electronic trading.” *Id.* Other commentators note that automation has reduced overhead costs and simplified order-matching. *See* Tsang, *supra* note 42. *See also infra* Part IV-A of this note for a discussion of the explosive trade volume growth on Globex as electronic trading came into the mainstream.

44. *Hearing on Business Method Patents, supra* note 13, at 11. The Patent Act of 1952 specifies four basic statutory requirements that must be met to obtain a patent: (1) the claimed invention must define eligible subject matter and have utility; (2) it must be novel; (3) it must not have been obvious to a person having ordinary skill in the art at the time the invention was made; and (4) it must be fully and unambiguously disclosed in the text of the patent application, so that the skilled practitioner would be able to practice the claimed invention without undue experimentation.
45. One commentator argues that opening the door to business methods may lead to the patenting of other methods of expressing data, such as combining videotaped lectures with online data retrieval and interactive questioning, and claiming that this juxtaposition of preexisting methods is now novel. *Economic Balance, supra* note 16, at 292. These authors question whether a pitching coach could patent a training program or method for teaching a new pitch that he had invented “the split-fingered curveball.” *Id.* at 292-93. This example illustrates how ridiculous some of the arguments for patentability can be – would anyone argue that requiring a license for other clubs to teach this pitching technique would be appropriate? *Id.* at 293.
46. *Diamond v. Diehr*, 450 U.S. 175, 184 (1981). The U.S. Supreme Court explicitly identified three specific areas of subject matter that are excluded from patent protection: (1) laws of nature; (2) natural phenomena; and (3) abstract ideas. *Id.* at 185.

were well-known.⁴⁷ *Diamond* illustrates the common disagreement over the worthiness for patent protection of the actual software versus the well-known method of implementing a process using that software.

Patent protection is coveted because copyright protection only encompasses the expression of its creator, but not the underlying idea. Thus, if a competitor reverse engineers the process and creates its own system, a copyright cannot act as both a shield and the basis for a patent infringement injunction. For instance, in the early 1970s, Merrill Lynch developed a set of linked cash management accounts operated through a computer program. When Merrill Lynch obtained a patent for the invention in 1982, Paine Webber sued to invalidate the patented business method.⁴⁸ Courts analyzing these cases have treated the notion of patenting many of these new financial or software systems as innovative. To the contrary, a White Paper by the United States Patent Office recently identified 41 instances of what it calls financial patents issued before 1848.⁴⁹

B. Financial Innovation Patents

In 1972, the Supreme Court decided the nature of a computer software process that made computer programs run more efficiently.⁵⁰ The Supreme Court reasoned in *Gottschalk v. Benson* that a computer process based on a “phenomenon of nature” such as a mathematical formula could not be patented because it merely expressed a pure idea. However, if the process in question used man-made ingenuity to modify or improve on the foundation of the mathematical formula, the process would become patentable.⁵¹ The Supreme Court ruled in *Gottschalk* that computer software merely converting binary coded decimal numbers into pure binary numbers was not patentable.⁵² The software at issue used a mathematical algorithm necessary for the efficient operation of digital computers. The Supreme Court found that allowing a patent on software that merely applied this ‘formula’ would be tantamount to allowing a patent on the algorithm itself.⁵³ No one could legally claim exclusionary rights of ownership over pure mathematics.⁵⁴

47. *Id.*

48. Paine Webber, Jackson & Curtis, Inc., v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 587 F. Supp. 1112, 1113 (D. Del. 1984).

49. USPTO, *White Paper on Automated Financial or Management Data Processing Methods (Business Methods)* (1999), available at <http://www.uspto.gov/web/menu/busmethp/index.html#origins> (last visited Nov. 14, 2005).

50. *Gottschalk v. Benson*, 409 U.S. 63, 64 (1972).

51. *Id.* at 67.

52. *Id.* at 71.

53. *Id.* at 71-72.

54. *Id.* at 67.

C. State Street: The Death of the Business Method Exception

Recently, the pendulum has swung decidedly in the opposite direction from the Supreme Court's ruling in *Gottschalk*. In *State Street v. Signature Financial Group, Inc.*, a mutual fund consulting firm, Signature Financial Group, sought to patent a computer program for managing multi-tier mutual fund investments through a computerized "Hub and Spoke" configuration.⁵⁵ Under the configuration, mutual fund "spokes" would pool their assets into an investment portfolio "hub" which was a partnership entity.⁵⁶ The complex tax and accounting treatment desired from the configuration required a number of arduous measures, such as moving funds in and out of accounts, balancing year-end accounting statements, and making pro-rata allocations of gains and losses attributable to the "spokes."⁵⁷ Signature Financial created a complex computer program to accomplish these requirements and obtained patent 5,193,056 (hereinafter "the 056 patent") on the innovative program.⁵⁸

State Street, as an accounting agent for several multi-tier fund complexes approached Signature Financial for a license.⁵⁹ When negotiations broke down, State Street sought to invalidate the 056 patent by filing a declaratory judgment action invoking the *Gottschalk* rationale to claim the system was merely an algorithm and not patentable.⁶⁰ The district court followed the *Gottschalk* rule stating that, "[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."⁶¹ The district court, citing *Diamond v. Diehr*, stated that laws of nature, natural phenomena, and abstract ideas (such as a pure algorithm) are not patentable subject matter.⁶²

The deciding factor under patent law is whether an invention is "new and useful" under the language in 35 U.S.C. § 101.⁶³ The deeper policy rationale, however, is derived from the language of Article I, Section 8, Clause 8 of the Constitution, which provides that Congress has the power to

55. *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 927 F. Supp. 502, 504-07 (D. Mass. 1996), *rev'd*, 149 F.3d 1368 (Fed. Cir. 1998).

56. *Id.* at 504-05.

57. *Id.* at 505; *see also* eSpeed, Annual Report (Form 10-K), at 1 (March 31, 2003) (stating "Our proprietary software provides an end-to-end solution, including front-end applications, transaction processing engines, credit and risk management tools and back-office and clearance modules, enabling straight-through processing.").

58. *State St.*, 927 F. Supp. at 504.

59. *Id.* a 506.

60. *Id.*

61. *Id.* at 507 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

62. *Id.* (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 309-10 (1980)).

63. 35 U.S.C. § 101.

