AMERICA'S FIRST PATENTS

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Abstract

Courts and commentators vigorously debate early American patent history because of a spotty documentary record. To fill these gaps, scholars have examined the adoption of the Intellectual Property Clause of the Constitution, correspondence, dictionaries, and British and colonial case law. But there is one largely ignored body of information – the content of early patents themselves. While many debate what the founders thought, no one asks what early inventors thought - and those thoughts are telling. This article is the first comprehensive examination of how early inventors and their patents should inform our current thoughts about the patent system.

To better understand our early patent history, we read every available patent issued prior to the institution of the "modern" examination system in 1836, totaling nearly 2,500 handwritten patents. For good measure, we also read the first 1,200 patents issued after 1836, the last of which issued in the middle of 1839.

Part I discusses how vague and ambiguous patents are relevant to early judicial discussion of "principles." In conjunction with misplaced reliance on English law, the patents suggest a different interpretation of "principles" in these cases. In short, patentable subject matter jurisprudence developed in a way that was not necessarily intended by the first Congress.

Part II discusses some noteworthy patents, including asbestos and lead paint, milk of magnesia, many business methods, and a programmable loom that predated Babbage's Analytical Engine. This might lead us to reconsider how we view technological change in the patent system.

Part III presents a surprising rebuttal to those who believe that the machine-or-transformation test is engrained in American inventive ethos. This test requires that, to be patentable subject matter, a claimed process must be performed by a machine or transform matter to a

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different state. Though the Federal Circuit formally introduced this test in 2008, courts and scholars present it as a "historical" limitation on patentable subject matter. Examination of the first fifty years of patents shows that forty percent of patented processes would have failed the machine-or-transformation test, whether or not the patents were tested by the Patent Office. Many method patents did not involve a machine and did not transform matter to a different state or thing.

The article concludes with some suggestions about how we might rethink patentable subject matter in light of America's first patents.

INTRODUCTION

Courts and commentators vigorously debate early American patent history because of a spotty documentary record.[1] To fill in these gaps, scholars have examined the adoption of the Intellectual Property Clause of the Constitution, correspondence, dictionaries, and British and colonial caselaw.[2] But there is one largely ignored body of information—the content of early patents themselves.[3] While many debate what the founders thought, no one asks what early inventors thought.[4] This Article is the first comprehensive examination of how early inventors and their patents should inform our current thoughts about the patent system.[5]

To better understand our early patent history, we[6] read every available patent issued prior to the institution of the "modern" examination system in 1836, totaling nearly 2,500 handwritten patents.

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1. *See* Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 CORNELL L. REV. 953, 977 (2007) ("One of the pressing problems with assessing the historical record in patent law, especially for anyone who uses this record today, is the paucity of Founding Era references to the Copyright and Patent Clause specifically and patent law generally.").

2. *See, e.g.*, Peter S. Menell, *The Mixed Heritage of Federal Intellectual Property Law and Ramifications for Statutory Interpretation*, *in* INTELLECTUAL PROPERTY AND THE COMMON LAW (Shyam Balganesh ed., forthcoming 2012), *available at* http://ssrn.com/abstract=1895784; EDWARD C. WALTERSCHEID, THE NATURE OF INTELLECTUAL PROPERTY CLAUSE: A STUDY IN HISTORICAL PERSPECTIVE (2002) (exploring the history and the written correspondences behind the development of U.S. patent law); Robert A. Kreiss, *Patent Protection for Computer Programs and Mathematical Algorithms: The Constitutional Limitations on Patentable Subject Matter*, 29 N.M. L. REV. 31 (1999); Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 TECH. & CULTURE 932 (1991); Andrew P. Morriss & Craig Allen Nard, *Institutional Choice & Interest Groups in the Development of American Patent Law: 1790–1865–1865*, 19 SUP. CT. ECON. REV. 143 (2011) (discussing the doctrinal development of patent law); Mossoff, *supra* note 1; Malla Pollack, *The Multiple Unconstitutionality of Business Method Patents: Common Sense, Congressional Consideration, and Constitutional History,* 28 RUTGERS COMP. & TECH. L.J. 61 (2002); Frank D. Prager, *The Influence of Mr. Justice Story on American Patent Law*, 5 AM. J. LEGAL HIST. 254 (1961); Joshua D. Sarnoff, *Patent-Eligible Inventions After Bilski: History and Theory*, 63 HASTINGS L.J. 53 (2011).

3. Some have looked at summary data for economic analysis, but not the details for legal analysis. *See*, *e.g.*, Kenneth L. Sokoloff, *Inventive Activity in Early Industrial America: Evidence from Patent Records, 1790–1846*, 48 J. ECON. HIST. 813, 813–14 (1988).

