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Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods

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Subjecting Rembrandt to the Rule of Law: Rule-Based Solutions for Determining the Patentability of Business Methods

Abstract

This article is an attempt to refine the substantive law of patents as to reestablish the patent system's control over the determination of whether business methods are patentable. It offers a framework for addressing business methods that allows the system to stay focused on the traditional goals of the statutory subject-matter requirement. It solves some of the problems that modern business methods present. The problems that it does not solve, it at least explains in a manner that sheds some light on the nature of the tasks that remain. This article takes considerable notice of how the relevant legal rules of patent law developed historically. This notice is deliberate. Many of the basic problems that the United States patent system is currently experiencing with business method patents are not actually new; they have instead troubled the system previously, but at a low level. This situation has now changed. But the change is not so much because the legal merits of modern business methods are new. Rather, it is because the methods are now both numerically commonplace and economically valuable. As a result, their patenting is being pressed often and with vigor.

Keywords

patent law reform, applied technology, business methods, USPTO, In re Schrader, State Street decision, Cochrane v. Deener

Disciplines

Intellectual Property Law

SUBJECTING REMBRANDT TO THE RULE OF LAW: RULE-BASED SOLUTIONS FOR DETERMINING THE PATENTABILITY OF BUSINESS METHODS

R. Carl Moy[†]

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I. INTRODUCTION

One of the most significant developments in United States patent law of late has been the increased prominence of patents for business methods. After attracting little or no attention over the entire history of the United States patent system, the question of whether patents can properly issue for business methods is suddenly extremely prominent. Numerous commentaries appeared in the traditional legal sources.¹ One of the most striking features is

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1. See, e.g., GREGORY A. STOBBS, BUSINESS METHOD PATENTS (2002); Brian P. Biddinger, *Limiting the Business Method Patent: A Comparison and Proposed Alignment of European, Japanese and United States Patent Law*, 69 FORDHAM L. REV. 2523 (2001); Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CAL. L. REV. 3 (2001); Q. Todd Dickenson, *E-Commerce, Business Method Patents, and the USPTO: An Old Debate for a New Economy*, 19 CARDOZO ARTS & ENT. L.J. (forthcoming 2002) (on file with author); William Krause, *Sweeping the E-Commerce Patent Minefield: The Need for Workable Business Method Exception*, 24 SEATTLE U. L. REV. 79 (2000); Jeffery R. Kuester & Lawrence E. Thompson, *Risks Associated With Restricting Business Method and E-Commerce Patents*, 17 GA. ST. U. L. REV. 657 (2001); Peter R. Lando, *Business Method Patents: Update Post State Street*, 9

that the issue has generated extensive commentary in the general and business press.

This sudden increase in prominence is partly the result of the responsible decision makers announcing new, more lenient standards by which the patentability of these methods is to be judged. Patent rights in the United States are available for developments in only certain fields of activity, as limited by section 101 of the Patent Act.³ Traditionally, it has been thought that these fields encompass applied technology only and do not include the management of a business or marketing enterprise.⁴ In a break with

TEX. INTELL. PROP. L.J. 403 (2001); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999); Claus D. Melarti, *State Street Bank & Trust Co. v. Signature Financial Group, Inc.: Ought the Mathematical Algorithm and Business Method Exceptions Return to Business as Usual?*, 6 J. INTELL. PROP. L. 359 (1999); Leo J. Raskind, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 61 (1999); Richard H. Stern, *Scope-of-Protection Problems with Patents and Copyrights on Methods of Doing Business*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 105 (1999); Matthew G. Wells, *Internet Business Method Patent Policy*, 87 VA. L. REV. 729 (2001). The International Association for the Protection of Industrial Property has also requested that its national chapters address the question of business method patents in their local systems. *See, e.g.*, Yoshikazu Tani, *Question 158, The Patentability of Business Methods*, 2001 A.I.P.P.I. J. 37 (reporting position of Committee on Japan).

2. Some of these have been the expected commentaries in legal dailies. *See, e.g.*, William T. Ellis & Aaron Chatterjee, *"State Street" Sets Seismic Precedent*, NAT'L L.J., Sept. 21, 1998, at B13. Others, however, have been in non-legal publications that rarely take notice of developments in patent law. *See, e.g.*, Julia Angwin, *'Business Method' Patents, Key to Priceline, Draw Growing Protest*, WALL ST. J., Oct. 3, 2000, at B1; Marc E. Brown, *Internet Patents: A Virtual Land Grab*, ELEC. BUS., Jan. 1, 2000, at 26; William M. Bulkeley, *E-Business: A Billion-Dollar Patent?: Software Developer is Seeking to Protect Process Using Internet for Foreign Trade*, WALL ST. J., Aug. 28, 2000, at A12; Robert M. Hunt, *You Can Patent That?: Are Patents on Computer Programs and Business Methods Good for the New Economy?*, BUS. REV., Jan. 1, 2001, at 515; Aaron Lucchetti, *Patent Poses Problem for AMEX Exchange-Traded Funds*, WALL ST. J., Sept. 20, 2000, at B14; Christopher Price, *A Pitch for the Skies*, NAT'L POST, July 31, 2000, at C2; Theresa Riordan, *Patents Considered Vital to Thrive on the Internet*, N.Y. TIMES, Dec. 20, 1999; Eric J. Sinrod, *High-Tech Patent Litigation is High-Stakes Business*, UPSIDE TODAY, Jan. 23, 2001.

3. 35 U.S.C. § 101 (1994); *see, e.g.*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); Pasquale J. Federico, *Section 101: Subject Matter for Patents*, in THE LAW OF CHEMICAL, METALLURGICAL AND PHARMACEUTICAL PATENTS 53-83 (Howard I. Foreman ed. 1967).

4. *See, e.g.*, *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908). Virtually all the prior reference works that mention business methods note that they were not patentable subject matter. *See, e.g.*, LEON H. AMDUR, PATENT LAW AND PRACTICE 24-25 (1935); ANTHONY WILLIAM DELLER, 1 WALKER ON PATENTS 152-53 (1938 ed.); ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT

this tradition, the United States Patent and Trademark Office (USPTO), which examines applications for patents in the first instance,⁵ has recently indicated that it no longer considers methods in such fields unpatentable per se.⁶ Instead, the agency will now judge them against the same criteria used in connection with methods generally. The United States Court of Appeals for the Federal Circuit, which has exclusive appellate jurisdiction over both the USPTO⁷ and actions for patent infringement in the United States District Courts,⁸ has handed down a series of decisions that refer to the exception for business methods disparagingly.⁹

These changes have been highly controversial. Some of the views advanced have been favorable.¹⁰ It has been suggested, for example, that this new extension of patentable subject matter provides companies with the opportunity to search for "Rembrandts in the attic," under the view that existing know-how can now be designated as property and leveraged.¹¹ Very many more reactions, however, have been negative, some sharply so.¹²

41 (3d ed. 1994); PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS 83 (1975 ed.). Until only recently the USPTO's own Manual of Patenting Examination Procedure also asserted that business methods were unpatentable. *See, e.g.*, Rinaldo Del Gallo III, *Are "Methods of Doing Business" Finally out of Business as a Statutory Rejection?*, 38 IDEA 403, 435 (1998). Prior to the present controversy, extensive citation on this point would not have been necessary, but questions have been raised concerning the historical view of whether business methods are a statutory subject matter. *See* discussion *infra* note 19.

5. *See, e.g.*, 35 U.S.C. §§ 131, 132 (1994); SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHT OF THE COMM. OF THE JUDICIARY OF THE UNITED STATES SENATE, 85TH CONG., 2ND SESS., THE EXAMINATION SYSTEM IN THE U.S. PATENT OFFICE, STUDY NO. 29 (1961) (authored by Eugene W. Geniesse) [hereinafter Geniesse].

6. *E.g.*, USPTO, Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. 7478, 7479 (Feb. 28, 1996), *available at* 1996 WL 82067; <http://www.uspto.gov/web/offices/pac/dapp/oppd/patoc.htm> [hereinafter Computer-Related Examination Guidelines]. The agency has incorporated the substance of the notice in its Manual of Patent Examining Procedure. *See* MANUAL OF PATENT EXAMINING PROCEDURE (8th ed. 2001), *available at* <http://www.uspto.gov/web/offices/pac/mpep/mpep.htm> [hereinafter MPEP].

7. *See, e.g.*, 28 U.S.C. § 1295(a)(1) (1994).

8. *Id.* § 1295 (a)(4)(A)-(B).

9. *In re Schrader*, 22 F.3d 290, 296 (Fed. Cir. 1994) (Newman, J., dissenting); *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375 (Fed. Cir. 1998), cert. denied, 525 U.S. 1093 (1999).

10. *See, e.g.*, Dickenson, *supra* note 1; Kuester, *supra* note 1; Stobbs, *supra* note 1.

11. KEVIN G. RIVETTE & DAVID KLINE, REMBRANDTS IN THE ATTIC: UNLOCKING THE HIDDEN VALUE OF PATENTS 16-18 (2000).

12. *E.g.*, Rochelle Copper Dreyfuss, *Essay: Are Business Method Patents Bad for Business?*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J. 263, 268, 274 (2000)

Seminars and hearings have been held.¹³ Congress has even proposed legislation.¹⁴

Meanwhile, the changes have had a significant impact on the patent system. Applications to the USPTO for patents on business methods have literally mushroomed, increasing by nearly a factor of fifty from 1995 to 2000.¹⁵ Driven mainly by applications from the United States, the activity in the European system has increased sharply as well.¹⁶ Disputes over the infringement of issued patents for business methods have also increased.¹⁷

(stating that the methods were well-known before the patents and that the patents have negative effects on innovation and the economy); Melarti, *supra* note 1, at 392; Merges, *supra* note 1, at 586; Raskind, *supra* note 1, at 80 (stating that *State Street* failed to provide an analytical framework for business methods patents); Stern, *supra* note 1, at 112. The reaction from some parts of the business community has been particularly virulent. *See, e.g.*, authorities in *supra* note 1.

13. The George Washington University Law School conducted a symposium on intellectual property rights in computer-related technology on March 25, 1999. The symposium, which was co-sponsored by Oracle Corporation, dealt with business method patents at length. Papers from the symposium are published in Volume Ten of the *Fordham Intellectual Property, Media & Entertainment Law Journal*. *See* John Kasdan, *Obvious and New Technologies*, 10 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 159 (1999); Raskind, *supra* note 1, Stern, *supra* note 1; John R. Thomas, *The Post-Industrial Patent System*, 10 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 3 (1999).

14. At least two efforts have been undertaken in Congress as of this writing to address problems associated with business method patents. The first is a series of bills introduced in the 106th Congress, HR 5364, and the 107th Congress, HR 1332, that would make patent applications for business methods subject to more stringent procedures. *See generally* Kuester & Thompson, *supra* note 1. The second resulted in the addition of section 273 to Title 35 U.S.C., which provides a defense against infringement to prior inventors who have elected to control their business methods via confidentiality rather than patenting. *See* Consolidated Appropriations Act, 2000, Pub. L. No. 106-113, § 4302, 113 Stat. 1501A-555 (1999); *Legislation: Signing of IP Reforms Amends Work-for-Hire, Leaves "First Inventor Defense" Unclear*, 59 *PAT. TRADEMARK & COPYRIGHT J.* 330 (1999) (reporting the Nov. 29, 1999 signing of Pub. L. No. 106-113).

15. The USPTO reports that 170 applications were filed for business method inventions. By 2000, it reports, the number of applications increased to 7800. Press Release, U.S. Patent & Trademark Office, USPTO Seeks Public Comment on Prior Art Searches for Business Method Patents (June 12, 2001), *available at* <http://www.uspto.gov/web/offices/com/speeches/01-25.htm>.

16. *See Report on the 80th meeting of the Administrative Council of the European Patent Organization*, 2000 *OFF. J. EPO* 307, 310-11 (2000), *available at* http://www.european-patent-office.org/epo/pubs/oj000/7_00/7_3070.pdf; *see, e.g.*, Michal Likhovski, *Fighting the Patent Wars*, 23 *EURO. INTELL. PROP. REV.* 267 (2001); Philip Atkinson, *Patentability of Computer Software and Business Methods*, *PATENT WORLD*, Nov. 2001, at 17.

17. *See, e.g.*, *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343 (Fed. Cir. 2001); *Interactive Gift Express, Inc. v. CompuServe, Inc.*, 256 F.3d 1323

And yet the entire situation has about it the distinct air of unreality. The Federal Circuit's lead decision, for example, in addition to announcing what the new decisional standard is, adamantly insists that the standard is the same that it has always been.¹⁸ The European Patent Office flatly disagrees; not only are business methods unpatentable there, the European agency is resisting requests even to search such applications against the prior art when they are filed.¹⁹ One United States company has spun off a venture apparently dedicated to the exploitation via license of new, patented business methods, thus making itself a "new business incubator."²⁰ Another has sued to enforce a particularly prominent new business-method patent against infringement, yet its founder has also publicly advocated that rights in business-method patents be drastically reduced as a matter of public policy.²¹ Commentary

(Fed. Cir. 2000). See generally David Bender, *Business Method Patents*, 670 PLI/PAT 7 (2001) (summarizing recent litigation); Lando, *supra* note 1 (also summarizing recent litigation).