“[p]romote the progress of science and the useful arts by securing for limited times to . . . investors the exclusive right to their . . . discoveries.”⁶⁴ Combining the two sources, the purpose of granting monopoly rents is to provide an incentive for innovation and *to promote progress*. The district court in *State Street* sidestepped the sweeping constitutional policy considerations and went on to analyze a series of Federal Circuit tests designed to determine the complex patentability issues behind software patents, most notably the test derived from *In re Alappat*.⁶⁵

The *Alappat* test had two parts: (1) whether the program comprised an otherwise statutory process; and (2) whether the mathematical procedures were applied to physical process steps.⁶⁶ To satisfy the *Alappat* test, a piece of computer software must be an algorithm tied to a physical transformation of the data (i.e. a machine). This approach represented a reaction to the particular type of policy problem presented in *State Street v. Signature Financial*, where Signature claimed *the machine* applying the algorithm was patentable.⁶⁷ Signature relied on the patentability of the physical apparatus, rather than the process itself.⁶⁸ Signature Financial wanted to avail itself of the odds, as it is far easier to show that a machine is “new and useful” than to show that a process meets the *Alappat* test. The district court saw through this posturing. After all, it should not be the classification of the technology into a category (process vs. machine), but its contribution to scientific progress that justifies the grant of monopoly rents.

The district court pierced through Signature Financial’s back-door approach to justify patentability and followed the *Alappat* reasoning that even a true “apparatus” would be subject to an algorithm/physical transformation analysis if the patent would foreclose the use of a pure mathematical process.⁶⁹ While the *Alappat* test is created out of whole judicial cloth, and its application seems artificial, it importantly focuses the inquiry on the underlying policy issues in dispute: how narrowly must a patentable technology be confined and how closely tied to the machinery with which it is carried out

64. U.S. CONST. art. 1, § 8, cl. 8.

65. *State St.*, 927 F. Supp. at 510; *see also In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994).

66. *Id.*; *c.f. infra* note 59 (The U.K. Patent Office standard of “technical effect” or that the business method be intricately tied to the physical machinery carrying it out, not merely implemented by the machine).

67. *State St.*, 927 F. Supp. at 507 (citing *In re Alappat*, 33 F.3d at 1542).

68. 35 U.S.C.A. § 101 (stating “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.”). Machine claims are frequently referred to in IP jurisprudences as “apparatus” patents.

69. *State St.*, 927 F. Supp. at 510-11.

must it be before it is innovative enough to justify foreclosing an entire market from competition?

The district court's real concern involved Signature Financial's ability to charge monopoly rents for the use of a "business method." The district court reaffirmed the long settled "business method" exception to patentability announced in *Hotel Security Checking Co. v. Lorraine Co.*,⁷⁰ holding:

If Signature's invention were patentable, any financial institution desirous of implementing a multi-tiered funding complex modeled on a Hub and Spoke configuration would be required to seek Signature's permission before embarking on such a project. *This is so because the '056 Patent is claimed sufficiently broadly to foreclose virtually any computer-implemented accounting method necessary to manage this type of financial structure.* Indeed, during licensing negotiations, Signature informed State Street that any data processing system designed to perform book accounting for a multi-tiered fund based on a partnership portfolio configuration would infringe the '056 Patent. *See Answer ¶ 12.*

In effect, the '056 Patent grants Signature a monopoly on its idea of a multi-tiered partnership portfolio investment structure; patenting an accounting system necessary to carry on a certain type of business is tantamount to a patent on the business itself. Because such abstract ideas are not patentable, either as methods of doing business or as mathematical algorithms, the '056 Patent must fail.⁷¹

State Street's victory, however, was a pyrrhic one. The Federal Circuit rejected the district court's holding that the multi-tiered investment software constituted a "business method."⁷² The Federal Circuit went even further, eliminating the business method exception altogether by clearly stating, "[w]e take this opportunity to lay this ill-conceived exception to rest."⁷³ The Federal Circuit decision to validate Signature Financial's patent opened the doors to a host of claims for patenting business methods. In fact, numerous similar patents filed with the U.S. Patent Office reflect the attitude that companies needed to act defensively to protect proprietary systems by filing for a patent.⁷⁴

After *State Street*, class 705 filings and patent grants both rose to an all time high, and commentators began to argue whether the large number of business method patents granted was appropriate. Class 705 of the U.S. patent classification system is the computer implemented business method class,

70. *Hotel Sec. Checking Co. v. Lorraine Co.*, 160 F. 467, 472 (2d Cir. 1908).

71. *State St.*, 927 F. Supp. at 516 (emphasis added).

72. *State St.*, 149 F.3d 1368, 1376-77 (Fed. Cir. 1998).

73. *Id.* at 1375.

74. *See Schaafsma, supra* note 24.

which includes “apparatus and corresponding methods for performing data processing operations . . . wherein the apparatus or method is uniquely designed for or utilized in the practice, administration, or management of an enterprise or in the processing of financial data.”⁷⁵ There were 8,700 Class 705 patent applications in 2001, a dramatic jump from the 1,300 applications in 1998, the year of the Federal Circuit decision in *State Street*.⁷⁶ In addition, patent applications containing the word “software” increased from 125 in 1996 to 40,000 in 1999.⁷⁷ These numbers demonstrate the response of the financial and technology industries to *State Street* and the race to secure intellectual property rights in proprietary systems. For example, to date, IBM holds over 300 Class 705 patents, Citibank holds over 50, and Cantor Fitzgerald holds at least four.⁷⁸

This explosion of patent applications, however, brought mounting criticism that patents were being granted too easily and broadly.⁷⁹ When the U.S. Patent Office granted patents to Priceline.com for a well-known reverse auction technique and to Amazon.com for its “one-click” purchasing method, commentators argued over whether the patentability standards were stringent enough.⁸⁰ In response to these concerns, the American Intellectual Property Law Association (“AIPLA”) commissioned a working group to prepare a White Paper containing a number of recommendations.⁸¹

Much of the criticism in the Business Method Patent area is directed at the patent examiners and the lack of resources available to research the novelty of these patents.⁸² Some economic studies suggest that at the inception of business method patents, patent examiners took the prior art searches con-

75. U.S. Patent Classification System, Class Definitions, Class 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination, implemented June 30, 2000, available at <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/def/705.htm> (last visited Nov. 14, 2005); see also *Rush to Patent*, *supra* note 23.

76. *Rush to Patent*, *supra* note 23.

77. James D. Zirin, *So Sue Me*, FORBES.COM, May 22, 2000, at <http://www.forbes.com/best/2000/0522/044.html> (last visited Nov. 14, 2005).

78. *Rush to Patent*, *supra* note 23.

79. See *Hearing on Business Method Patents*, *supra* note 13, at 5.

80. See *Rush to Patent*, *supra* note 23. This commentator quotes Harvard Law Professor Lawrence Lessig for the viewpoint that many e-commerce players are forced by economic considerations to pay royalties for junk patents, rather than risk shouldering a greater than \$1 million dollar patent infringement defense. *Id.*

81. *Hearing on Business Method Patents*, *supra* note 13, at 21.