4. Edward C. Walterscheid, *Patents and the Jeffersonian Mythology*, 29 J. MARSHALL L. REV. 269, 313 (1995) ("[Jefferson's] standards in this regard were high—perhaps higher than most Americans of the time thought necessary.").

5. To be sure, some early patents (such as the cotton gin) are highlighted in the literature, but no one has looked at the entire body of patents.

6. Here, "we" refers to the author and his several research assistants. The author reviewed every coding decision.

For good measure, we also read the first 1,200 patents issued after 1836, the last of which issued in the middle of 1839.[7]

In addition to their historic relevance, early American patents are helpful because most were filed at a time when virtually every patent application issued as a patent without any substantive review. That is, patent applications did not undergo any consideration on the merits like they do today. Indeed, until 1836, the statute *forbade* such consideration;[8] if one applied for a patent, one was almost always granted a patent.[9] As a result, these unexamined patents constitute important and untainted evidence: inventions that Americans thought were patentable in our early history, without editing by the Patent Office, courts, or legislatures.

The period of non-examination is also helpful because two periods of examination are available for comparison. The first was between April 1790 and February 1793, when the Attorney General (Edmund Randolph), the Secretary of War (Henry Knox), and the Secretary of State (Thomas Jefferson) determined whether patents should issue.[10] Only fifty-seven patents issued during this time, and only five survive today.[11] The second examination period began in July 1836, when the patent commissioner and his assistants began examining patents on their merits. These bookends allow us to consider whether patent filings during the time when every patent was allowed differed from those that inventors filed when gatekeepers determined the sufficiency of the application.

To be sure, many of the patents would be invalid by today's standards (or even by nineteenth-century standards); indeed, poor patent quality was one of the reasons for the reinstitution of the examination system in 1836.[12] Thus, the primary relevance of these patents is not whether they were meritorious, but that they show what *types* of inventions inventors thought *could or should be* patentable.

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7. Filing dates are not recorded on these early patents, but we are confident that we captured most, if not all, patents filed prior to the institution of the modern examination system.

8. *See* Grant v. Raymond, 31 U.S. 218, 241 (1832) (holding that Secretary of State must grant all applications if ministerial requirements were met).

9. EDWARD C. WALTERSCHEID, TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION, 1798-1836, at 259–64 (1998) (discussing early refusals to patent and warnings to patentees that their invention may not be new, despite registration requirement).

10. Patent Act of 1790, ch. 7, § 1, 1 Stat. 109–112 (repealed 1793) [hereinafter 1790 Patent Act].

11. Walterscheid, *supra* note 4, at 288. Perhaps it is not a surprise that Thomas Jefferson suggested that examinations be abandoned, much to his later regret. *See id.* at 312.

12. JOHN RUGGLES, SELECT COMMITTEE REPORT ON THE STATE AND CONDITION OF THE PATENT OFFICE, S. DOC. NO. 24-338, at 4 (1836).

This study yields qualitative and quantitative insights into three primary areas relating to patentable subject matter. These insights are missing from prior historical analysis,[13] and each Part of this Article discusses one.

Part I describes the patents we reviewed and our methodology for reviewing them. Even if they were printed rather than handwritten, the patents were difficult to read because inventors were simply unclear about what they invented. Even after the Patent Act of 1836 required that patents include "claims" to the invention,[14] patent applicants continued to describe their inventions in ways that made it very difficult to determine exactly what they had invented.

Meanwhile, early nineteenth-century cases often discussed the unpatentability of "principles." Modern interpretations view these as important cases defining what types of inventions can be patented.[15] Part I discusses how vague and ambiguous patents are relevant to early judicial discussion of principles. In conjunction with misplaced reliance on English law, the patents suggest a different interpretation of "principles" in these cases. In other words, patentable subject matter jurisprudence developed in a way that was not necessarily intended by the First Congress.

Early judicial decisions relied heavily on English law to interpret U.S. law, but the English patent statute was different than the U.S. patent statute in important ways. As a result, there was a disconnect between how patentees described their inventions and how some judges (and one important judge[16]) viewed patents. Additionally, judicial discussion of principles almost never related to attempts to patent natural phenomena, but instead related to patent construction—determining what the inventor wanted to exclude others from doing. By assuming that the patent was *not* for an abstract or natural principle, courts could better determine what the patent did cover. As a result, we should reconsider how we understand early subject matter discussion.

Part II summarizes the types of inventions early patentees sought, including the United States Patent and Trademark Office (USPTO)

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13. Future work might examine families of patents for novelty and obviousness issues, though such issues are more difficult given the lack of patent examination or prior art searching. *See* Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J.L. & TECH. 179, 200 (2007) ("Moreover, because the applicant is not required to search for prior art, the initial claims represent what the patentee thinks *might* be novel and nonobvious.").