18. *State St. Bank & Trust, Co. v. Signature Fin. Group*, 149 F.3d 1368, 1375-77 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999).

19. See, e.g., European Patent Office, *International Treaties – PCT – Business methods*, 2001 OFF. J. 413, 482 (Oct. 2001), available at http://www.european-patent-office.org/epo/pubs/oj001/10_01/10_4821.pdf.

For the avoidance of doubt the EPO wishes to remind applicants that pursuant to Rule 39.1(iii) PCT it will not carry out an international search on an application to the extent that its subject-matter relates to no more than a method of doing business, in the absence of any apparent technical effect.

Moreover, claims to commonplace technological implementations of such methods will not be searched because it would not serve any useful purpose to do so.

* * *

The EPO also wishes to remind applicants that methods of doing business per se are excluded from patentability pursuant to Article 52(2)(c) & (3) EPC.

Id. This move by the EPO appears to be driven in part by workload concerns. See *id.*

20. The company, Walker Digital, Inc., is related to Priceline.com. See, e.g., Merges, *supra* note 1; Julia Angwin, *Priceline's Walker to Leave Board of Web Company*, WALL ST. J. EUROPE, Jan. 2, 2001, at 22; Richard Byrne Reilly, *Priceline.com's Founder Goes on the Rebound*, REDHERRING.COM, July 16, 2001, available at <http://www.redherring.com/insider/2001/0716/1810019781.html>; Christopher Price, *A Pitch for the Skies*, NAT'L POST, July 31, 2000, at C2 (discussing *Walker Digital*). The term "new business incubator" appears in several newspaper articles. Julia Angwin, *Priceline.com Posts a Profit*, WALL ST. J., Aug. 1, 2001, at A3; Julia Angwin, *Priceline.com Founder Leaves Board To Focus on Incubator Walker Digital*, WALL ST. J., Dec. 29, 2001, at A13.

21. The parties are Amazon.com, Inc., owner of the "one-click" patent at issue in *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1346, and its

routinely refers to patents for seemingly trivial or non-technological subject matter as they issue from the USPTO.²² At least one patent has even issued for an improved process of writing a patent application.²³ One commentator has analogized the situation to "Alice in Wonderland."²⁴

To call this situation distressing is an understatement. The consensus in the larger community appears to be that patents should not be issuing for new business methods. But that consensus seems to have no prospect of being brought successfully to bear against the USPTO and the Federal Circuit. Rather, the appearance is that the agency will continue to allow business-method patents to issue, and that those patents will be upheld by the Federal Circuit. The resulting feeling is one of powerlessness; that there is no real means of correcting the system, even though it may well be out of control.

This article is an attempt refine the substantive law of patents as to reestablish the patent system's control over the determination of whether business methods are patentable. It offers a framework for addressing business methods that allows the system to stay focused on the traditional goals of the statutory subject-matter requirement. It solves some of the problems that modern business methods present. The problems that it does not solve, it at least explains in a manner that sheds some light on the nature of the tasks that remain.

In offering these refinements, the article takes considerable notice of how the relevant legal rules of patent law developed historically. This notice is deliberate. Many of the basic problems that the United States patent system is currently experiencing with business method patents are not actually new; they have instead

founder, Jeff Bezos. See, e.g., Michelle Nichols, *Jeff Bezos Backs Site for Bounty Hunters Battling Over Patents*, INTELLIGENT ENTERS., Jan. 1, 2001, at 13. Mr. Bezos has published his views in an open letter to the trade. Jeff Bezos, *An Open Letter on the Subject of Patents*, AMAZON.COM, at <http://www.amazon.com/exec/obidos/subst/misc/patents.html/105-1090555-5463134> (last visited Feb. 8, 2002).

22. E.g., Paul D. Lehrman, *Morons, Oxymorons and Technology Patents: Stupid Intellectual Property Tricks*, MIX, June 1, 2001, at 20, available at <http://industryclick.com/magazinearticle.asp?releaseid=6415&magazinearticleid=105001&siteid=15&magazineid=141>; Seth Shulman, *PB&J Patent Punch-up*, MIT'S TECH. REV., May 1, 2001, at 37, available at <http://www.techreview.com/articles/shulman0501.asp>.

23. U.S. Patent No. 6,049,811 (issued Apr. 11, 2000) ("Machine for drafting a patent application and process for doing same," Petruzzi, et al.).

24. Merges, *supra* note 1, at 578.

troubled the system previously, but at a low level. This situation has now changed. But the change is not so much because the legal merits of modern business methods are new. Rather, it is because the methods are now both numerically commonplace and economically valuable. As a result, their patenting is being pressed often and with vigor.

The presentation in the article is organized as follows. Part I discusses the recent background of the controversy over business-method patents, and describes several of the primary authorities in detail. It also summarizes some of the criticisms that has been leveled against the new developments, and the ways in which those criticisms are limited. Part II offers a particular analysis that avoids some of those limitations. It first discusses the need to provide advice that patent system can actually use, and discusses why that advice must therefore be presented in the nature of specific legal rules. It next discusses the specific reforms that are required to deal with two major, recurring problems in the area of business method patents: the attempts of applicants and practitioners to misdirect the system by phrasing their methods developments nominally as apparatus; and the potentially poor fit between the traditional rule for judging methods and the modern, information-based economy. The article proposes specific suggestions for dealing with this first type of problem successfully. It discusses the nature of the inquiries that must be made to deal successfully with the second.

II. THE PRESENT DISPUTE OVER BUSINESS METHOD PATENTS

Modern developments regarding the patentability of business methods date mainly from the 1990s. Prior to that time, the United States patent system had apparently reached an early decision that such methods are not patentable subject matter.²⁵ A report of an internal decision of the Patent Office case can be found from 1869, for example, in which it is asserted not only that such methods are non-statutory, but that the rule in the agency was by that time already well settled.²⁶ While not numerically large, a body of cases does exist from the end of the nineteenth century and through the first half of the twentieth century, in which it is repeatedly asserted

25. See generally authorities in *supra* note 4.

26. *Ex parte Abraham*, 1869 C.D. 59 ("It is contrary to the spirit of the patent law construed by the Office for years, to grant patents for methods or analogous systems of bookkeeping.").

that methods of doing business are not patentable subject matter.²⁷

This view began to change, within the USPTO and the Federal Circuit, in the early 1990's. In 1994, for example, the United States Court of Appeals handed down a decision, *In re Schrader*,²⁸ that reviewed the USPTO's refusal to issue a patent application to a business method. The particular method at issue there involved a novel way of conducting auctions of related items, such as contiguous tracts of land. According to the method, the auction was to be conducted by assembling various bids into a "completion," that would complete a sale of all of the items being offered at the highest offered total price.²⁹ The application at issue claimed the invention as a method.³⁰ During prosecution, the USPTO had refused to allow Schrader's patent to issue on the ground that the method was nonstatutory subject matter.³¹

A majority of the three-judge panel affirmed the agency's ruling on appeal.³² According to them, the invention involved a mathematical algorithm that, as claimed, was not associated with a physical change, effect, or result sufficient to bring the invention within the definition of statutory subject matter. The act of creating a record, they asserted, was both too minimal and too conventional

27. See, e.g., *Loew's Drive-In Theaters, Inc. v. Park-In Theaters, Inc.*, 174 F.2d 547 (1st Cir. 1949); *In re Sterling*, 70 F.2d 910 (C.C.P.A. 1934); *In re Patton*, 127 F.2d 324 (C.C.P.A. 1942); *In re Chatfield*, 545 F.2d 152 (C.C.P.A. 1976); *In re Wait*, 73 F.2d 982 (C.C.P.A. 1934); *United States Credit System Co. v. American Indemnity Co.*, 53 F. 818 (C.C.S.D.N.Y. 1893). But see *Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 546 F.Supp. 1358 (D. Del. 1983).

28. 22 F.3d 290 (Fed. Cir. 1994).

29. *Id.* at 291.

30. *Id.* At 292. The representative claim read as follows:

1. A method of competitively bidding on a plurality of items comprising the steps of identifying a plurality of related items in a record, offering said plurality of items to a plurality of potential bidders, receiving bids from said bidders for both individual ones of said items and a plurality of groups of said items, each of said groups including one or more of said items, said items and groups being any number of all of said individual ones and all of the possible combinations of said items, entering said bids in said record, indexing each of said bids to one of said individual ones or said groups of said items, and assembling a completion of all said bids on said items and groups, said completion identifying a bid for all of said items at a prevailing total price, identifying in said record all of said bids corresponding to said prevailing total price.

Id.

31. *Id.*

32. *Id.* at 296.

to render the invention statutory.³³

The third judge on the panel, Pauline Newman, dissented.³⁴ In her view, the view that business methods form an identifiable category on nonstatutory subject matter was “an unwarranted encumbrance to the definition . . . in section 101,” and that the rule should be “discarded as error-prone, redundant, and obsolete.”³⁵ “Data representing bid prices for parcels of land do not differ, in section 101 substance,” she asserted, “from data representing electrocardiogram signals or parameters in a process for curing rubber,” both of which courts had determined to be statutory in prior cases.³⁶ To her, all these types of cases dealt with the technological arts.³⁷ Prior cases, she asserted, had mentioned the patentability of business methods only in dicta, and thus did not form binding precedent.³⁸

Schrader was followed by a change in the official position of the United States Patent and Trademark Office. Earlier editions of the Manual of Patent Examining Procedure, which set forth the agency’s interpretation of judicial and statutory precedents,³⁹ had dealt with business methods briefly and characterized them as non-statutory subject matter that should be rejected under section 101.⁴⁰

33. *Id.* at 294.

34. *Id.* at 296 (Newman J., dissenting).

35. *Id.* at 298.

36. *Id.* at 297. The prior decisions are *Arrythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992) and *Diamond v. Diehr*, 450 U.S. 175 (1981).

37. *Schrader*, 22 F.3d at 297.

38. *Id.* at 298. This view had appeared shortly prior to *Schrader* in an article by Yoches and Pollack. E. Robert Yoches & Howard G. Pollack, *Is the “Method of Doing Business Rejection Bankrupt?”*, 3 FED. CIR. BAR J. 73 (1993).

39. MPEP, *supra* note 6. The MPEP describes itself as “a reference work on the practices and procedures relative to the prosecution of patent applications before the Patent and Trademark Office.” *Id.* at Foreword.

40. As noted in the immediately preceding footnote, the MPEP is currently in its eighth edition. MPEP, *supra* note 6. The prior editions are as follows:

First Nov. 1949

Second Nov. 1953

Third Nov. 1961

Fourth June 1979

Fifth Aug. 1983

Seventh July 1998

The agency has also routinely issues revisions to the MPEP between production of successive editions. Prior editions of the MPEP are difficult to locate. Morris discusses the references to business methods in some prior editions and revisions, Roberta J. Morris, *Business Method Patents: Good, Bad, Old or New (and Other Miscellaneous Thoughts)*, 589 PLI/PAT. 77, 80 (2000), as does Judge Rich in *State*

In 1996, however, the USPTO issued a new set of examination guidelines for inventions implemented via computer apparatus.⁴¹ Those guidelines adopted the views set out in the dissent to *Schrader*.⁴² They specifically asserted that claimed inventions “should not be categorized as methods of doing business. Instead, such claims should be treated like any other process claims, pursuant to these guidelines when relevant.”⁴³

It was clear that these guidelines would categorize inventions involving business methods as patentable under at least some circumstances. In particular, the guideline asserted that statutory processes would include methods that transform data representing “physical objects” or “activities external to [a] computer system.”⁴⁴ The implication was clearly that this definition might include physical objects or activities associated with the operation of a financial or other business method such as that at issue in *Schrader*.

Eventually, one of the patents issued by the agency during this period became the subject of a litigated court dispute, *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*⁴⁵ There, Signature Financial Group, Inc. had sued State Street Bank and Trust Co. for infringement of a patent that had issued in 1993.⁴⁶ The patent dealt with a data system for processing information from a financial services network. The network involved various mutual funds that had agreed to pool their resources into a common investment portfolio. The network was arranged so that the common portfolio formed a hub, with each mutual fund at the end of a spoke. The data system allowed the participants in the network to calculate the exact value that a participant’s shares of the fund were worth at a given moment in time.⁴⁷

The district court held the patent invalid on summary judgment as directed to non-statutory subject matter.⁴⁸ At one level, the court reasoned, the invention at issue involved essentially the

Street Bank & Trust Co., 149 F.3d 1368, 1377 (Fed. Cir. 1998).

41. Computer-Related Examination Guidelines, *supra* note 6, at 7478.

42. *Id.* at 7479 n.4. (citing *Schrader*, 22 F.3d at 297-98 (Newman J., dissenting))

43. *Id.*

44. *Id.* at 7483 (discussing safe harbors with regard to statutory subject matter determination).

45. 149 F.3d 1368, 1377 (Fed. Cir. 1998).

46. *Id.* At 1370.

47. *Id.* At 1371.

48. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 927 F.Supp. 502, 502 (D. Mass. 1996).

act of numerical calculation, rather than the transformation of physical objects. “[L]ike other accounting methods,” the court stated, “it is designed to manipulate and record numbers.” As such, it “does not ‘involve[] the transformation or conversion of subject matter representative of or constituting physical activity or objects.’”⁴⁹ “A change of one set of numbers into another, without more, is insufficient to confer patent protection. The invention does nothing other than present and solve a mathematical algorithm and, therefore, is not patentable.”⁵⁰

In addition, the district court plainly picked up on treatment of business methods given by the majority opinion of the Federal Circuit in *Schrader*. It noted the standard description of business methods as unpatentable in treatises on patent law, as well as prior decisions of the Federal Circuit and its predecessor court, the Court of Customs and Patent Appeals.⁵¹ It analyzed the *Schrader* decision at length,⁵² and described its own holding as comporting with that decision.⁵³

On appeal, however, the Federal Circuit reversed. That court did not view the invention as directed to a non-statutory mathematical algorithm. Rather, it felt that type of non-statutory subject matter to be limited to systems in which the algorithm produced no useful result. Signature’s system, it asserted, “admittedly produces a ‘useful, concrete, and tangible result.’ This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.”⁵⁴

The appellate panel also took direct aim at the exception for business methods. “We take this opportunity,” the court stated, “to lay this ill-conceived exception to rest. Since its inception, the ‘business method’ exception has merely represented the application of some general, but no longer applicable legal principle Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or

49. *Id.* at 514 (citing *In re Schrader*, 22 F.3d 290, 294 (Fed. Cir. 1994)).

50. *Id.*

51. *Id.* At 515.

52. *Id.* At 514.

53. *State Street Bank & Trust, Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1377 (Fed. Cir. 1998).

54. *Id.* at 1375 (citing *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)).

method.”⁵⁵ Prior decisions, it argued, had not actually applied the business method exception to hold any particular invention unpatentable, and therefore demonstrated that the exception did not actually exist. Even the court’s recent opinion in *Schrader*, “while making reference to the business method exception, turned on the fact that the claims implicitly recited an abstract idea in the form of a mathematical algorithm and there was no ‘transformation or conversion of subject matter representative of or constituting physical activity or objects.’”⁵⁶

The *State Street* decision has proved strongly influential since it was handed down. The number of applications filed for patent rights on such inventions has reportedly increased markedly both in the United States and abroad.⁵⁷ The USPTO has apparently been encouraged by the decision to grant business method patents more widely,⁵⁸ and has incorporated reference to *State Street* into its MPEP.⁵⁹ By various reports, well known business entities have begun assembling portfolios of business method patents.⁶⁰

These developments have also sparked widespread commentary. Some of it has been favorable, or at least opportunistic. It has been argued, for example, that the availability of patent rights for business methods will increase the rate of invention, thus providing the same benefits that the patent system supplies elsewhere.⁶¹ Others have argued that patents for business methods are a reality, and that industry players should behave according to their self-interest.⁶²

55. *Id.* at 1375.

56. *Id.* at 1376 (citing *In re Schrader*, 22 F.3d 290, 294 (Fed. Cir. 1994)).

57. See, e.g., Jenna Greene, *Staking a Claim: How State Street Has Spurred a Rush on the PTO*, L. TIMES, Apr. 10, 2000, at 14. See also authorities in *supra* notes 15 (U.S. patent applications) and 16 (EU patent applications).

58. See, e.g., Bender, *supra* note 17, at 16-17).

59. MPEP, *supra* note 6, § 706.03.

60. See, e.g., Bender, *supra* note 17, at 17.

61. E.g., Dickenson, *supra* note 1; Kuester & Thompson, *supra* note 1, at 658; Morris, *supra* note 40, at 87; Richard Poynder, *Internet Sparks Patenting Controversy*, IP MATTERS, Nov. 2000, available at <http://www.derwent.com/ipmatters/features/controversy.html>.

62. E.g., Larry J. Guffey, *What Advice Should You Consider Giving to Your Clients Regarding Them?* 34 MD. B.J. 41 (2001); Peter H. Kang & Kristin A. Snyder, *A Practitioner’s Approach to Strategic Enforcement and Analysis of Business Method Patents in the Post-State Street Era*, 40 IDEA 267 (2000); Vannis Skulikaris, *Software-Related Inventions and Business-Related Inventions: A Review of Practice and Case Law in the US and Europe*, PATENT WORLD, Feb. 2001, at 1; Erwin J. Basinski, *Business Method Patents in Europe: A Saussurean Explanation*, MORRISON & FOERSTER, Apr. 2001, at <http://www.mofo.com/news/general.cfm?MCatID=&concentrationID=&ID=141&Type=5>

A much greater part of the reaction, however, has been unfavorable.⁶³ Elected officials have asserted that business method patents do not promote innovation, and have introduced legislation to curb the new developments.⁶⁴ Others have echoed this view, questioning whether the social benefits of patenting business methods are overshadowed by the potential costs.⁶⁵ Many of these assertions have been based on the view that business methods fall outside the bounds of proper subject matter for the patent system.⁶⁶ Others have pointed to narrower concerns, observing that many issued patents appear to be for business methods that are actually old.⁶⁷ Thus, they suggest greater scrutiny of such inventions for anticipation and obviousness.⁶⁸ It has also been suggested that business method patents be systematically given only a narrow scope during the determination of infringement,⁶⁹ or that mechanisms be transferred into patent law from copyright to protect the public domain.⁷⁰

In addition, the developments appear to have placed stress on the internal operations of the USPTO. Assertions have been made that the agency lacks the systems and expertise to take adequate account of the prior art, and that the agency should be structurally reformed.⁷¹ The agency has investigated whether to institute internal reforms to address these questions.⁷² There have also been

(last visited Feb. 8, 2002).

63. *E.g.*, Marc E. Brown, *Internet Patents: A Virtual Land Grab*, ELEC. BUS., Jan. 1, 2000, at 26, available at <http://www.oppenheimer.com/internet/mebrown/elec100.shtml>. James Gleick, *Patently Absurd*, N.Y. TIMES MAG., Mar. 12, 2000, at 44; Ron Wilson, *The Patent System Has Just Gone MAD*, ELEC. ENG'G TIMES, Jan. 19, 1999, available at http://www.eetimes.com/story/open_line/OEG19990119S0023; Jesse Berst, *How Patent Attorneys are Stealing our Future*, ZDNET, Jan. 18, 2000, at http://www.zdnet.com/anchordesk/story/story_4364.html;

64. *See* 146 CONG. REC. E1659-60 (daily ed. Oct. 4, 2000) (statement of Rep. Berman); 146 CONG. REC. E1651-52 (daily ed. Oct. 3, 2000) (statement of Rep. Boucher).

65. *E.g.*, Dreyfuss, *supra* note 12, at 276-77 ("The bottom line is this. The costs of business method patents are very high. The benefits, at least the traditional benefits, are low. The ratio is terrible. The case for patents on business methods is simply not there, at least not in general."); Raskind, *supra* note 1, at 102.

66. *E.g.*, Dreyfuss, *supra* note 12, at 274; Merges, *supra* note 1, at 582; Stern, *supra* note 1, at 111.

67. *E.g.*, Dreyfuss, *supra* note 12, at 268.

68. *E.g.*, Merges, *supra* note 1, at 592.

69. *E.g.*, Cohen & Lemley, *supra* note 1, at 3.

70. Stern, *supra* note 1, at 112.

71. *E.g.*, Lando, *supra* note 1, at 409; Merges, *supra* note 1, at 591

72. *See, e.g.*, Lando, *supra* note 1, at 409 n.35.

suggestions that the weaknesses should be addressed by permitting greater outside participation in the examination process.⁷³

Despite their number and variety, however, these criticisms of the patent system's new permissiveness toward business methods are not particularly satisfying. Plainly, the critics have the better position on at least one point: despite the assertions in *State Street* and *Schrader*, very few in the patent community believe that business methods have always been patentable.⁷⁴ To the contrary, the dominant view is that the law has changed, and that the definition of patentable subject matter is now wider than it once was.⁷⁵ Additionally, this expansion is not popular. While some are willing to defend the new standard,⁷⁶ even long-time members of the patent community are uncomfortable with the prospect of patent rights becoming routinely available for methods of doing business.⁷⁷

Even with these advantages, however, it is not at all clear that the current criticisms will impact the law significantly. The observation that many methods of doing business are already old, for example, addresses only the status quo. True, improving the system's ability to find the prior art will prevent patents from issuing on currently-known methods and their obvious variants. But it still leaves open to patenting business methods that are

73. *E.g.*, Merges, *supra* note 1, at 591; Nicole-Marie Slayton, *Internet Business Model Patents: An Obvious Incentive to Reform the United States Patent and Trademark Office*, 21 LOY. LOS ANGELES ENT. L. REV. 123, 148 (2000).

74. *See, e.g.*, Kuester, *supra* note 1, at 662; Morris, *supra* note 40, at 84. The USPTO's White Paper on business method patents cites examples of its own prior issued patents as evidence of a prior legal standard favorable to business methods. USPTO, A WHITE PAPER ON AUTOMATED FINANCIAL OR MANAGEMENT DATA PROCESSING METHODS (BUSINESS METHODS), *available at* <http://www.uspto.gov/web/menu/busmethp/index.html> (last visited Feb. 8, 2002). The validity of the USPTO's assertion is suspect, since nearly all of the cited examples involve claims to apparatus, rather than methods.

75. *See, e.g.*, Dreyfuss, *supra* note 12, at 274; Raskind, *supra* note 1, at 61. Congress' addition of the prior inventor defense in section 273 of the patent statute, Pub. L. No. 106-113, § 4302, was based on the assumption that the patentability of business methods had increased. *See, e.g.*, 145 CONG. REC. S14708, S14717-18 (daily ed. Nov. 17, 1999) (section-by-section analysis of S.1948 printed in the Congressional Record at the request of Sen. Lott); 145 CONG. REC. H6943 (daily ed. Aug. 3, 1999) (statement of Rep. Rohrabacher); 145 CONG. REC. H6929, H6942 (daily ed. Aug. 3, 1999) (statement of Rep. Coble) ("[T]he defense under section 273 is limited . . . to the State Street Bank case.").

76. Morris, *supra* note 40, at 84.

77. Dreyfuss, *supra* note 12, at 274; Merges, *supra* note 1, at 594-596; Raskind, *supra* note 1, at 92; Stern, *supra* note 1, at 112.

significantly new.⁷⁸ Those who object to business method patents will rightly find this unacceptable; fundamentally, they feel that the entire field of business methodology should remain free of the patent system's influence, including future developments.⁷⁹ The difference between the two views is significant; few business persons today, for example, would appreciate being limited to only those business practices that were already in use by the early 1980's.

The other major assertion, that business methods are not proper subject matter for inclusion into the patent system, suffers from a different set of problems. General observations are fine, if they can be translated into a concrete plan and put into practice. But no such plan or practice for business methods has been offered.⁸⁰ The entire patent system rests on large-scale assumptions about the relationship between profit incentive and the rate of invention that have never been proven.⁸¹ Case studies and econometrics specific to the development of business methods thus have limited value in the real world.⁸²

78. 35 U.S.C. §§102, 103 (1994).

79. See, e.g., Dreyfuss, *supra* note 12, at 274.

Invalid patents are not, however, my main concern. My real problem with this trend is more controversial: I even question the value of valid business method patents. I believe that they adversely affect innovation, and worse, the economy. These patents are not associated with the benefits that, as a constitutional matter, justify the recognition of private property.

Id.

80. See, e.g., Merges, *supra* note 1, at 581 (“[N]o such knowledge has been revealed to us. The instruments we have at hand are simply too imprecise, at least for the time being.”); see generally Alan Durham, *Useful Arts in the Information Age*, 1999 B.Y.U.L. REV. 1419 (1999).

81. See, e.g., SUBCOMMITTEE ON PATENTS, TRADEMARKS, AND COPYRIGHT OF THE COMMITTEE OF THE JUDICIARY OF THE UNITED STATES SENATE, 85TH CONG., 2ND SESS., AN ECONOMIC REV. OF THE PATENT SYSTEM, STUDY NO. 15, at 76-80 (1958) (authored by Fritz Malchup) [hereinafter Malchup].

No economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss on society. * * * If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.

Id. See also C.T. TAYLOR & Z.A. SILBERSTON, *ECONOMIC IMPACT OF PATENTS* 331-65 (1973) (discussing British system); O.J. FIRESTONE, *ECONOMIC IMPLICATIONS OF PATENTS* (1971) (discussing Canadian system); F.M. SCHERER & DAVID ROSS, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE*, 624 (3d. ed. 1990).

82. See, e.g., Kuester & Thompson, *supra* note 1, at 671 (“[T]here has been no comprehensive analysis of the costs and benefits of business method patents.”);

III. REFORMING THE LAW OF PATENTING BUSINESS METHODS

As the foregoing summary demonstrates, the reform proposals relating to business method patents that have been offered to date are all in some way seriously incomplete. Those that are specific enough to be actually implemented are conceptually minor. Those that address the problem at its core are too abstract to be put into practical use.