82. See *Economic Balance*, *supra* note 16, at 294. (arguing that despite staff increases at the U.S. Patent Office, examiners are still left with insufficient time to make diligent searches for “prior art”).

ducted by the prospective patent applicant at face value.⁸³ Because of the economic stakes involved, commentators have also questioned whether the USPTO acts to balance public policy interests, or is influenced by commercial interests.⁸⁴ In 2000, Congress enacted the “Business Method Initiative” that increased USPTO class 705 staffing and added a second-level of review. This initiative reduced the criticism directed at business method patents.⁸⁵ The changes reflected recommendations set forth in the AIPLA White Paper:

(1) improving USPTO non-patent prior art collections, including improved classification of, and access to, prior art references submitted by applicants; (2) enhancing USPTO examiner skills and training; (3) funding the USPTO adequately to fulfill its statutory obligations to effectively search and examine patent applications and promptly grant valid patents; (4) creating an early inter partes post-grant opposition procedure with estoppel unless appealed to the Federal Circuit; and (5) subject to national security considerations, publishing all pending patent applications after eighteen months.⁸⁶

D. A Comparative Perspective

The United Kingdom Patent Office (“UKPO”) and the European Patent Office (“EPO”) have been less liberal in granting a “first mover monopoly” to enterprising companies industrious enough to file for patent protection.⁸⁷ The European System arose out of the European Patent Convention (“EPC”), which strives to create a unitary patent system across Europe.⁸⁸ The elements of patentable subject matter under this system are similar to those in the United States; the patent must involve an inventive step and be capable of industrial application.⁸⁹ A study by the Oxford Intellectual Property Re-

83. *Id.*

84. *Id.*

85. United States Patent and Trademark Office, Roundtable on Computer Implemented Business Method Patent Issues, 65 Fed. Reg. 121 (July 27, 2000).

86. *Hearing on Business Method Patents*, *supra* note 13, at 21-22.

87. Michal Likhovski, Michael Spence, & Michael Molineaux, *The First Mover Monopoly*, Oxford Intellectual Property Research Center, St. Peter’s College [hereinafter *First Mover Study*], available at <http://www.oiprc.ox.ac.uk/EJWP0500.pdf> (last visited Nov. 14, 2005) (discussing the contrast between the reaction of the European and American patent systems, and noting that American companies have filed the vast majority of defensive patents to protect intellectual property innovations).

88. *Id.*

89. *Id.* at 29; *see also* Patent Act 1977 § 1(1) (U.K.); European Patent Convention Article 52(1); *but c.f.* 35 U.S.C. § 102 (2002) (requiring the invention be novel); *see* 35 U.S.C. § 103 (2002) (requiring the invention be non-obvious).

search Center notes that the practical “industrial use” requirement, which draws the line at an invention which is “useful,” is absent from the American patent system.⁹⁰ The EPC also contains a list of items that are not patentable “as such” and specifically excludes business methods from patentability.⁹¹

European commentators opposing the exclusion of business methods patents reason that a reward is necessary in order to spur innovation. Those supporting the exclusion argue that business methods are abstract ideas and patents on business methods stifle competition.⁹² Despite this exclusion, it is not impossible to obtain a patent for a business method in Europe. Similar to the *Alappat* standard, patents can be obtained in Europe if the business method is an intricate part of the machine that runs it; however, under the U.K. standard, the actual machine must be controlled by the technology.⁹³ Today the EPO recognizes the embodiment of a technology in a computer, but only if it creates a “technical effect” on the machinery itself.⁹⁴ Such an effect may possess the requisite “usefulness” to justify a patent grant.⁹⁵ Outside of Europe, the Japanese Patent Office (“JPO”) has also recently released guidelines for Business Method Patents.⁹⁶

E. Prior Invention Protection

The patent grant, which comes at the cost of expensive research and development, gives the patent holder the right to exclude others from the use of his invention during the patent period.⁹⁷ Practically, patents bring into the public domain the advances and inventive steps that have led to a particular innovation.⁹⁸ In the software and data processing area, however, where patents were not allowed, there was a lack of literature and documentation sur-

90. *First Mover Study*, *supra* note 87, at 29.

91. *Id.* at 30. *See also* Patent Act 1977 § 1(2); European Patent Convention Art. 52.

92. *First Mover Study*, *supra* note 87, at 30-31.

93. *Id.* at 33-34.

94. *Id.*

95. *Economic Balance*, *supra* note 16, at 302. *Compare* EUROPEAN PATENT ORGANIZATION’S ADMINISTRATIVE COUNCIL, *Report on the 80th Meeting of the Administrative Council of the European Patent Organization*, 7 O.J. 307-09 (2000), with *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (noting that there must only be a technical implementation of the process, but not necessarily a technical effect on the underlying machinery) (Emphasis added).

96. *Id.*

97. *Economic Balance*, *supra* note 16, at 296. (noting “[e]xclusive rights provide market advantages that encourage investment of time and effort in developing new and better techniques for organizing business,” but only with the incurrance of “considerable research and development costs”).

98. RICHARD POYNDR, *CAUGHT IN A WEB: INTELLECTUAL PROPERTY IN CYBERSPACE* 96-97 (2001).

rounding these intermediary inventive steps.⁹⁹ Thus, following the decision in *State Street* there was a shortage of “prior art.” This left examiners to make difficult determinations of whether an invention was truly novel and caused an overflow of accepted patents.¹⁰⁰

Many groups were afraid of the scope of the *State Street* decision and lobbied Congress to mitigate its effects. In particular, industry insiders feared that competitors would be able to offensively capture patent protection for a business system for which it had not sought patent protection, but that the firm already relied on as an intricate part of their business model. In 1999, Congress added a “prior inventor” defense to prevent a subsequent copy-artist from foreclosing the actual inventor’s use of a business method he developed.¹⁰¹

The Business Methods Patents Improvement Act of 2000 was also proposed in Congress (by Congressmen Berman and Boucher) to place limitations on business method patents.¹⁰² While this legislation was not passed into law, it would have given third parties a window of eighteen months after the application was filed to dispute the patent.¹⁰³ This legislation would have also created a rebuttal presumption that any claimed invention that merely processed prior art through a computer application was not an “innovation.”¹⁰⁴

F. The “On-Sale Bar” Prohibition

In *Minton v. National Securities Dealers, Inc.*, the validity of a patent on a securities trading system was brought into question as a defense to a patent infringement claim.¹⁰⁵ Minton received the ‘643 patent for a computerized securities trading system that allows individuals wishing to trade securities to post and reply to offers, and thus effect trades through a computer network.¹⁰⁶ Minton admitted that a similar version of the ‘643 patent securities trading system, TEXCEN, had been leased to a brokerage firm a year prior to

99. *Id.*

100. *Id.* The author discusses a particularly shocking incident in 1993, where Compton’s New Media Company announced before an audience at a presentation that it had been awarded a patent covering search technology necessary to run computer-based multimedia presentations, which threatened bystanders with the prospect of paying 1-3% royalties to Compton’s on all multimedia presentations sold in the United States.