14. Patent Act of 1836, ch. 357, § 5, 5 Stat. 117 (amended 1870, repealed 1952) [hereinafter 1836 Patent Act] ("[S]pecifying what the patentee claims as his invention or discovery.").

15. *See, e.g.*, Sarnoff, *supra* note 2.

16. Justice Joseph Story had an outsize influence on patent law. *See infra* notes 123–24, 127–28, 143–44 and accompanying text.

technology classifications. This Part discusses several exemplary patents in detail to illustrate what inventors were working on during the first fifty years of the patent system. Lead paint and asbestos abounded, but there were also many important inventions. As might be expected, early patents covered technology very different from today's patents. However, several patents described business methods and one even covered rudimentary "software."[17]

This leads to the second insight: we should reconsider how we view technological change in the patent system. For example, assuming that new types of technology should be suspect until Congress acts would be far too limiting. Congress could not have foreseen the patents that inventors sought a few years after our nation's founding, let alone during the last hundred years. Further, interpreting patent laws to cover "technology" only would outlaw many patents—and not just business methods—that our first inventors thought were proper patentable subject matter.

Part III presents a surprising rebuttal to those who believe that the "machine-or-transformation test" is engrained in the American inventive ethos. This test requires that, to be patentable subject matter, a claimed process must either be performed by a machine or transform matter into a different state. Though the U.S. Court of Appeals for the Federal Circuit formally introduced this test in 2008,[18] courts and scholars present it as a "historical" limitation on patentable subject matter.[19]

Examination of the first fifty years of patents shows that about 40% of patented processes would have failed the machine-or-transformation test, whether or not the patents were tested by the Patent Office. In other words, many methods patents did not involve a machine and did not transform matter into a different state or thing. Neither inventors nor gatekeepers objected to patents that would fail today's test.

This leads to the third insight: the machine-or-transformation test, which is currently a rule of thumb to determine whether methods may be patented, should be reconsidered. At the very least, it should not be touted as a historically applicable test.

The Article concludes with some thoughts about how America's first patents should refocus the debate toward solving modern problems

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17. *See infra* Section II.F.

18. *In re* Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008), *aff'd but criticized sub nom.* Bilski v. Kappos, 130 S. Ct. 3218 (2010).

19. *Id.*; *see also* Peter. S. Menell, *Forty Years of Wondering in the Wilderness and No Closer to the Promised Land:* Bilski*'s Superficial Textualism and the Missed Opportunity to Return Patent Law to Its Technology Mooring,* 63 STAN. L. REV. 1289, 1295 (2011); Sarnoff, *supra* note 2.

with modern considerations rather than relying on a false sense of history.

I. INTERPRETING AMERICA'S FIRST PATENTS

This Part discusses how we identified and went about understanding early patents. Interpreting patents, it turns out, was no small feat due to the peculiar way in which inventors wrote patents at the time. Patents today, many of which people claim are too vague, have nothing on our first patents.[20] Indeed, much of the subject matter jurisprudence of the time was an attempt to determine what the patentee was actually attempting to protect with the patent.

As one might expect, reliance on history decreases as time goes on. A brief treatise citation study by the author illustrates scholarly emphasis on modern patent treatises. The most cited treatise, *Chisum on Patents*,[21] first appeared in 1983 and has garnered 1,281 citations in Westlaw's JLR database.[22] Next is *Walker on Patents*[23] (1883–present), with 425 citations. Following are *Robinson on Patents*[24] (1890), with 264 citations; *Curtis on Patents*[25] (1849–1873), with 76; *Phillips on Patents*[26] (1837), with 30; and *Fessenden on Patents*[27] (1810 and 1822), with 18.

Declining reliance on history is detrimental when considering patentable subject matter, a topic that so many us history to support their position. For example, caselaw barely considers the history of the types of inventions patented at our nation's founding, yet routinely pronounces rules based on historic requirements.[28] Apparently, until

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20. William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755, 757–58 (1948); *see also* Karl B. Lutz, *Evolution of the Claims of U.S. Patents*, 20 J. PAT. OFF. SOC'Y 134, 139–41 (1938). *But see* Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. PA. L. REV. 1743, 1746–47 (2009) (arguing that current claiming methodology leaves patent scope uncertain, and that a return to "central" claiming might improve patent clarity).

21. DONALD S. CHISUM, CHISUM ON PATENTS (Matthew Bender ed. 2011).

22. Citations counted on January 3, 2012. Results in HeinOnline were similar.

23. R. CARL MOY, MOY'S WALKER ON PATENTS (4th ed. 2011).

24. WILLIAM C. ROBINSON, THE LAW OF PATENTS FOR USEFUL INVENTIONS (1890)).)

25. GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS, AS ENACTED AND ADMINISTERED IN THE UNITED STATES OF AMERICA (4th ed., Lawbook Exch. 1873).