Progress in dealing with business method patents therefore requires proposals that overcome both these weaknesses at the same time. To be effective a reform must address the fundamental nature of business method patents, or it will leave some part of the problem unsolved. An effective reform must also, however, take account of the decisional criteria that the patent system actually employs to deal with questions of statutory subject matter. Only specific, concrete suggestions on how those criteria should be changed stand a real chance of leaving the system improved.

A. *The Decisional Criteria of Patentability*

The first step in designing such a reform, then, is to inquire into the nature of decisional criteria that are used to determine patentability. Scholarship on legal theory asserts that decisional criteria can be described in terms of at least two properties.⁸³ The

Raskind, *supra* note 1, at 78.

[E]mpirical data on the function of business method patents is insubstantial The business practices which received protection in the State Street Bank decision involve the service and distribution side of economic activity. Significantly, there seem to be no studies of distribution and service industries as an element in economic growth beyond the calculation of their contribution in the national income accounts. In the absence of data showing a need to spur innovation in business methods, it is equally plausible that the spur of competition and the long tradition of competition by emulation have been sufficient to provide an adequate level of innovation in methods of doing business.

Id.

83. Various authorities discuss the concept of decisional criteria in the law. See, e.g., KENNETH C. DAVIS, *DISCRETIONARY JUSTICE: A PRELIMINARY INQUIRY* (1969); P.S. ATIYAH & ROBERT S. SUMMERS, *FORM AND SUBSTANCE IN ANGLO-AMERICAN LAW: A COMPARATIVE STUDY IN LEGAL REASONING, LEGAL THEORY AND LEGAL INSTITUTIONS* (1987); H.L.A. HART, *THE CONCEPT OF LAW* 126-31 (1961); HENRY M. HART & ALBERT M. SACKS, *THE LEGAL PROCESS* 155-58 (10th ed. 1958); MARK KELMAN, *A GUIDE TO CRITICAL LEGAL STUDIES* 15-63 (1987); RICHARD A. POSNER, *THE PROBLEMS OF JURISPRUDENCE* 42-53 (1990); ROSCOE POUND, *AN INTRODUCTION TO THE PHILOSOPHY OF LAW* 115-23 (1922); FREDERICK SCHAUER, *PLAYING BY THE RULES: A PHILOSOPHICAL EXAMINATION OF RULE-BASED DECISIONMAKING IN LAW AND IN LIFE*

first of these is complexity.⁸⁴ According to the scholarship, the complexity of an individual criterion refers to the number of factors upon which the criterion operates; a criterion that takes account of, and the outcome of which therefore depends upon, a large number of factors is complex. Conversely, a decisional criterion that operates on only a small number of factors is simple. Decisional criteria can be compared according to this property; in relation to each other the potential criteria in a pair under consideration are either simpler or more complex.⁸⁵

Another identified property of decisional criteria relates to the time at which the system supplies the criterion with its content. Decisional criteria in this sense can be classified as either *ex ante* or *ex post*.⁸⁶ An *ex ante* criterion is one whose specific content, i.e., the exact factors on which it operates and precisely how those factors relate to each other, is determined during initial promulgation, before the event under adjudication occurs. An *ex post* criterion, in contrast, is one in which the determination of content is deferred; the criterion is initially set out in a general form only, and the determination of how the criterion will operate on specific details is left until adjudication, after the events at issue have already come to pass.⁸⁷ A more common (but less exact) nomenclature for this second property is the distinction between *rules* and *standards*. A rule identifies the specific factors on which it will operate, and specifically how those factors will be weighed, at the outset. It is therefore *ex ante*. A standard, in contrast, initially identifies only the types of factors that are to be considered and the criterion's overall

(1991); Ronald M. Dworkin, *The Model of Rules*, 35 U. CHI. L. REV. 14, 22-29 (1967); Isaac Ehrlich & Richard A. Posner, *An Economic Analysis of Legal Rulemaking*, 3 J. LEGAL STUD. 257 (1974); Duncan Kennedy, *Form and Substance in Private Law Adjudication*, 89 HARV. L. REV. 1685 (1976); Roscoe Pound, *Hierarchy of Sources and Forms in Different Systems of Law*, 7 TUL. L. REV. 475, 482-87 (1933). The best recent work is captured in a series of excellent papers by Professor Kaplow, Louis Kaplow, *A Model of the Optimal Complexity of Legal Rules*, 11 J.L. & ECON. ORG. 150 (1995) [hereinafter Kaplow, *A Model*]; Louis Kaplow, *Rules Versus Standards: An Economic Analysis*, 42 DUKE L.J. 557 (1992) [hereinafter Kaplow, *Rules*].

84. For a discussion distinguishing between complexity and other aspects of decisional criteria, see Kaplow, *Rules*, *supra* note 83, at 586-90. As Prof. Kaplow notes, the various concepts are not always distinguished in the literature. See, e.g., Dworkin, *supra* note 83, at 22-25; Frederick Schauer, *Rules and the Rule of Law*, 14 HARV. J.L. & PUB. POL'Y. 645, 650-51 (1991) (defining rule-based nature in terms of number of factors operated upon by criterion).

85. E.g., Kaplow, *A Model*, *supra* note 83, at 150.

86. E.g., Kaplow, *Rules*, *supra* note 83 at 560-62.

87. *Id.*

objective. The specific factors and specifically how they relate to each other is left to be determined during the process of adjudicating individual disputes. The standard is therefore *ex post*.

The same literature that differentiates decisional criteria according to complexity and content provision associates each type of criterion with various costs and benefits. Standards, for example, are thought to supply an array of benefits. They are considerably easier to formulate initially.⁸⁸ The formation of a rule requires the initial designer to think through various potential scenarios within the decisional criterion in advance. These must be evaluated up front: the specific factors that will control their proper outcome must be identified, and the specific interaction of those factors worked out and encoded in the expression of the rule.⁸⁹ Formulating a standard, in contrast, allows much of this work to be deferred.⁹⁰ Even when the same specific relevant factors have been identified, for example, their precise interaction is left to the later adjudicator, who is instructed to perform the work according a set of overall values or objectives. Provided that one has confidence in the adjudicator's abilities, this should result in the outcome of individual cases being assigned more accurately.⁹¹

Rules are thought to provide a different array of benefits.⁹² It is easier to predict how a rule will operate on a given set of facts. Rules therefore provide better notice.⁹³ Additionally, a rule

88. *Id.* 568-69. Kaplow also presents a consideration of how likely rules and standards are to alter the future behavior of the participants under adjudication, including how much effort is required to predict which outcome the criterion will assign. *Id.* at 568-77. Those potential costs are not analyzed here.

89. *Id.* 568.

90. *Id.* See also HART & SACKS, *supra* note 83, at 157 ("The wise draftsman . . . asks himself, how many of the details of this settlement ought to be postponed to another day, when the decisions can be more wisely and efficiently and perhaps more readily made?").

91. This aspect of the decisional criterion is often referred to as its error cost. The flexibility of a standard is thought to provide a greater chance that the outcome of a case will be assigned correctly, thus indicating the standard's error cost will be low. The rule, in contrast, cannot be altered to adapt to circumstances that were previously unseen, and will therefore sometimes compel an outcome that is wrong on its merits. Thus, the error cost of a rule is considered to be relatively higher. See, e.g., Louis Kaplow, *The Value of Accuracy in Adjudication: An Economic Analysis*, 23 J. LEGAL STUD. 307, 309 (1994) [hereinafter Kaplow, *The Value*]; Cass R. Sunstein, *Problems with Rules*, 83 CAL. L. REV. 953, 992-93 (1995).

92. See, e.g., Kaplow, *Rules*, *supra* note 83 at 571-77; Sunstein, *supra* note 91, at 969-78.

93. E.g., Sunstein, *supra* note 91, at 976. Some authors state this benefit in a slightly different way. If one assumes that various levels of notice are only so

constrains the decision maker in a later adjudication within narrower limits.⁹⁴ As a result, they provide better horizontal equity to litigants as a group.⁹⁵ Rules also permit the later adjudications to involve the expenditure of fewer resources, judicial and otherwise.⁹⁶

Several observations about these different types of decisional criteria can be made at this point. First, the strengths and weaknesses of these decisional criteria have led some prominent jurists to advocate the use of rules strongly. Justice Scalia, for example, has asserted that adherence to democratic principles requires a preference in the legal system for rules over standards.⁹⁷ Those principles require placing value judgments of the group over those of politically empowered individuals. The discretion conferred on adjudicators by a standard, particularly a complex standard, is therefore destructive in comparison to the constraining impact of a rule.

These arguments apply with special force to patent law, particularly in matters involving the determination of patentability. Determinations of patentability are extremely numerous, numbering in the hundreds of thousands per year.⁹⁸ The potential benefits from the efficient application of rules for patentability are therefore large. In addition, the adjudication of these issues is delegated very deeply; they have not only been assigned by

valuable to potential litigants, and that study of the decisional criterion is required to determine its operation, rules provide better actual notice because litigants can study them more cost-effectively. The end result under either analysis is essentially the same for the present discussion. *See, e.g.,* Kaplow, *Rules*, *supra* note 83, at 580.

94. *E.g.,* Sunstein, *supra* note 91, at 975.

95. Horizontal equity refers to the property of similarly situated litigants in different adjudications receiving similar applications of the decisional criterion. Because rules limit the adjudicators' discretion, there is less room for adjudicators who hold different views of how the criterion should operate to impose those differing views on the litigants in the individual cases they have under consideration. *See, e.g.,* Louis Kaplow, *Horizontal Equity: Measures in Search of a Principle*, 42 NAT'L. TAX J. 139 (1989); Sunstein, *supra* note 91, at 974-78.

96. *E.g.,* Kaplow, *Rules*, *supra* note 83, at 582-83; Sunstein, *supra* note 91, at 972-73.

97. Antonin Scalia, *The Rule of Law as a Law of Rules*, 56 U. CHI. L. REV. 1175, 1176-77 (1989).

98. For the fiscal year 2000, the USPTO received some 293,000 applications for patent. USPTO, FY ANNUAL REPORT (2000), at 23, *available at* <http://www.uspto.gov/web/offices/com/annual/2000/00patents.pdf> (last visited Feb. 8, 2002). The majority of these are applications for utility patents, filed under 35 U.S.C. § 111 (1994), which the agency is required to examine on the merits. 35 U.S.C. §§ 131, 132 (1994). Kaplow is an example of an authority that recognizes the potential benefits of rule-based decision-making increase as the number of adjudications becomes larger. *See* Kaplow, *Rules*, *supra* note 83, at 575-76.

Congress to the USPTO, that agency has in turn delegated them to the thousands of individuals in its Examining Corps, some of whom have relatively little experience and no formal legal training.⁹⁹ It is therefore entirely appropriate—in fact, it is probably necessary—to use decisional criteria that limit the discretion of the individual examiners strongly. And, although the assertion is not likely to meet with favor in the patent community, the plain truth is that the societal cost of assessing any individual determination of patentability incorrectly is actually quite small. On average, individual patents are not likely to be valuable.¹⁰⁰ In addition, the rights at stake are purely economic¹⁰¹ and thus do not implicate the values that are associated with, for example, issues of Constitutional liberty or the police powers of the state. Put bluntly, the error cost of using even an inaccurate rule in patentability is likely to be acceptable, if the alternative is an ambiguous standard.

Probably, as a result of these factors, the part of substantive United States patent law that addresses patentability is indeed administered mainly by rule. Questions of claim interpretation,¹⁰² what qualifies as prior art,¹⁰³ and whether that prior art anticipates

99. See, e.g., USPTO, ANNUAL REPORT, *supra* note 98, at 27-28 (referencing examining corps); STACY V. JONES, *THE PATENT OFFICE* (1971); Geniesse, *supra* note 5.; GUSTAVUS A. WEBER, *THE PATENT OFFICE, ITS HISTORY, ACTIVITIES AND ORGANIZATION* (1924) (no. 31 of Service Monographs of the United States).

100. See generally Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 95 NW. U. L. REV. 1495, 1499-1508 (2001) (“The limited data we have suggest that the overwhelming majority of patents are neither litigated nor licensed.”).

101. The discussion leaves aside here the assertion, sometimes made, that patenting vindicates a natural right of the patent owner. This assertion is easily discredited. E.g., 1 WILLIAM C. ROBINSON, *THE LAW OF PATENTS* §§ 28, 29 (1890); Malchup, *supra* note 81, at 22. In any event, the interest is one as to property only, and thus does not compare to interests in liberty.

102. Modern patent claim interpretation is performed largely through rule-based procedures. See, e.g., *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384-90 (1996) (general interpretation of claim as legal question); *Lampi Corp. v. American Power Products, Inc.*, 228 F.3d 1365, 1376 (Fed. Cir. 2000) (transitional phrase in patent claim); *Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*, 73 F.3d 1573, 1580-81 (Fed. Cir. 1996) (rule for resolving ambiguity in claim language); *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834, 846-47 (Fed. Cir. 1992) (rule for inventions characterized as product resulting from process).

103. See, for example, the various detailed criteria as to timing and content set out in 35 U.S.C. § 102 (1994). Even the judicial interpretation of the various terms in this statutory section proceeds largely by rule. See, e.g., *Pfaff v. Wells Electronics, Inc.*, 525 U.S. 55, 58-60, 67-68 (1998) (definition of “on sale”); *Linear Technology Corp. v. Micrel, Inc.*, 275 F.3d 1040, 1050 (Fed. Cir. 2001) (distinguishing “on sale” formal contract offer).

the invention at issue,¹⁰⁴ for example, are all mainly determined by rules. The use of standards is very minor.