101. 35 U.S.C. § 273 (2005).

102. See *Hearing on Business Method Patents*, *supra* note 13.

103. *Id.*

104. *Id.*

105. *Minton v. Nat’l Ass’n of Sec. Dealers, Inc.*, 336 F.3d 1373 (Fed. Cir. 2003).

106. *Id.*

issuance of the patent.¹⁰⁷ TEXCEN required a broker in order to effect a trade; the trade would be executed only after the broker determined that it met certain requirements like the “best execution rule,” requiring the broker to fill an order at the best available price.¹⁰⁸ The district court in *Minton* granted defendants’ Motion for Summary Judgment, finding the TEXCEN system constituted an “on-sale bar” under 35 U.S.C. § 102(b).¹⁰⁹ The Federal Circuit Court of Appeals held that pursuant to 35 U.S.C. § 102(b), the patent was invalid.¹¹⁰ The Federal Circuit focused its analysis on the § 102(b) “on-sale bar” prohibition, which invalidates patents on an invention that was on sale more than one year prior to the patent application.¹¹¹

Although not addressed by the court in *Minton*, another classic defense for invalidating a patent is to declare an innovation obvious and not novel within the industry.¹¹² In the eSpeed case discussed *supra*, there was a controversy over whether prior industry literature discussed the process that was ultimately granted patent protection – with Nymex attempting to show that Richard Sandor had originally conceptualized an electronic futures exchange by discussing this innovation in the popular literature prior to Susan Wagner’s receipt of the Wagner Patent.¹¹³

The policy rationale behind the prior invention protection and the *Minton* patent invalidation is especially profound in the context of financial systems. In an industry that is even now gearing up to create computerized monitoring processes to assist in due diligence, new technology systems in the market are quickly internalized and added into the arsenal of increasing protections necessary for complex brokerage operations. To allow a competitor to patent a process that has already been internalized, requiring systems to be entirely reworked, would be unfair to those companies that had relied on and invested in the new technology and had already made the technology available to the market.

This inequity would be most pronounced where a party had actually purchased the rights to use a process at arm’s length and then would be required to pay monopoly rents once a patent was procured. To prevent such unjust enrichment, the courts have tempered the effect of the *State Street*

107. *Id.*

108. *Id.* at 1380.

109. *Id.* at 1375; *see* 35 U.S.C. § 102(b) (stating “the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States”).

110. *Minton*, 336 F.3d at 1381.

111. *Id.*

112. 35 U.S.C. § 103 (2005).

113. *See* Grant & Skorecki, *supra* note 34.

validation of business methods, eliminating patentability for those previously on sale in the market.

G. Examples of Business Method Patents: Cash Management to Internet Banking

The scope of business method patents is virtually endless, promising to make this a growth area in the law. As some commentators have argued, this will ultimately lead to the creative destruction of institutions that are unable to adapt.¹¹⁴ Information Systems experts at Cambridge and the London School of Economics have commented that “the speed and nature of change towards e-trading in traditional exchanges has been dramatic with the leaders’ response viewed as critical for their survival.”¹¹⁵

It has been predicted by economists and commentators that the true impact of the “Information Age” will be the ability to harness software to increasingly minimize routine human labor, and to aid laborers in accomplishing increasingly complex tasks with tools that cut time and expense. In 1996, based on government data suggesting a decline in service-sector worker productivity, members of the Federal Reserve cautioned Greenspan to raise interest rates to cut inflation. However, the Chairman believed that the data reflected a lag between the advent of computer technology and the effective implementation of that computer technology into business systems.¹¹⁶ In fact, Greenspan argued that technology companies would

114. Alan Greenspan, Federal Reserve Chairman, before the Financial Markets Conference, on Electronic Finance, Sea Island, Georgia (October 16, 2000), *available at* <http://www.federalreserve.gov/boarddocs/speeches/2000/20001016.htm> (last visited Nov. 14, 2005). Mr. Greenspan stated:

Some institutions inevitably will suffer erosion of their franchise values as competitors, new and old, prove more adept at tapping the potential gains from the new technology. Electronic finance represents an acceleration of the process that noted economist Joseph Schumpeter many years ago termed “creative destruction”—the continuous shift in which emerging technologies push out the old. Although I trust that supervisors and regulators themselves are not at risk of creative destruction, the effectiveness of their approaches may well be impaired, if not marginalized.

Id.

115. Michael Barrett & Susan Scott, *Electronic Trading and the Transformation of the Futures Exchanges in Global Work Times*, The 2nd Social Study of IT at the London School of Economics, ICT and Globalization Workshop, 8-9 (Apr. 22, 2002), *available at* http://is.lse.ac.uk/events/ssit2/Barrett_Scott.pdf (last visited Nov. 14, 2005).

116. Greg Ip, *Fed Chief's Style: Devour the Data, Beware of Dogma: As Retirement Looms in 2006 Greenspan's Strong Record Will be Hard to Replicate; Did He Help Create a Bubble?* WALL ST. J., Nov. 19, 2004, at A1.

be able to increase productivity without having to add a large number of additional workers, therefore preventing inflation.¹¹⁷

The following are examples of ways business method patents have contributed to Chairman Greenspan's vision of computer technology boosting production capacity, and the resulting legal fallouts corporations have encountered:

1. Cash Management (1982): Merrill Lynch received a patent (no. 4,346,442) for software that managed cash management accounts. Paine Webber sued Merrill Lynch under the *Gottschalk* rationale that the patent was claimed on a mathematical algorithm.¹¹⁸
2. CollegeSure CD (1989): New Jersey's College Savings Bank obtained a patent (no. 4,839,804) on a special certificate of deposit tied to the cost of college tuition. The bank sued Central Trust Savings Bank for infringement, and the case was settled by Central Trust entering into a licensing agreement.¹¹⁹
3. Mutual Fund Data Processing (1993): Signature Financial Group obtained a patent (no. 5,193,056) on its "hub and spoke" system for mutual funds.¹²⁰
4. Name Your Own Price Bidding (1998): Walker Digital, Inc. obtained a patent (no. 5,794,207) on a computer system and software that allow for reverse auctions. This is the system behind Priceline.com's "name your own price" reverse auction system. Priceline and Expedia sued under the prior invention protection of 35 U.S.C. § 273.¹²¹
5. One-Click Purchasing (1999): Amazon.com obtained a patent (no. 5,960,411) for a program that stored customer information in a database so that they could make on line purchases, now commonly known as a "check out." In December 1999, Amazon obtained a preliminary injunction preventing Barnes and Noble from using its one-click system. However, Barnes and Noble eventually added an extra click to its ordering system and had the injunction thrown out.¹²²
6. Internet Banking (2000): S1 obtained a patent for a three-tier financial transaction system, one of many internet banking patents.¹²³

117. *Id.*

118. Hunt, *supra* note 19, at 10.

119. *Id.*

120. *Id.*; *see also State St.*, 927 F. Supp. 502.

121. Hunt, *supra* note 19, at 10.

122. *Id.*

123. *Id.*

IV. REGULATION OF ELECTRONIC TRADING SYSTEMS AND ELECTRONIC EXCHANGES

A. Electronic Exchanges

The turn of the century marked a new era of electronic commerce immediately visible in the commodities and futures trading world. Even before the year 2000, volume on electronic exchanges grew at more than ten times that of traditional exchanges.¹²⁴ For example, in 1997, volume on the Chicago Mercantile Exchange's ("CME") Globex and the CBOT's Project A increased by 118% and 143% respectively, with volume on the exchanges growing by only 13.4% and 9.1% respectively.¹²⁵ In the six months leading up to May 19, 2000, the CFTC received inquiries from six startup electronic exchanges, whereas, in the preceding ten year period the CFTC received only two such inquiries.¹²⁶

While commentators have different views on the role of electronic trading in the commodity and futures landscape, everyone agrees that electronic trading is here to stay. The trend toward electronic trading began with Globex, an around-the-clock, around-the-globe trading system designed by the CME and Reuters in the 1980s.¹²⁷ Globex requested advance guidance regarding the requirements that would be necessary to place its trading screens in foreign jurisdictions.¹²⁸ The major hurdle for electronic trading, however, was not regulation.

Instead, Globex was threatened by resistance in the U.S. markets, the oldest and best-established markets in the world, which have historically relied on open outcry and pit trading.¹²⁹ But recently, U.S. markets have recognized the principle advantage of electronic trading; it is cheaper. Additionally, some believe that electronic trading is operationally superior to pit trading.¹³⁰ Thus, while the smaller foreign exchanges have been quicker than the more established U.S. exchanges to seize on electronic trading and

124. *See infra* note 4.

125. Asami Sarkar & Michelle Tozzi, *Electronic Trading on Futures Exchanges*, 4 CURRENT ISSUES IN ECON. & FIN. 1, 2 (Jan. 1998). This chart is the work of the officers of this article which compares the system of open outcry to electronic trading.

126. William J. Rainer, Chairman of Commodity Futures Trading Commission, addressing the International Organization of Securities Commissions, Sydney, Australia (May 19, 2000).

127. Andrea M. Corcoran, *The Uses of New Capital Markets: Electronic Commerce and the Rules of the Game in an International Marketplace*, 49 AM. U. L. REV. 581, 600 (2000).

128. *Id.*

129. ROBERT W. KOLB, UNDERSTANDING FUTURES MARKETS 43 (5th ed. 1997).

130. *Id.*

drive these new technologies to widespread use, the U.S. exchanges are increasingly willing to operate in conjunction with new technology.¹³¹

Globex started trading in June 1992, beginning with after-hours trading of foreign exchange products.¹³² When the CME sought approval from the CFTC, the CFTC indicated that written disclosure to customers would be necessary. The CME enacted Rule 577 to provide for disclosure of the uniqueness of electronic trading.¹³³ The National Futures Association (“NFA”) subsequently convened a subcommittee to see if the Futures Commission Merchants (“FCM”) would be able to provide a simplified, uniform, one page electronic systems disclosure. This subcommittee includes representatives from the CME, CBOT, NYMEX, and CFFE.¹³⁴ The CFTC then approved the single page statement, requiring exchanges to post it on their website.¹³⁵

With the CFTC’s growing approval and acceptance of electronic exchanges, Globex expanded its operations. Soon after the 1992 opening date, trading in Eurodollar futures and options and S&P 500 futures followed representing the real competitive windfall for the CME.¹³⁶ Today, Globex even offers e-miNY crude oil and natural gas futures in conjunction with NYMEX.¹³⁷ The major breakthrough that propelled Globex into the main stream was when it began trading specialized products like E-mini S&P 500 futures during normal trading hours.¹³⁸ Trading volume expanded from less than 1,000 daily trades in 1992 to over 1 million daily trades in 2003.¹³⁹

B. The Unified Theory: Inter-Exchange Competition in the Global Market

The CME launched Globex in an effort to maintain its global dominance in Eurodollar contracts.¹⁴⁰ The Chairman of the exchange noted that Asian

131. *Id.*

132. Chicago Mercantile Exchange, Overview of CME Globex e-Trading, *available at* <http://www.cme.com/trading/get/dev/orderou2839.html> (last visited Nov. 14, 2005).

133. *Id.*

134. Ellen T. Flaherty, *Electronic Trading Disclosure Reduced to One Page*, FUTURE INDUSTRY MAG., April/May 1999, *available at* <http://www.futuresindustry.org/fimagazi-1929.asp?a=566>. (last visited Nov. 14, 2005).

135. *Id.*

136. Chicago Mercantile Exchange, Overview of CME Globex e-Trading, *available at* <http://www.cme.com/trading/get/dev/orderou2839.html> (last visited Nov. 14, 2005).

137. *Id.*

138. *Id.*

139. *Id.*

140. Barrett & Scott, *supra* note 115, at 9.

and London competitors were gearing up to obtain a first-mover advantage in these products due to time zone problems:

London was going to build a Eurodollar market. In fact, LIFFE did. LIFFE opened in 1981. By 1982 they had a Eurodollar market, and I thought they were, I found out they were in a better position from a *time zone point of view than we were because of the way things were Asia could wait a couple hours and use the London market, and the London market lasted long enough into our day and Asia closed, so, in fact, they captured Asia. We would be left with just North America.*¹⁴¹

To solve these problems, the CME and Singapore Futures Exchange SYMEX (who listed Eurodollars) developed a “mutual offset” whereby trades could be started in the U.S. and offset in Singapore, or the reverse.¹⁴² The Chairman of the CME explained the time zone issue as follows:

We said to the world, look, we only want what’s ours. You come join Globex. Put your product, that will open after your business day is closed, on Globex. You’ll pay us a little fee, but we won’t trade your product. That is, we will trade your product but it will be your product. A cross exchange arrangement for all exchanges in the world. That’s the unified theory of Globex.¹⁴³

The unified theory assumed that exchanges would remain dominant in their benchmark established contracts, thus creating a division and collusion optically similar to a cartel. However, electronic exchanges competed over market share in existing contracts. One graphic example was when the LIFFE Bund contract lost market share and was entirely overtaken by the electronic Deutsche Terminborse (DTB) exchange through a cheaper trade execution.¹⁴⁴ While CBOT allied itself with the London exchanges for the EUREX contract, the CME allied with Paris to launch Globex 2, based on the French Marche a Terme International de France’s electronic trading system NSC.¹⁴⁵

C. The Functional Aspects of an Electronic Exchange

Some of the functional aspects of how electronic trading works, using Globex as an example, are set out below:

1. OPEN ACCESS. Before electronic trading, large institutional investors had to contact an FCM or introducing broker (“IB”), who would then transmit the order to a floor broker

141. *Id.* (emphasis added).