Second, while the variables of complexity and time frame are not linked with each other necessarily, the choice in many instances is between a complex standard and a simple rule. This is probably natural; the decision to create a standard is probably driven by the difficulty of knowing in advance which rule to use. This inability to identify how the involved factors should interact, however, can easily coexist with an inability to identify even the factors themselves. When creating a standard it is therefore easier (and perhaps safer) to describe the included factors generally, thereby making the potential list of them longer rather than shorter.

But, while most standards end up being complex, the opposite may tend to be true of rules. It is certainly possible to judge legal matters by simple rules.¹⁰⁵ But legal rules can also be extremely complex.¹⁰⁶ In fact, it is likely that, over time, decisional criteria that are rule-based will tend to become increasingly complex. The reason for this tendency may not be difficult to understand. However, given enough time, it is likely that later decision makers will see opportunities for improvement, either by reducing some common fact patterns into sub-rules, or by recognizing exceptions. Refinements of the first type make the rule even easier to apply, while refinements of the second type reduce the error cost of wrong decisions.

True to this trend, the law of patentability shows a general preference for rules that are complex, rather than simple.¹⁰⁷ Part of

104. See, e.g., *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771-72 (Fed. Cir. 1983) (requirement that anticipating reference disclose all limitations recited in claim).

105. A common example in the literature is the rule to determine whether a vehicle is speeding on a particular roadway. E.g., Kaplow, *Rules*, *supra* note 83, at 565. In such a case, the criterion can operate on as little as a single factor, for example, the speed of the vehicle. *Id.*

106. See, e.g., Kaplow, *Accuracy, Complexity, and the Income Tax*, 14 J.L. ECON. & ORG. 61 (1998) (discussing examples from the tax code).

107. Generally speaking, in comparison to other areas of the law the rules used in the law of patents tend to be considerably more finely detailed and subject to exceptions than other areas of the law. Perhaps the most visible area in which this can be seen are the myriad rules and sub-rules employed in determining anticipation. See 35 U.S.C. § 102 (1994). The same quality also exists in many other areas. See, e.g., 35 U.S.C. § 120 (1994) (continuation practice); *Transco Products Inc. v. Performance Contracting, Inc.*, 38 F.3d 551 (Fed. Cir. 1994) (impact of best mode requirement of 35 U.S.C. § 112, par. 1, on continuation practice).

this tendency may be due to the nature of the area itself. Because the number of situations that must be decided is so continuously large, potential refinements may be easier to see. The fact that the system has been operating without major disturbance since the nineteenth century, moreover, means that this pattern of rule and sub-rule has had many years to develop.¹⁰⁸ Still further, the technological schooling of those participating in the system may predispose them to think in terms of finely detailed sub-rules.

This property of the decisional criteria employed in the determination of patentability is fundamentally important to the present inquiry. The issue of proper statutory subject matter is one of patentability.¹⁰⁹ If the applicable law does not appropriately implement the large-scale value judgments that should apply in the area, the problem is, at some level, one of manifesting those values into rules. This suggests in turn that an examination of the rules used to determine the existence of proper statutory subject matter, in the context of an invention relating to a business method, may shed light on the specific problems that the patent system is currently experiencing. It is to that examination that we now turn.

B. Judging Statutory Status by Rule

The sudden upsurge of interest in patenting business methods has highlighted two problems that the United States patent system has encountered with the rules it uses to categorize, and thus assign legal outcomes to, inventions that raise questions of proper statutory subject matter. These problems can be characterized as separating business apparatus from business methods and business methods from applied technology. As the following discussion relates, neither of these problems is new; in fact, they are both quite old. While solving the former may be simply a matter of following the governing rules more closely, solving the latter involves difficult issues that the patent system has never resolved completely.

108. The last major revision of the United States patent statutes occurred in 1836. Patent Act of 1836, ch. 357, 5 Stat. 117 (1836). Most major doctrines of substantive United States patent law have therefore been continuously under development since the middle part of the 1800s. *See, e.g.,* Kendall v. Winsor, 62 U.S. 322 (1858) (effect of suppression by prior inventor); Hotchkiss v. Greenwood, 52 U.S. 248 (1850) (obviousness); Bain v. Morse, 2 F. Cas. 394 (C.C.D.C. 1849) (prior foreign invention).

109. "Patentability" refers to the criteria set out in the Patent Statute. *See* 35 U.S.C. § 101 (1994) (setting forth statutory subject matter).

1. *Separating Business Apparatus from Business Method.*

Although it is not widely appreciated beyond persons who practice in the field, United States patent law actually has a great deal of difficulty determining the exact nature of the inventive advance at issue in a given case. By statutory requirement, United States patents must contain at least one patent claim.¹¹⁰ The claim is a linguistic expression that defines the technological scope of the legal, exclusive right that the patent confers.¹¹¹ Because of both convention and the particular interpretive paradigm that United States patent law employs, virtually all United States patent claims describe the invention at issue in terms of the invention's individual components.¹¹² The claim therefore tends to take the form of a list, in which the various parts of the invention are set out in some sort of conceptual order.¹¹³ United States law has adopted the general view that the invention at issue in a particular case is the subject matter defined by the claim. The assertion, in fact, has gained the status of an adage, and is made in a variety of different contexts.

Equating the inventive advance with the exact contours of the claim works well in many instances.¹¹⁴ It is not, however, suitable universally. One particular area of such unsuitability is the determination of whether the inventor's work constitutes statutory subject matter. As a general matter, United States patent law

110. 35 U.S.C. § 112, ¶ 2 (1994) ("The specification shall conclude with one or claims . . .").

111. See *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373-74 (1996).

112. United States patent law proceeds on the basis of what is known as "peripheral claiming," under which the technological scope of the patent right is equated with the regular linguistic meaning of the terms used in the patent claim. See, e.g., *Markman*, 517 U.S. at 374-76; 1 ANTHONY W. DELLER, *PATENT CLAIMS*, §§ 9-10; (2d ed. 1971); Donald S. Chisum, *The Scope of Protection for Patents After the Supreme Court's Warner-Jenkinson Decision: The Fair Protection-Certainty Conundrum*, 14 SANTA CLARA COMP. & HIGH TECH. L.J. 1 (1998); Toshiko Takanaka, *Interpreting Patent Claims: The United States, Germany, and Japan*, 17 IIC STUDIES 1 (1995).

113. This can be confirmed from a variety of sources, most easily practitioner-oriented works that are directed to the mechanics of drafting patent claims. See, e.g., FABER, *LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING* § 9 (4th ed. 2001) ("The body of a combination claim . . . comprises . . . a recitation of the 'elements' of parts of the combination . . .").

114. It is particularly effective, for example, in determining infringement, *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997) ("Each element contained in a patent claim is deemed material to defining the scope of the patented invention . . ."), and whether an invention that is conceded to be statutory subject matter has been anticipated by prior technology. E.g., *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 771-72 (Fed. Cir. 1983).

typically operates on the assumption that the claimed invention is either a physical structure or a series of method steps.¹¹⁵ It also assumes, moreover, that the invention must possess one these characters only; at an operational level it does not permit the invention be defined as a combination of elements of each type.¹¹⁶ Thus, for example, the patentability of an article of manufacture is usually considered to be independent of the particular use to which the article may be put.¹¹⁷ Similarly, the patentability of a process is usually considered to be independent of the particular apparatus by which the process is to be carried out.¹¹⁸

This categorization initially appears to make considerable sense. As a series of steps, a method seems to be conceptually distinct from any static physical configuration. One consists of motion, the other of still life. On closer inspection, however, the distinction between method and apparatus breaks down. Stripped to its essentials, the subject matter of a patent is the inventor's recognition of how technology can be applied to some particular result. Almost by definition, that application of technology involves the overall process of moving between more-or-less static configurations via one or more methods. In reality, therefore, the successful inventor's work has many different aspects; it includes the static configurations, the methods by which those configurations are either created or used, and the apparatus through which the method is performed.

Viewed in this way, the distinction between method and apparatus can be extremely artificial. Legally, patenting grants control over the subject matter set out in the claim.¹¹⁹ But methods always require apparatus; acquiring broad control over the

115. See, e.g., Federico, *supra* note 3, at 58 (“[T]he general field [of statutory subject matter] may be considered as consisting of new things and new acts; here there is an inherent separation.”).

116. See, e.g., *In re Schreiber*, 128 F.3d 1473 (Fed. Cir. 1997); *In re Durden*, 763 F.2d 1406 (Fed. Cir. 1985); *Ex parte Akamatsu*, 22 U.S.P.Q.2d 1915 (PTO Bd. Pat. App. & Interf. 1992); *Ex parte Lyell*, 17 U.S.P.Q.2d 1548 (PTO Bd. Pat. App. & Interf. 1990); see also 1 ROSENBERG, PATENT LAW FUNDAMENTALS § 14.04; DELLER, *supra* note 4, § 133.

117. See, e.g., *Schreiber*, 128 F.3d at 1473.

118. See, e.g., *Akamatsu*, 22 U.S.P.Q.2d at 1918.

119. See, e.g., 35 U.S.C. § 154(a)(1) (1994) (“Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States . . .”).

apparatus can therefore amount to control of the method itself. The characterization of the inventor's work as either structure or method is largely a matter of tactical choice.

Where the inventor's work is in a field in which patent rights have been granted traditionally, the existence of this tactical choice generally has no impact on public policy. An advance in chemical processing, for example, is acceptable statutory subject matter regardless of whether the patent right is formally exerted over the chemical product, the process steps, or the specialized apparatus.

Where the inventor's work is primarily the development of a non-statutory process, however, the characterization of the inventor's work is potentially critical. Claiming the advance directly as the method presents the question of proper statutory subject matter squarely, and provokes an inquiry that the inventor's work may not survive. Claiming the work instead as the apparatus specific to the method, in contrast, causes the existing rules of substantive patent law to categorize the invention as statutory by default.¹²⁰ In essence, the rules classify the invention as statutory whenever apparatus elements are present.

This latter result clearly has the potential to upset the basic aims of the patent system. It classifies the invention as patentable subject matter without regard to the relative significance of the method and apparatus aspects of the inventor's work. This is true even if the actual thrust of the inventor's creative effort is the non-statutory method. The inventor's tactical choice, therefore, can be used to bring otherwise non-statutory subject matter arguably within the patent system.

This rule-based weakness is especially problematic with regard to methods of doing business. These methods are increasingly implemented by computer, either because of the methods'

120. See, e.g., *In re Alappat*, 33 F.3d 1526, 1541-42 (Fed. Cir. 1994) (holding the invention at issue to be statutory subject matter "[b]ecause claim 15 is directed to a 'machine,' which is one of the four categories of patentable subject matter enumerated in § 101, claim 15 appears on its face to be directed to § 101 subject matter."); Stern, *supra* note 1, at 129 ("Second, any business method of any significance now needs to be carried out in part by means of a programmed computer. Under the Federal Circuit's jurisprudence . . . that suffices to make the subject matter part of the technological arts."); see generally Vincent Chiapetta, *Patentability of Computer Software Instruction as an "Article of Manufacture: Software as Such as the Right Stuff*, 17 J. MARSHALL J. COMPUTER & INFO. L. 89 (1998); see R. Carl Moy, *Statutory Subject Matter and Hybrid Claiming*, 17 J. MARSHALL J. COMPUTER & INFO. L. 277 (1998) (discussing more completely the exact mechanisms of this area of the law).

complexity, or because the methods are specific to the computer-based environment of the internet.¹²¹ In these instances it is nearly always possible to characterize the development of the new business practice indirectly as the development of a new, special-purpose computer apparatus. In addition, because these methods *must* be implemented by computer, the claim to the computer apparatus provides exclusive rights largely equivalent to a claim to the method.

To make matters worse, the practice community is well aware that the rule for determining proper statutory subject matter can be manipulated in this way.¹²² The practice literature openly discusses the technique of claiming the associated apparatus to control the method indirectly.¹²³ Not surprisingly, many of the recent complaints allege that the USPTO is issuing patents on business methods on merely because those methods are now being executed on the hardware of the internet.

One example of this technique, in fact, is the patent that was at issue in *State Street*.¹²⁴ Although in *State Street*, the discussion of business methods, which appears in the latter part of the opinion,¹²⁵ has received most of the attention, the first part of the opinion in many ways sheds more light on the real problem.¹²⁶ There, the opinion notes that the actual claims at issue in the case were drawn to the *apparatus*, and not the method.¹²⁷ Strictly speaking, they did

121. *E.g.*, Stern, *supra* note 1, at 129.

122. *E.g.*, Computer-Related Examination Guidelines, *supra* note 6, at 7483-84 (discussion of "safe harbor" claim formats); Kuester and Thompson, *supra* note 1, at 679.