142. *Id.*

143. *Id.* at 10-11.

144. *Id.*

145. *Id.*

("FB"). Under the electronic system, anyone having an account with a futures FCM or IB with a CME clearing house guarantee can electronically trade products on their own account.¹⁴⁶

2. CLEARING GUARANTEE. The CME acts as a clearing agent for all electronic trades, matching orders, and eliminating counterparty risk.¹⁴⁷

3. SPEED OF EXECUTION. Globex advertises that its response time is 3/10 of a second. This provides a clear advantage for institutional investors that want to act immediately on market information.¹⁴⁸

4. OPEN ARCHITECTURE. The Globex system can stand independently, or be incorporated into a customer's proprietary software, providing a business-to-business solution. This is helpful for large institutions that have their own proprietary order-tracking systems.¹⁴⁹

5. ORDER ENTRY. Some of the difficulty with order entry, experienced on a trading floor, is eliminated because prices, order limits, and back office functions are implemented automatically and immediately over the electronic system.¹⁵⁰

Below is a diagram from the CME describing how order routing takes place on the electronic system.

146. Chicago Mercantile Exchange, Overview of CME Globex e-Trading, *available at* <http://www.cme.com/trading/get/dev/orderou2839.html> (last visited Nov. 14, 2005).

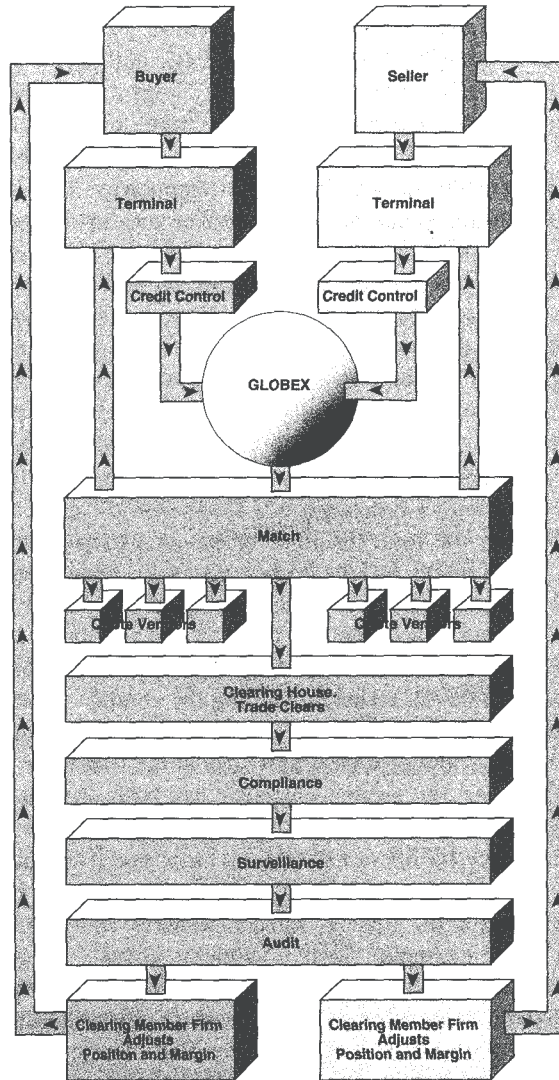
147. *Id.*

148. *Id.*

149. *Id.*

150. *Id.*

Order Routing Through GLOBEX ¹⁵¹



D. Regulatory Oversight

Section 4(a) of the CEA requires futures contracts to be traded on an exchange, which the CFTC has designated as a contract market, unless exempted by the CFTC pursuant to Section 4(c). Section 4(b) of the CEA permits the CFTC to establish rules for U.S. persons who make offers or sales of futures contracts traded on exchanges located outside of the United States.

151. KOLB, *supra* note 129, at 45.

The concept of an electronic futures exchange raises questions of regulatory oversight. However, it is first important to understand the difference between an exchange and an intermediary. In *Board of Trade of the City of Chicago v. SEC*, Judge Posner stated, “[e]xchanges facilitate securities transactions, but do not serve as agents on behalf of the parties to such transactions.”¹⁵² Under section 78c(a)(1) of the Securities Exchange Act of 1934, an exchange is “any organization, association, or group of persons . . . includes the market place and market facilities maintained by such exchange.”¹⁵³ Commentators have asked whether a centralized computer information system, providing pricing and trade execution functions, qualifies as an exchange.¹⁵⁴ Clearly, it does not become an intermediary by virtue of trade execution functions alone. However, regulatory issues become murky when a firm offering an electronic exchange attempts to serve as an intermediary as well.

Globex was the first to voice concerns to the CFTC about providing foreign futures on its trading platform, making them available to U.S. clients over an electronic exchange.¹⁵⁵ CFTC’s first solution was to allow Globex customers to place orders through a non-U.S. affiliate of an exchange member firm during hours when the CME was closed.¹⁵⁶ This method was called “passing the book.”¹⁵⁷ Soon afterward, a second letter was issued to the *Marche a Terme International de France*.¹⁵⁸ The letter stated that such trades would be carried on the books of the foreign firm on an omnibus basis, in conjunction with an omnibus account.¹⁵⁹ Thus, the contact with the U.S. firm would be limited to carrying the customer omnibus account of the U.S. FCM,

152. *Board of Trade of City of Chicago*, 923 F.2d 1270, 1274 (7th Cir. 1991); see also JEAN-BAPTISTE ZUFFEREY & MARGARET TSCHANZ-NORTON, REGULATION OF TRADING SYSTEMS ON FINANCIAL MARKETS 176 (1997) [hereinafter *Trading Systems*] (discussing the demarcation between exchanges and intermediaries and giving an international perspective of the relevant legal criteria).

153. 15 U.S.C.A. § 78c(a)(1) (1934).

154. ZUFFEREY & TSCHANZ-NORTON, *supra* note 152, at 182.

155. See Concept Release on Placement of a Foreign Board of Trade’s Computer Terminals in the United States, 64 Fed. Reg. 39,780 (July 24, 1998) [hereinafter *Foreign Terminals*].

156. See CFTC Interpretative Letter No. 92-11, COMM. FUT. L. REP. (CCH) ¶ 25,325 (June 25, 1992), *superseded in part by* CFTC Interpretative Letter No. 93-83, COMM. FUT. L. REP. (CCH) ¶ 25,849 (Aug. 9, 1993).

157. *Id.*

158. See *Foreign Terminals*, *supra* note 155, fn. 10, *referencing*, Letter from Andrea M. Corcoran, Dir., Div. of Trading and Markets, to Carl Royal, Vice President and Gen. Counsel, CME (May 26, 1989).

159. *Id.*

and the U.S. customer would be communicating directly with a foreign firm pursuant to a Part 30 exemption.¹⁶⁰

In February 1996, the Commission's Division of Trading and Markets ("Division") issued a no-action letter to the Deutsche Terminbörse ("DTB" or "Eurex"), an all-electronic futures and option exchange, headquartered in Frankfurt, Germany, agreeing not to recommend enforcement action to the Commission if the Eurex placed computer terminals in the U.S. offices of its members.¹⁶¹ The CFTC commented on the changing nature of the industry in 1999, stating:

As with the rapid developments in technology overtaking other industries, the *growth of electronic exchanges* and the placement of cross-border futures and option trading systems in the United States raise some of the most basic and fundamental issues facing the Commission and the futures industry. Among the critically important questions that need to be addressed are *what role intermediation will play* when technological developments make access to

160. In general, under the Commission's Part 30 rules, foreign brokerage firms may be exempted from the registration requirements of the Act provided that the Commission determines that the firm is subject to comparable rules and regulations in its home country. Foreign Future and Foreign Options Transactions, 17 C.F.R. § 30.1-.12 (2005).

161. See Access to Automated Boards of Trade, 64 Fed. Reg. 32,829 (June 18, 1999) [hereinafter Access to Automated Boards of Trade], *stating in pertinent part*, "The Division's letter did not alter DTB's obligations to: (a) request a no-action position from the Commission prior to engaging in the offer or sale of any foreign stock index futures in the U.S.; or (b) have any foreign debt obligation first designated as an "exempt security" by the Securities and Exchange Commission ("SEC") before engaging in the offer of sale of any futures contract or option thereon in the U.S. Section 2(a)(1)(B)(v) of the Act that states generally, "No person shall offer or enter into a contract of sale for future delivery of any security except an "exempt security" under § 3 of the Securities Act of 1933 or § 3(a)(12) of the Securities Exchange Act of 1934. (1) DTB terminals will be located only in the U.S. offices of DTB members; (2) Only DTB members that also are U.S.-registered FCMs may trade for customers—non-FCM DTB members are limited to principal-only trading; (3) DTB members will (a) provide the Commission and the National Futures Association ("NFA") with access to their books and records and the premises where DTB terminals are installed, and (b) consent to U.S. jurisdiction with respect to compliance with relief provided in the no-action letter; (4) All DTB members that will operate pursuant to the relief granted will be identified to the Commission and NFA; (5) Upon request, DTB (a) will provide the Commission with information received from its members regarding the location of DTB terminals in the U.S. and (b) will update the information on a periodic basis; (6) DTB will continue to comply with the International Organization of Securities Commissions ("IOSCO") "Principles for Oversight of Screen-Based Trading Systems for Derivative Products." See *id.*

global markets far easier than before; what the future relationships will be between and among customers, futures commission merchants, exchanges, technology providers, and regulators; and *how to provide a level-playing field and foster fair competition in the context of electronic trading systems between domestic and foreign market participants and between exchanges and FCMs while maintaining the protection of customers and the safety and soundness of larger and faster global markets.*¹⁶²

At the time, the CFTC was grappling with this same fundamental question of the inter-connectedness of exchanges and intermediaries in commodity and futures transactions. In March 1999, the CFTC issued a “concept release” proposing rule 30.11,¹⁶³ which allows foreign electronic boards of trade to make their systems available in the U.S. subject to a § 4(c) order by the Commission.¹⁶⁴ The Commission also proposed Rule 1.71, which set standards for automated order routing systems, including requirements, safeguards, credit and position limits.¹⁶⁵ In April 1999, the CFTC went a step further, proposing rules for permitting automated trading systems with access to foreign exchanges to be placed in the U.S. without requiring the board of trade to be designated as a U.S. contract market as defined in section 5 of the Act, pursuant to the prescriptions of section 4(a) of the Act.¹⁶⁶ The foreign board of trade would be recognized as a foreign electronic exchange (“RFEE”).¹⁶⁷

The CFTC planned to regulate two types of automated trading systems: (1) automated order routing systems (“AORS”), which permit customers to route orders to an exchange computer system that matches bids and offers and executes; and (2) direct execution systems (“DES”), which permit order-entry for exchange traded products without human intermediaries or brokers.¹⁶⁸ The regulations would have required foreign exchanges to petition the CFTC for exemption from the DCM requirement and FCM’s registered

162. Access to Automated Boards of Trade, 64 Fed. Reg. at 32,829-30 (emphasis added). Note that nothing in CEA § 4(b) applies to foreign exchanges.

163. At a glance, the text of the proposed rule is unwieldy and probably too complex to implement, going on for several pages. See proposed rule 30.11, available at <http://www.cftc.gov/opa/press99/opa4243-99-attch.htm> (last visited Nov. 14, 2005). See Access to Automated Boards of Trade, *supra* note 161 (note the complexity of the rules proposed).

164. See Access to Automated Boards of Trade, *supra* note 161.

165. See *id.*

166. Regulatory Flexibility Agenda, 64 Fed. Reg. 22242, 22243 (Apr. 26, 1999).

167. *Id.*

168. David Aron, *Terminal Illness: An Electronic Trading Odyssey*, 3 No. 4 WALL-STREETLAWYER.COM: SECURITIES IN THE ELECTRONIC AGE 18, 20 (Sept. 1999).

with the CFTC to seek a Rule 30.10 exemption for foreign participants.¹⁶⁹ Domestic exchanges were concerned foreign exchanges could offer their products in the U.S. with less stringent regulation.¹⁷⁰ Commissioner David D. Spears concluded that the rules were unnecessarily complex, and Commissioner James E. Newsome felt that this “overly regulatory” approach exceeded CFTC authority.¹⁷¹

Finally, on June 2, 1999, the CFTC withdrew the proposed rules (proposed with the backing of Chairperson Brooksley Born) pertaining to automated order routing and electronic access to trading systems and instructed the Commission staff to “begin immediately processing no-action requests from foreign boards of trade seeking to place trading terminals in the United States.”¹⁷² Further, the commission staff was to issue responses where appropriate, pursuant to the general guidelines included in the Eurex (DTB) no-action process,¹⁷³ or other guidelines established by the Commission.¹⁷⁴ This was a drastic change in CFTC policy, lifting a moratorium the CFTC had imposed on such requests by foreign exchanges wishing to place trading terminals in the U.S.¹⁷⁵

In response, these “Foreign System No-Action Letters” were granted to seven more foreign exchanges over the next year: (1) Eurex Deutschland; (2) the International Petroleum Exchange of London Limited; (3) LIFFE Administration and Management (“LIFFE”); (4) Parisbourse^{SBF} SA; (5) the Singapore Exchange Ltd. (formerly known as the Singapore International Monetary Exchange); (6) the Sydney Futures Exchange Limited; and (7) the New Zealand Futures and Options Exchange Limited.¹⁷⁶

The 2001 report by the Market Access Subcommittee on “Best Practices for Organized Electronic Markets” gives some insight into how well the No-

169. *See id.*

170. *Id.*

171. *Id.*

172. Access to Automated Boards of Trade, *supra* note 161.

173. *Id.* In February 1996, Commission staff issued no-action relief to Deutsche Termibourse (“DTB”), an automated international futures and options exchange headquartered in Frankfurt, Germany, permitting DTB, subject to certain terms and conditions, to place computer terminals in the U.S. offices of its members for principal trading. *Id. See also* CFTC Interpretative Letter No. 96-28, COMM. FUT. L. REP. (CCH) ¶ 26,669 (Feb. 20, 1996). In June 1998, DTB changed its name to Eurex Deutschland.