123. *See, e.g.*, Basinski, *supra* note 62, at 7; Likhovski, *supra* note 16, at 270 (describing United States practice as elevating form of the patent over substance); Gaye Middleton, *Internet Patents*, 10 J. L. & INFO. SCIENCE 153, 160 (1999) (noting that United States practice permits patent rights to be obtained over computer software characterized as placed on storage device). The technique is extremely widespread throughout the practitioner community. The leading desk reference on patent claim drafting, in fact, refers to the technique expressly. FABER, *supra* note 113, § IV-32 ("From a claim-drafting viewpoint, it is possible also to claim some business methods using an apparatus claim for apparatus that performs the method."); John R. Thomas, *Of Text, Technique, and the Tangible: Drafting Patent Claims Around Patent Rules*, 17 J. MARSHALL J. COMPUTER & INFO. L. 219, 265-75 (1998).

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

125. *Id.* at 1375.

126. *Id.* at 1371-72.

127. *Id.* at 1372. The patentee had presented claims to the method during prosecution, but they were rejected by the USPTO. *Id.* at 1371.

not even raise the question of whether the method was patentable. The court, moreover, expressly relied on the apparatus details in the issued claims to find the invention statutory.¹²⁸ The later discussion of business methods in the opinion is therefore only dicta.

If this is the problem, then what is the solution? Plainly, dealing properly with the practitioner community's use of this technique requires a response that somehow looks past the tactical choice of apparatus phrasing and deals with the question of exclusive patent control on its merits. Fortunately, we have at least two sources where procedures for achieving this result have been laid out by rule. One is the developing practice under the European Patent Convention.¹²⁹ There, in a recent decision by the European Patent Office¹³⁰ (Pension Benefits case), the agency determined that a computer-implemented method of controlling a pension benefits plan was not patentable subject matter under the EPC.¹³¹ Notably, the application included claims drawn to the details of the apparatus used to implement the method.¹³² Those apparatus claims were blocked as well.¹³³

The manner in which the EPO dealt with the apparatus claim is instructive. It held that the claim, as being drawn to physical structure, set out proper statutory subject matter under Article 52(1) of the EPC.¹³⁴ In this sense the EPO's decision mirrored the reasoning in *State Street* with regard to section 101 of the United States patent statute. Unlike the court in *State Street*, however, the EPO went further. It found the applicant's real contribution to the art to have been the development of the method, and that, once developed, the implementation of the method via computer apparatus was trivial.¹³⁵ As a result it refused to allow the apparatus claims, not under the provisions of the EPC relating to statutory

128. *Id.* at 1372.

129. Convention on the Grant of European Patents (European Patent Convention), Oct. 5, 1973, available at <http://european-patent-office.org/legal/epc/e/ma1.html> [hereinafter European Patent Convention].

130. Improved Pension Benefits System, 2001 J. EUR. PAT. OFF. 441 (Oct 2001) (case no. T 0931/95 - 3.5.1) [hereinafter Pension Benefits], abstract at http://www.european-patent-office.org/epo/pubs/oj001/10_01/10_4411.pdf, decision at <http://www.european-patent-office.org/dg3/pdf/t950931eu1.pdf>.

131. Pension Benefits, *supra* note 130, at 454.

132. *Id.* at 444.

133. *Id.* at 452.

134. *Id.* at 448-49.

135. *Id.* at 449.

subject matter directly, but under those going to whether the apparatus differed sufficiently from the art.¹³⁶ In the EPO's opinion the new method, since it was a development in the technological arts, could not be relied upon to distinguish the invention from the state of the art. To the extent that the inventor's work did constitute new contributions to technology, those contributions were trivial and could not support patentability.¹³⁷ In applying its test, it expressly assumed that the art would have been aware of the inventor's non-statutory business method, even though that method had been newly developed.¹³⁸

A very similar approach to such apparatus-phrased claims is also available in United States law.¹³⁹ Under it, claims to the apparatus are held to satisfy the statutory subject matter provision under section 101. The rationale for this result is the recited presence of structural elements in the claim.¹⁴⁰ In this way the test is closely analogous to the procedure in *Pension Benefits*. But this does not mean that the claim under United States practice is allowed to issue. Instead, it is then evaluated for non-anticipation and non-obviousness under sections 102 and 103, respectively.¹⁴¹ In performing this evaluation, moreover, the law does not permit the

136. *Id.*

137. *Id.*

138. *Id.* Interestingly, on this point the *Pensions Benefits* case is strikingly similar to an approach used by the United States Supreme Court. See *Parker v. Flook*, 437 U.S. 584 (1978). In *Parker*, the Court determined the patent claim at issue to be drawn to be unpatentable. In particular, the Court there asserted that, in comparing the invention against the art, the non-statutory portions of the claimed invention should be "assumed to be within the prior art." *Id.* at 594.

139. See *Moy*, *supra* note 120, at 289-96.

140. *Id.* at 295. The practice is discussed briefly by R. Lewis Gable & J. Bradford Leahey, *The Strength of Patent Protection for Computer Products: The Federal Circuit and the Patent Office Refine the Test for Determining which Computer-Related Inventions Constitute Patentable Subject Matter*, 17 RUTGERS COMPUTER & TECH. L.J. 87, 133-34 (1990), and by Stephen A. Becker, *Drafting Patent Applications On Computer-Implemented Inventions*, 4 HARV. J.L. & TECH. 237, 239 (1991). See also Nelson Moskowitz, *The Patentability of Software Related Inventions After Diehr and Bradley*, 63 J. PAT. OFF. SOC'Y. 222 (1981) (Moskowitz was a senior member of the agency's examining corps at the time he authored his article); Keith E. Witek, *Developing a Comprehensive Claim Drafting Strategy for U.S. Software Patents*, 11 BERKELEY TECH. L.J. 363, 378, 404 (1996).

141. See, e.g., *Ex parte Des Granges*, 142 U.S.P.Q. 41 (Bd. Pat. App. & Int. 1962); *Ex parte Dere*, 118 U.S.P.Q. 541 (Bd. Pat. App. & Int. 1958); *Ex parte Gwinn*, 112 U.S.P.Q. 439 (Bd. Pat. App. & Int. 1955); see also *Ex parte Carver*, 227 U.S.P.Q. 465 (Bd. Pat. App. & Int. 1985); *Ex parte Bonne*, reprinted in Jeffrey A. Simenauer, *Patentability of Computer related Inventions: A Criticism of the PTO's view on Algorithms*, 54 GEO. WASH. L. REV. 871, 911 (Appendix) (1986).

inventor to rely on the details of the non-statutory method to distinguish his invention from the art;¹⁴² in fact, there is even precedent to assume that the non-statutory method was known to the art.¹⁴³ The logical consequence of this latter assumption is that the inventor cannot patent implementations of the method that would be routine, again in close parallel to the procedure used in *Pension Benefits*.

One interesting aspect of this approach is that it requires close interplay between the application of, on the one hand, the statutory subject matter criterion of section 101 and, on the other, the art-based criteria of anticipation and obviousness in sections 102 and 103. Because litigation in the United States proceeds under the adversarial system generally, a decision maker in the United States may not have the power to apply both parts of the test in a given case. Looked at with this in mind, in fact, the decision *State Street* may not be so stunning after all. That case involved only the accused infringer's contention that the apparatus claims were invalid under section 101.¹⁴⁴ Under the approach referred to here, that defense should have failed. The more substantial question was whether the claims were adequate to survive scrutiny against the art and, particularly, on how much of the claimed details the patent owner was entitled to rely. It is therefore significant that *State Street* expressly notes the issue of statutory subject matter is separate from the inquiries under sections 102 and 103.¹⁴⁵

This approach has also appeared in United States patent law on other occasions. It is used relatively routinely, for example, in connection with non-statutory aspects of inventions outside the

142. This is usually accomplished by categorizing the non-statutory portions of the claim as "nonlimiting" or otherwise unable to carry patentable weight. *E.g.*, *In re Smith*, 70 F.3d 1290 (Fed. Cir. 1995) ("no patentable weight"); *In re Lowry*, 32 F.3d 1579 (Fed. Cir. 1994) (patentable weight); *In re Gulack*, 703 F.2d 1381 (Fed. Cir. 1983); *In re Miller*, 418 F.2d 1392 (C.C.P.A. 1969). Earlier cases use somewhat different language but to the same effect. *Conover v. Coe*, 69 App. D.C. 144 (1938); *In re Graf*, 87 F.2d 218 (C.C.P.A. 1937); *In re Scott*, 76 F.2d 136 (C.C.P.A. 1935); *In re Sterling*, 70 F.2d 910 (C.C.P.A. 1934); *In re Reeves*, 62 F.2d 199 (C.C.P.A. 1932). Witek briefly discusses the practical operation of the rule in the context of section 102 and section 103. Witek, *supra* note 140, at 409-10; *see also* *Simenauer*, *supra* note 141, at 897-909.

143. *See supra* note 138 and accompanying text; *see also* *Moy*, *supra* note 120, at 298-99.

144. *State St. Bank & Trust, Co. v. Signature Fin. Group*, 149 F.3d 1368, 1369 (Fed. Cir. 1998).

145. *Id.* at 1377.

computer arts.¹⁴⁶ Its use has been suggested by the Supreme Court.¹⁴⁷ The USPTO has referred to a form of it in the agency's own examination guidelines.¹⁴⁸ It stands ready to be incorporated, as a refinement, into the rules for determining proper statutory subject matter with regard to business methods.

In fact, the prior existence of this refinement goes far to explain the earlier judicial decisions that have discussed the business method exception. As noted previously, these decisions have recently been criticized as having dealt with the statutory status of business methods only in dicta, while actually deciding the merits on the basis of the prior art.¹⁴⁹ Close inspection reveals, however, that most, if not all, of the decisions actually confronted claims that had been phrased as *apparatus*, not methods. It is therefore entirely expected that these cases did not turn on the question of statutory subject matter directly. Instead, one would expect the meaningful consequence of the prior adjudicators' conviction that the methods were non-statutory to be a series of holdings that the inventions did not differ enough from the existing art. *That is the mechanism by which the patent system has traditionally blocked attempts to patent non-statutory methods phrased as apparatus.* The recent criticisms about the prior decisions are thus not convincing. They reflect instead an incomplete understanding of the legal rules that the prior decisions applied.

The solution to this first problem of dealing with business methods by rule may therefore be relatively simple. The overall purpose of the statutory subject-matter criterion in United States patent law is well known. The primary shortcoming in the current effort to deal with the tactical use of apparatus phrasing, therefore, is a failure to grasp fully the entire set of rule-based mechanisms that are needed to ensure that these purposes are met. Once one understands what the mechanisms are, including how the individual mechanisms relate to each other, arriving at the correct decision in particular cases requires mainly that the system stay

146. *E.g.*, *In re Smith*, 70 F.3d 1290 (Fed. Cir. 1995); *In re Gulack*, 703 F.2d 1381 (Fed. Cir. 1983); *In re Miller*, 418 F.2d 1392 (C.C.P.A. 1969).

147. *Diamond v. Diehr*, 450 U.S. 175, 188-89 (1981) (characterizing section 101 determination as "threshold" requirement, to be followed by other determinations under chapter 10 of patent statute); *Parker v. Flook*, 437 U.S. 584, 594 (1978).

148. *E.g.*, Computer-Related Examination Guidelines *supra* note 6, at 7479 (reference to "limiting" and "not limiting" claim recitations)

149. *See supra* note 38 and accompanying text.

focused on the precise issues at hand. Inherently, this should avoid the system becoming distracted by other matters that, while interesting, are not actually present in the case for decision.

2. *Business Methods as Applied Technology*

As described, the foregoing solution to the tactical use of apparatus claims would definitely improve the patent system's ability to deal with business methods. Unfortunately, however, by itself that solution is almost certainly not enough. In essence, working around the tactical use of apparatus claims merely ensures that an effort to patent a business method will be addressed on its true merits, rather than becoming distracted by a fiction of form. It does not address at all the basic question, of whether business methods are truly statutory subject matter under the patent law.

Dealing with this more basic problem may be much more difficult. United States patent law expressly describes "processes" as one of the four categories of statutory subject matter set out in section 101.¹⁵⁰ Speaking generally, this provision relates to methods of applying technology to arrive at a useful result.¹⁵¹ As the provision states, methods of this type are considered to be eligible subject matter, provided they meet the other requirements set out in the law.¹⁵²

This recognition that methods can be patentable inventions separate from the apparatus by which they are performed is actually a fairly late development in United States law. When the patent law of the United States was first established, for example, English law had not yet settled the question of whether methods could be patentable subject matter per se. The Statute of Monopolies, which formed the basis of early English law, referred only to the grant of patent rights in "manufactures."¹⁵³ English

150. 35 U.S.C. § 101 (1994) ("Whoever invents or discovers any new and useful *process*, machine, manufacture, or composition of matter . . . may obtain a patent therefore . . .") (emphasis added).

151. See, e.g., *In re Waldbaum*, 457 F.2d 997, 1003 (C.C.P.A. 1972) ("[W]hether appellant's process is a 'statutory' invention [in terms of § 101 patentable subject matter] depends on whether it is within the 'technological arts.' The phrase 'technological arts,' as we have used it, is synonymous with the phrase 'useful arts' as it appears in Article I, Section 8 of the Constitution."); *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970).

152. 35 U.S.C. § 101 (1994).