174. Access to Automated Boards of Trade, *supra* note 161.

175. Aron, *supra* note 168 at 18.

176. Notices: Commodity Futures Trading Commission, 65 Fed. Reg. 41,641 (July 6, 2000).

Action Letter approach has succeeded.¹⁷⁷ The Subcommittee began by discussing the market efficiencies offered with electronic trading, which takes place in “real-time, anywhere in the world. . . at a marginal cost of nearly zero.”¹⁷⁸ Next, the Subcommittee compared traditional order entry with that available on electronic exchanges¹⁷⁹:

The Role of Intermediation Under Open Outcry and Electronic Trading	
Traditional Futures Markets	Electronic Futures Exchanges
<ul style="list-style-type: none"> ▪ Client opens an account with an FCM. ▪ Orders are filed by FBs. ▪ Trade intermediation takes place at execution. 	<ul style="list-style-type: none"> ▪ Drastic reduction in need for FCMs and trade intermediaries. ▪ Registered FBs are eliminated. ▪ Time/price paradigm replaces trade intermediation.

Comparing Open Outcry and Electronic Trading ¹⁸⁰		
	Open Outcry Trading	Electronic Trading
Main Suppliers of Liquidity	Locals	Large institutions; market-making firms
Primary Costs	Upkeep and staffing of trading floor; back-office tasks	Upgrading of software and hardware; telecommunication costs
Information Sources	Traders’ observations of market activity	Order book; outside news sources
Operating Efficiency	Large time and labor investment; potential for errors	Speed, accuracy, and transparency
Possible Sources of Trading Abuse	Lack of precise trade records; lack of anonymity in trading	Manipulation of order prior to entry

One Subcommittee’s recommendation prohibited any order processing that would advantage one type of market participant over another—for instance, favoring institutions over retail clients, or, more importantly, foreign traders over domestic traders.¹⁸¹ This was presumably in response to the earlier concern of U.S. exchanges that they would receive disparate treatment

177. See generally Commodity Futures Trading Commission Technology Advisory Committee, *Best Practices for Organized Electronic Markets* (Nov. 27, 2001) [hereinafter *Best Practices Report*].

178. *Id.* at 3 (2001) (stating that the new economies of organized markets are “measured in kilobytes, nanoseconds, and bandwidth”).

179. See *id.* at 4.

180. Sarkar and Tozzi, *supra* note 126 at 7. This chart is the work of the officers of this article which compares the system of open outcry to electronic trading.

181. See *id.* at 6.

under the new regime. However, most of these recommendations dealt with order processing and ignored the intermediation issue. The requirements listed below fit within the framework of self-regulatory powers typical of an exchange like the NYSE or NYMEX, to set rules for its members such as registration, authorization, licensure, and margin requirements (particularly in the case of commodity and futures contracts).¹⁸²

In particular, the Subcommittee identified that credit filters and similar constraints could increase the run time for customers subject to them, distorting the price/time paradigm.¹⁸³ Another concern was that system processing capabilities be prepared to deal with extraordinary order volumes, so as to maintain the real-time processing required for reliable order matching.¹⁸⁴ The Subcommittee recommended defraying the substantial end-to-end bandwidth costs by allocating fees proportionate to usage.¹⁸⁵ In regards to order queuing, the Subcommittee recommended: (1) the “rules of engagement” or queuing algorithms be supplied to industry participants; (2) attempt to queue orders as close to order entry as possible; (3) use FIFO for placing queued orders into the order book; and (4) make sure the queuing mechanism has rule allocation classes for each market participant.¹⁸⁶ These recommendations are evidence of the growing efficiencies created through the use of technology and the materialization of the increased labor productivity envisioned by the Federal Reserve Chairman almost a decade ago.¹⁸⁷

V. CONCLUSION

Chairman Greenspan bet that the implementation of computer software technology would revolutionize business and lead to the “creative destruction” of firms unwilling to compete under these new rules.¹⁸⁸ CFTC Commissioner Walt Lukken commented that the forces of technology and competition would become the future of the futures industry.¹⁸⁹ CFTC Com-

182. *Trading Systems*, *supra* note 152 at 184-85 (discussing the self-regulatory powers customary for exchanges). The author uses the Delta System in *Board of Trade of City of Chicago v. SEC* to illustrate that self-regulatory systems have: (1) transaction clearing bodies implementing exchange rules, such as § 17A(b)(3)(B) of the Securities Exchange Act of 1934; (2) regulation of rules and customs of business conduct; and (3) market surveillance of intermediaries and clearing bodies, such as § 17A(b)(3)(G) of the Securities Exchange Act of 1934. *Id.*

183. *Best Practices Report*, *supra* note 177, at 6.

184. *See id.*

185. *Id.* at 7.

186. *Id.*

187. *See id.*

188. *See Greenspan*, *supra* note 114.

189. Lukken, *supra* note 5.

missioner Joseph B. Dial envisioned screen-based systems that threatened open outcry, over-the-counter order matching systems, automated order transmission systems, and one-stop clearing and margining.¹⁹⁰

The visions of these leaders played out through the advent of Business Method Patents, the patent infringement lawsuits among Trading Technologies, eSpeed, and others, and the adaptation of the CFTC to new electronic exchanges. These exchanges themselves have relied on the innovations of the patent holders to compete with one another and increase volume, while major investment houses and commodity and futures brokers have patented their own proprietary business systems. Rupert Murdoch, an entrepreneur, said, "Big will not beat small anymore. It will be the fast beating the slow."¹⁹¹ In this new global technological environment, innovation will continue to spawn increasing numbers of patents, and a strong policy of patent protection and global access to exchanges is necessary. The laws must increasingly adapt to this new seamless web that binds the world and provides incentives for entrepreneurs and large institutions to grapple with its complexities and make it accessible to the world.

190. Dial, *supra* note 6.

191. Brainy Quote, *Rupert Murdoch Quotes*, available at http://www.brainyquote.com/quotes/authors/r/rupert_murdoch.html (last visited Nov. 14, 2005).