153. Section 6, 21 Jac. 1, ch.3 (referring to "sole working or making of any manner of new manufactures").

authorities interpreting this as including disembodied methods did not become established until sometime in the Nineteenth Century.¹⁵⁴

The early United States patent statutes, like their English precursor, also did not refer to methods directly. Instead, they permitted the grant of patents for “art[s].”¹⁵⁵ This express language, left open the basic question of whether patents might be granted for processes per se, divorced from any particular apparatus by which the process might be performed.

The United States courts initially held that such disembodied processes were not patentable subject matter. A good early example of the cases of this type is *Le Roy v. Tatham*,¹⁵⁶ which dealt with a patented method of forming lead pipe.¹⁵⁷ The patent owner in that case had characterized the invention as the use of particular machinery in a new process; the joining the seams of the formed pipes under heat and pressure, so that the two surfaces of the lead at the seam would fuse.¹⁵⁸ This was significant because the art previously knew of various machines for making lead pipe. According to the trial court, “it was not material whether the mere combinations of machinery referred to [in the patent] were similar to the combination used by the [defendants], because the originality did not consist in the novelty of the machinery, but in bringing a newly discovered principle into practical application”¹⁵⁹

On appeal, a majority of the Supreme Court took issue with this characterization of the patent right. “A principle,” the majority observed, “is not patentable.”¹⁶⁰ A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be

154. See, e.g., *Neilson v. Harford*, 151 Eng. Rep. 1266 (1841); *Boulton v. Bull*, 126 Eng. Rep. 651 (1795) (C.J. Eyre, *dissenting*); see generally Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents (Part 3, Continued)*, 77 J. PAT. & TRADEMARK OFF. SOC'Y 847, 855-56 (1995).

155. Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 110 (1790) (“any useful art, manufacture, engine, machine, or device”). See also Patent Act of 1793, ch. 11, §1, 1 Stat. 318, 319 (1793); Patent Act of 1836, ch. 357, §6, 5 Stat. 117, 119 (1836); Consolidated Patent Act of 1870, ch. 230, §24, 16 Stat. 198, 201 (1870). The term “process” did not appear in the United States patent statutes until the revision of the statutes in 1952. Patent Act of 1952, ch 10, § 100, 66 Stat. 797 (1952) (codified into 35 U.S.C.). See *Federico*, *supra* note 3, at 58.

156. 55 U.S. 156 (1852).

157. *Id.* at 171.

158. *Id.* at 172-73.

159. *Id.* at 174.

160. *Id.* at 175.

patented, as no one can claim in either of them an exclusive right.”¹⁶¹ “Through the agency of machinery a new steam power may be said to have been generated,” the court offered as an example.¹⁶² “But no one can appropriate this power exclusively to himself, under the patent laws. The same may be said of electricity, and of any other power of nature, which is open to all, and may be applied to useful purposes by the use of machinery.”¹⁶³

The main concern of the courts at this time appears to have been that extending patent rights to processes per se would cause some patent rights to be too broad. The majority in *LeRoy* asserted, for example, that “[a] patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.”¹⁶⁴ Tying the patentee’s process to the particular machinery disclosed to carry it out would, in the court’s view, prevent the patent right from being viewed too abstractly, and would confine it to the patentee’s actual contribution to the art.¹⁶⁵

The prevalence of this view in early courts is probably related to the United States patent system’s widespread use of central, as opposed to peripheral, claiming at the time. As other authorities have discussed in greater detail, the United States patent system interpreted patents primarily according to the central claiming paradigm until about 1870.¹⁶⁶ That paradigm uses the patent claim mainly as a tool to point out the part of the patent specification in which the subject invention of the patent has been disclosed, in contrast to the parts that set out merely background information.¹⁶⁷ Under central claiming the patent right is assigned a scope that

161. *Id.*

162. *Id.*

163. *Id.*

164. *Id.*

165. *Id.*

166. *See generally* authorities in *supra* note 112.

167. The English-language authorities on the theoretical underpinnings of central and peripheral claiming are thin. The two best that are readily available are Deller, *supra* note 112, §§ 9-10, and Takanaka, *supra* note 112, at 1-9. An early decision that provides an example of central claiming in use is *Bain v. Morse*, 2 F. Cas. 394 (C.C.D.C. 1849). The differences between central and peripheral claiming are discussed to some extent, in the context of contrasting early United States (central) and English (peripheral) practices occurs in *King v. Gedney*, 1 MacArt. Pat. Cas. 443 (C.C.D.C. 1856).

covered the particular embodiment shown in the patent, as well as all other embodiments that used the same inventive concept.¹⁶⁸

Use of this central claiming paradigm naturally tends to limit the patentee's right to variations of the disclosed apparatus. By necessity, no patentee can disclose all the different apparatus by which the method can be performed. Instead, the patent specification discloses one or, at most, a finite range of apparatus. Accordingly, allowing the patent to cover all means of performing the method arguably extends beyond the patentee's actual contribution to the art. Almost by definition, therefore, a centrally claimed method is limited to some extent by the apparatus disclosed in the patent.¹⁶⁹

Eventually, however, some court decisions began to distinguish the invention of methods from the apparatus used to carry them out. As early as 1853, for example, at least one decision of the Supreme Court asserted in dicta that patent rights could be validly held in a method per se, divorced from any apparatus limitations.¹⁷⁰ This development apparently coincided with, or was perhaps even preceded by, the Patent Office issuing patents specific to methods.¹⁷¹

The position espoused in these later cases was that the patenting of disembodied methods would not necessarily lead to exclusive rights that were overly broad.¹⁷² Instead, these courts felt that patent coverage over methods could be limited to specific forms. This view is stated expressly in *Corning v. Burden*, in which Justice Grier asserts that a patent may be obtained for a process "irrespective of any particular form . . . or mechanical device."¹⁷³

168. See generally authorities in *supra* note 167.

169. The general validity of this reasoning is bolstered by the Supreme Court's treatment of the *LeRoy* litigation in a subsequent case. *LeRoy v. Tatham*, 63 U.S. 132 (1859). There, the defendant attempted to invalidate the patent in suit by establishing that the particular apparatus disclosed in the patent had been previously invented by others. *Id.* at 134. Despite this having been established, however, the Court found the patent in suit to be valid. *Id.* at 141. Clearly, the Court did not consider the patent as directed to either the apparatus or the method per se, but rather a combination of the two. See *Burr v. Duryee*, 68 U.S. 531, 570 (1863) (patent must be for machine, not mode of operation or "abstraction").

170. *Corning v. Burden*, 56 U.S. 252 (1853) (patent at issue held to claim apparatus)

171. See, e.g., *Burr*, 68 U.S. at 566-67 (separate reissue patents obtained for apparatus and method).

172. *Burr*, 68 U.S. at 568; *Corning*, 56 U.S. at 268.

173. *Corning*, 56 U.S. at 268.

“It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable”¹⁷⁴

According to Justice Grier, this distinction between the method of producing a result and the end result itself was critical:

[T]he term process is often used in a more vague sense, in which it cannot be the subject of a patent Here the term is used subjectively or passively as applied to the material operated on, and not to the method or mode of producing that operation, which is by mechanical means, or the use of a machine, as distinguished from a process.¹⁷⁵

The same focus on claim breadth also appeared in a later case, *Mitchell v. Tilghman*.¹⁷⁶ In that case, the claim at issue expressly characterized the invention as a method.¹⁷⁷ The Court treated this method as patentable subject matter, but observed that this conclusion of patentable subject matter was:

subject to the universal qualification that the legal construction of every such claim is that the patentee means to limit the same to his described method or process Usually the claim contains the words as described or substantially as described, or words of like import, which are everywhere understood as referring back to the descriptive parts of the specification. Words of such import, if not expressed in the claim, must be implied, else the patent in many cases would be invalid as covering a mere function, principle, or result, which is obviously forbidden by the patent law, as it would close the door to all subsequent improvements.¹⁷⁸

Again, the reasoning in this second set of early cases is closely dependent on the use of central claiming. Because central claiming inherently measures the scope of the claim by the scope of disclosure, it provides a ready mechanism to limit the scope of the claim, even where the patentee employs claim language that is broadly abstract.¹⁷⁹

174. *Id.*

175. *Id.*

176. 86 U.S. 287 (1873).

177. *Id.* at 378.

178. *Id.* at 391.

179. Some proof of this assertion can be obtained by observation of the

Unfortunately, the underlying rationale for both these lines of cases expired when the patent system of the United States switched to peripheral claiming in the early 1870s.¹⁸⁰ Peripheral claiming equates the scope of the patent right with the lingual meaning of the words in the patent claim.¹⁸¹ It does not include any direct reference to the scope of the patent disclosure. Accordingly, peripheral claiming provides the patentee with a much more powerful means of defining the invention as a pure method, disembodied from any apparatus that may have been disclosed. In addition, peripheral claiming imposes no inherent limit on the level of abstraction that the patentee is able to use in the claim.¹⁸² The result is that a patent system operating on peripheral claiming principles is forced to confront the patentability of pure methods that are broadly abstract.

In response to this test, Nineteenth Century courts of the United States adopted a test for patentable subject matter that attempted to identify method claims of limited scope. The lead case on this point is now considered to be *Cochrane v. Deener*.¹⁸³ The invention at issue there involved a method of milling flour, in which the middle-grade particles remaining after a first grinding were cleansed by blasts of air, re-ground and then combined with the higher grade particles obtained originally.¹⁸⁴ The patentee held two patents, one directed to the method and the other to the particular apparatus he employed.¹⁸⁵

On review, the Supreme Court held the method patent

patents systems in countries that still use central claiming. Typically, these systems lack express provisions that would enable a patent claim to be invalidated as being broader in scope than the disclosure. See, e.g., European Patent Convention, *supra* note 129, at art. 101 (failing to state as permissible ground for opposition allegation that disclosure in patent specification is inadequate to support patent claim). Central claiming constrains the scope of the patent claim to that of the disclosure inherently, as part of the basic process of claim interpretation. This difference has led to some difficulty in England, for example, which has adopted the EPC as an outward statement of the legal rules of its patent law, but still proceeds under peripheral claiming.

180. See *supra* note 112 and accompanying text.

181. *Id.*

182. Thus, the United States patent system deals with such issues whether to grant "single means" claims. See, e.g., *In re Hyatt*, 708 F.2d 712, 714-15 (Fed. Cir. 1983) (holding claim reciting single means invalid for lack of enablement).

183. 94 U.S. 780 (1876).

184. *Id.* at 781.

185. *Id.* at 781.

directed to subject matter that was statutorily patentable.¹⁸⁶ “That a process may be patentable, irrespective of the particular form of the instrumentalities used,” the Court asserted, “cannot be disputed.”¹⁸⁷ “[I]f the patent is not confined to that particular tool or machine, the use of . . . other [tools or machines] would be an infringement, the general process being the same.”¹⁸⁸

As to the question of undue breadth, the Court adopted a definition of patentable processes that inherently required the claim to refer to specifics.

A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art.¹⁸⁹

This holding was consistently followed over time, and became generally understood as limiting patentable processes to those that involve the transformation of a physical article or substance.¹⁹⁰ Methods that involve such physical transformations were considered to involve statutory subject matter. Methods that did not, in contrast, were generally considered to be non-statutory and thus unpatentable.

As this historical summary indicates, the physical transformation requirement in United States patent law has existed to address two issues of claim scope. Broadly speaking, the patent

186. *Id.* at 787.

187. *Id.*

188. *Id.* at 788.

189. *Id.*

190. *See, e.g.,* *Diamond v. Diehr*, 450 U.S. 175, 187-88 (1981); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Holland Furniture Co. v. Perkins Glue Co.*, 277 U.S. 245, 255 (1928); *Ex Expanded Metal Co. v. Bradford*, 214 U.S. 366, 383 (1909); *Ex parte Kharasch*, 39 U.S.P.Q. 123 (Pat. & Tr. Office Bd.App.); *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994); ROBINSON, *supra* note 101, § 159. Two cases from the Court of Customs and Patent Appeals that have been cited on occasion as contrary to the holding in *Cochrane v. Deener*, 94 U.S. 780 (1876). *In re Prater*, 415 F.2d 1393, 1403 (C.C.P.A. 1970); *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970). These cases, despite being handed down by a lower court, did take issue with the physicality requirement. *See, e.g., Musgrave*, 431 F.2d at 893 (“All that is necessary, in our view, to make a sequence of operational steps a statutory ‘process’ within 35 U.S.C. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of ‘useful arts.’”). It is not clear that these latter decisions had a widespread impact, largely because practitioners switched to characterizing their developments as apparatus, in the manner discussed in the prior section.

system is not directed to all developments of humankind, but rather only those that involve technology.¹⁹¹ The Constitutional provision, for example, expressly connects patenting with the “useful arts.”¹⁹² The distinction between technological and non-technological subject matter essentially defines the boundary between the systems of patent and copyright.¹⁹³ The desire to preclude patent rights over non-technological matters underlies many of the historical objections to extending the definition of statutory subject matter.¹⁹⁴

One function of the physical transformation requirement has therefore been to provide a rough, rule-based mechanism for determining where this boundary between the technological and the non-technological existed in specific cases. By necessity a method that results in a physical resource being transformed must involve the use of technology at some level. Accordingly, it should be validly patentable. A method that does not leave such a transformation in its wake, in contrast, is likely to be non-technological and therefore outside the patent system’s proper reach. In this way, requiring such a transformation enabled the system to block effectively the grant of patent protection over developments in the liberal arts and sciences.

Another overall goal of the patent system is to police the breadth of the exclusive right given to any particular patentee. Economic authorities are in general agreement, for example, that the grant of overly broad patent rights imposes significant costs on society.¹⁹⁵ The United States patent system therefore contains an

191. See, e.g., *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09 (1980); Federico, *supra* note 3, at 57-59.

192. U.S. CONST., art. I, § 8 (“Congress shall have the power . . . To promote the Progress of . . . useful Arts . . .”). See, e.g., Edward C. Walterscheid, *To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution*, 2 J. INTELL. PROP. L. 1, 43-51 (1994).

193. See, e.g., 17 U.S.C. § 101 (defining “pictorial, graphic and sculptural works”; “Such works shall include works of artistic craftsmanship insofar as their form but not their mechanical or utilitarian aspects are concerned.”). Copyright law contains an array of such boundary-defining mechanisms.

194. See, e.g., *Diamond*, 447 U.S. at 308-09 (living organisms); *Gottschalk*, 409 U.S. at 63 (mathematical algorithms); *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908) (traditional rule regarding business methods).

195. See, e.g., Paul Heald, *Federal Intellectual Property and the Economics of Preemption*, 76 IOWA L. REV. 959, 962 (1991); SUBCOMM. ON PATENTS, TRADEMARKS AND COPYRIGHT OF THE COMMITTEE ON THE JUDICIARY OF THE UNITED STATES SEN., 86TH CONG., 2ND SESS., THE PATENT SYSTEM: ITS ECONOMIC AND SOCIAL BASIS, PATENT STUDY NO. 26, at 6 (1958) (Abramson); Malchup, *supra* note 81, at 42-66 (1958);

array of mechanisms, such as the enablement requirement¹⁹⁶ and, less obviously, the requirement of practical utility,¹⁹⁷ that are designed to ensure that the scope of the exclusive right conferred by the patent bears some reasonable correlation to the scope of the patent's disclosure.

There are many additional mechanisms by which the scope of the patent claim can be limited.¹⁹⁸ Pointedly, however, the most effective mechanism—central claiming—is not required in the United States.¹⁹⁹ Instead, by having settled on peripheral claiming as the dominant technique, the United States has left itself open to the presentation of method claims that are highly abstract and which, if issued, would threaten to lock competitors out of entire fields that remain to be developed.²⁰⁰ This, of course, is at odds with the system's basic goals, which prohibit, for example, the patenting of abstract concepts and matters of pure science.²⁰¹

Addressing this inconsistency, then, is the physical transformation requirement's second major function. By insisting no patent issue unless a method recited the manipulation of a physical structure, the requirement provides at least some assurance that the rights would be limited to a manner in which a technological principle could be applied, rather broadly

JOHN W. SCHLICHER, *PATENT LAW: LEGAL AND ECONOMIC PRINCIPLES* § 2.10 (2001). The list of similar references could be extended much further.

196. 35 U.S.C. § 112, ¶ 1 (1994). *See, e.g.*, *Regents of the Univ. of Cal. v. Eli Lilly*, 119 F.3d 1559 (Fed. Cir. 1997); *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200 (Fed. Cir. 1991).

197. *See, e.g.*, *Brenner v. Manson*, 383 U.S. 519 (1966).

198. The system can, for example, refuse altogether to grant types of patents that hold the greatest potential for overly broad protection, as the Federal Republic of Germany did prior to adopting the European Patent Convention. The system can also make compulsory licenses available to later inventors whose work is blocked or otherwise controlled by a prior patent to another. This latter mechanism is particularly prominent in the systems of developing countries.

199. *See generally supra* note 112.

200. This difficulty, in fact, produced a series of Supreme Court decisions in the later 1800s that dealt with the question of how the system should determine whether individual patent claims has been worded so broadly as to be drawn to an unpatentable principle. *E.g.*, *Dolbear v. American Bell Tel. Co.*, 126 U.S. 1, 553 (1888); *Tilghman v. Proctor*, 102 U.S. 707, 722 (1880); *O'Reilly v. Morse*, 56 U.S. 62, 130 (1853). Various authors have analyzed this series of cases in an attempt to define a governing principle. *E.g.*, ALBERT H. WALKER, *TEXTBOOK ON THE LAW OF PATENTS* 1-19 (2nd ed. 1886); Christopher L. Ogden, *The Patentability of Algorithms After State Street: The Death of the Physicality Requirement*, 83 J. PAT. & TRADEMARK OFF. SOC'Y 491 (2001). The general view is that none of these efforts has yet been successful.

201. *See, e.g.*, *Gottschalk v. Benson*, 409 U.S. 63 (1972).

encompassing the principle itself. The requirement's performance in this role was certainly minimal; it screened out only those attempts to obtain rights over abstract technology that were the most egregious. But in this way it was actually similar to, rather than different from other breadth-policing mechanisms that exist in the system.²⁰² By granting patent rights in these two ways, therefore, the holding of *Cochrane v. Deener* has thus tended to serve as bulwark against the expansion of the patent system beyond its traditional, and thus arguably appropriate, subject matter boundaries.

Recognizing these functions of the physical transformation requirement reveals why the current controversy over business methods strikes at the patent system's fundamentals. The Supreme Court handed down the *Cochrane* decision during the Industrial Revolution. At that time, valuable business activities tended to involve primarily manufacturing. The use of physical transformation as trigger to patentability was thus a reasonably good fit; by their very nature manufacturing processes involve transforming raw materials.

In recent decades, in contrast, the economies of the most technologically advanced countries have moved increasingly away from manufacturing. Now, the trend is toward the provision of services, particularly services rendered with the aid of computers.

The impact of this change on the role of the patent system is potentially severe. In an information economy the primary functions of modern businesses are much less likely to center around the manipulation of physically observable objects. If the requirement of physical transformation is retained, therefore, the patent system itself will become increasingly inapplicable to modern commerce. Eventually, it may become an anachronism, replaced by other regimes of intellectual property protection.

In fact, one can see these pressures influencing the United States patent system already. As early as the mid 1960s, for example, the system began to be confronted with attempts to patent business methods that were implemented through computer technology.²⁰³

202. The enablement requirement, for example, is an extremely loose policing mechanism in the mechanical and electrical arts, where it permits the patentee to characterize the invention "as broadly as the prior art permits." *E.g.*, *Beale v. Schuman*, 212 U.S.P.Q. 291 (Pat. & Tr. Office Bd. App. 1980); *see also In re Fisher*, 427 F.2d 833, 839 (C.C.P.A. 1970). The breadth policing mechanisms are wholly absent from the United States system. *See supra* note 198 and accompanying text.

203. *See, e.g., In re Foster*, 438 F.2d 1011 (C.C.P.A. 1971); *In re Musgrave*, 431 F.2d 882 (C.C.P.A. 1970); *In re Prater*, 415 F.2d 1393 (C.C.P.A. 1969).

These decisions discussed the statutory subject matter requirement directly. At least several made general assertions that the scope of statutory subject matter should be interpreted broadly.²⁰⁴

At least several recent cases suggest that this trend is continuing even after *State Street*.²⁰⁵ *AT&T Corp. v. Excel Communications, Inc.*,²⁰⁶ for example, involved a method for use in the telecommunications industry. Specifically, the invention at issue assigned various different codes to the identifying signals of telephone subscribers and used those codes, when the subscriber placed telephone calls, to generate billing information customized to each particular code.²⁰⁷ The invention thus manipulated information, to generate information as an end result.

As one of its defenses, the accused infringer in *AT&T* asserted that the method was unpatentable because it did not involve a physical transformation.²⁰⁸ In response, the Federal Circuit took the opportunity to recast the requirement in a somewhat different form. "The notion of 'physical transformation,'" according to the opinion, "can be misunderstood. . . . [I]t is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application."²⁰⁹ In the court's view, the broader question was whether the invention in question arrived at a "useful, concrete, [or] tangible result."²¹⁰ In particular, the court asserted that such useful, concrete, tangible results include the generation of mere numbers, provided that the generated numbers have specific meaning.²¹¹ The mere fact that a process transforms information, rather than physical structure, is thus not inconsistent with a conclusion that the process is patentable subject matter.

The impact of this more modern transformation standard on the issue of undue breadth can be seen by contrasting *AT&T* with another recent decision, *In re Warmerdam*.²¹² *Warmerdam* involved the use of a particular modeling technique to generate a numerical

204. *E.g.*, *Musgrave*, 431 F.2d at 893. This was, of course, repeated expressly by the Supreme Court in *Diamond v. Diehr*, 450 U.S. 175, 188 (1981).

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

206. 172 F.3d 1352 (Fed. Cir. 1999).

207. *Id.* at 1358.

208. *Id.*

209. *Id.*

210. *Id.* at 1359.

211. *Id.* at 1360.

212. 33 F.3d 1354 (Fed. Cir. 1994).

construct known as a bubble hierarchy.²¹³ Overall, the construct was designed to approximate the exterior shape of obstacles in a robotic environment.²¹⁴ In *Warmerdam*, the court viewed various claims to the method of such a hierarchy to be non-statutory.²¹⁵ This was because, the court asserted at the time, the various components of the claimed method were themselves no more than basic mathematical constructs.²¹⁶ The court in *AT&T* later noted this observation in *Warmerdam* with approval.²¹⁷

Looked at more globally, however, it is possible to read the decision in *Warmerdam*²¹⁸ as indicating something more. Specifically, the invention there can be viewed as having been claimed broadly—so broadly, in fact, that at least some of the claims would have covered the generation of a bubble-hierarchy model by virtually all means. Under that analysis the method recited in *Warmerdam*²¹⁹ was rightly blocked as non-statutory. Even in an information economy there must still be some limits to the subject matter that can be patented; the system must still insist that the invention be applied technology in a specific form.

*AT&T*²²⁰ and *Warmerdam*²²¹ thus represent attempts to adapt the physical transformation requirement to the facts of modern industry, while at the same time retaining the requirement's traditional functions. They would classify narrow claims, i.e., those that are limited to a particular means of achieving a technologically valuable result, as statutory subject matter. In contrast, they would classify broad claims, i.e., those that attempt to control means substantially beyond what the applicant has disclosed, as non-statutory.

The most basic controversy over business methods therefore places the patent system at a crossroads. In the future, economic and technological developments will result in an increased number of developments that lie just outside the line defined by the traditional rule of physical transformation. As a society, we may

213. *Id.* at 1355.

214. *Id.*

215. *Id.* at 1361.

216. *Id.*

217. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1360 (Fed. Cir. 1999) (citing *Warmerdam*, 33 F.3d at 1359).

218. *Warmerdam*, 33 F.3d at 1354.

219. *Id.*

220. *AT&T Corp.*, 172 F.3d at 1352.

221. *Warmerdam*, 33 F.3d at 1354.

judge all these developments to be in fact beyond the patent system's proper subject matter reach. If so, the traditional rule of *Cochrane*²²² is likely to survive. But this choice will result in the economic importance of patent rights gradually receding.

Or we may make the opposite choice. We may decide collectively that at least some part of these new, information-based developments continue to involve the application of technology, and that the award of patent rights over them is consistent with the patent system's proper aims. In that event we will almost certainly conclude that the physical transformation requirement is unworkable; i.e., that it will categorize too many new developments incorrectly as non-statutory, and that the error cost of adhering to it in the present day is too high.

But if we make this second choice, which the existence of *State Street*²²³ and *AT&T*²²⁴ plainly suggests is the more likely alternative, we will be faced with considerable difficulties. Inarguably, the patent system does not apply to at least some things. Equally, we are unlikely to abandon peripheral claiming. Inescapably, therefore, the patent system must continue to perform the same two tasks that it always has, up to and after *Cochrane*.²²⁵ How can those tasks be performed so as to capture information-based applications of technology, but still leave non-technological matters aside? What rule will capture whether a method is non-technological? What rule will define when the method has been recited too abstractly? We may not be able, as the Supreme Court was in *Cochrane*,²²⁶ to set out both boundaries with a single rule. But we will eventually have to find a way to succeed with each task, because their administration—and their administration by rule—is fundamental to the orderly operation of the patent system.

IV. CONCLUSION

The United States patent system would therefore be considerably improved by changes that would deal with business-method and other information-based developments via decisional rule. Such mechanisms already exist to cope with the practice

222. *Cochrane v. Deener*, 94 U.S. 780 (1876).

223. *State St. Bank & Trust, Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1377 (Fed. Cir. 1998).

224. *AT&T Corp.*, 172 F.3d at 1352.

225. *Cochrane*, 94 U.S. at 780.

226. *Id.*

technique of characterizing a process development nominally in terms of the associated apparatus. While intricate, they are nevertheless adequate and solidly based on existing precedent. Mechanisms do not yet exist for the more basic task, of distinguishing between applied technology and abstract principle at a level that does not require the manipulation of physical structure. While therefore likely to be difficult, the process of working out adequate rules in this latter context will be easier if the system's attention remains focused on the fundamental issues that are involved.