26. WILLARD PHILLIPS, THE LAW OF PATENTS FOR INVENTIONS; INCLUDING THE REMEDIES AND LEGAL PROCEEDINGS IN RELATION TO PATENT RIGHTS (American Stationers' Co. 1837).

27. THOMAS G. FESSENDEN, AN ESSAY ON THE LAW OF PATENTS FOR NEW INVENTIONS (D. Mallory & Co. 1810);1810) [hereinafter FESSENDEN (1810)]; THOMAS GREEN FESSENDEN, AN ESSAY ON THE LAW OF PATENTS FOR NEW INVENTIONS (Charles Ewer 2d ed. 1822) [hereinafter FESSENDEN (1822)].

28. For example, the earliest case cited by *Gottschalk v. Benson*, 409 U.S. 63 (1972), to

twenty-five years ago, most people did not even know patent data were available for the period before 1836.[29]

The primary early references that modern observers rely on are Jefferson's views of patents from the early 1800s; however, his thoughts may not be an accurate reflection of historical views about patents, and his contemporary influence is largely overstated.[30] Thus, examining early mainstream patent activity may supplement current views of history, especially in the area of patentable subject matter.

A. *Locating the Patents*

We began with an index of all historical patents, which is provided in a publicly available spreadsheet.[31] All of the patents that issued from 1790–1836 are known as "X" patents because they were not numbered; the USPTO retroactively renumbered them starting with X1.[32] The first patent to issue under the examination system in 1836 restarted at Patent No. 1.

The index we used listed 9,986 X patents, because several patents were assigned duplicate numbers.[33] A fire at the Patent Office in 1836 destroyed many of these patents. Many others were missing from available databases even though they were listed as not having been destroyed.[34] Still others were simply illegible. In the end, we coded

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define "transformation" was issued in 1853, as discussed *infra* at note 105. *See* Bilski v. Kappos, 130 S. Ct. 3218, 3246 (2010) (Stevens, J., dissenting) (citing cases outlawing business method patents beginning in 1893).

29. *See* Robert R. MacMurray, *Technological Change in a Society in Transition: Work in Progress on a Unified Reference Work in Early American Patent History*, 45 J. ECON. HIST. 299, 299 (1985).

30. Kenneth J. Burchfiel, *Revising the "Original" Patent Clause: Pseudohistory in Constitutional Construction,* 2 HARV. J.L. & TECH. 155, 166 (1989) ("Jefferson's unheeded proposals for restriction, if not elimination, of the intellectual property power indicate that his opinions were shared neither by the framers of the Constitution nor by the Congress that drafted the Bill of Rights."); Mossoff, *supra* note 1, at 959 ("[T]he Jeffersonian story of patent law is at best a half-truth—at worst, it is an outright myth."); Walterscheid, *supra* note 4, at 311 (remarking that "only in the twentieth century has the Supreme Court seen fit to consider Jefferson as an oracle regarding the early interpretation of the patent law.").

31. *See* Jim Shaw, *Historical Patent and Trademark Databases*, PATENT AND TRADEMARK DEPOSITORY LIBRARY ASSOCIATION, http://www.pdtla.org/history (last visited March 23, 2012); *see also* HENRY L. ELLSWORTH, A DIGEST OF PATENTS, ISSUED BY THE UNITED STATES, FROM 1790 TO JANUARY 1, 1839 (1840).

32. *See* Teresa Riordan, *Lawyers Unearth Early Patents*, N.Y. TIMES, Aug. 9, 2004, http://www.nytimes.com/2004/08/09/technology/09patent.html; http://www.archives.gov/research/guide-fed-records/groups/241.html (last visited, Jan. 5, 2012)..

33 The last X patent is X9903.

34. MacMurray, *supra* note 29, at 300 (noting that National Archive index is inaccurate).

summary data (such as date and technology class) for about 2,525 of the X patents, and coded patent content for 2,480 of them.[35]

Additionally, we read the first 1,200 patents issued beginning in mid-1836 (fifteen of which were not found in the USPTO database). The last of these patents issued in mid-1839, providing three years of experience under the new examination system, and allowing for issuance of virtually all patents applied for prior to the move to an examination system.

To read and code the patents, we first located images of the patents using two sources—either the USPTO website[36] or the Google patents database.[37] Both sources largely overlapped, but there were a few instances where one database included a patent unavailable in the other. For some patents beginning in the late 1820s, we also consulted the *Journal of the Franklin Institute*,[38] which often had summaries of issued patents or even printed versions of specifications that were only handwritten in Patent Office records. We also found additional patent specifications in online archives, in court opinions and records, and in secondary sources. We recorded the current U.S. patent classification for each patent, which was available on the USPTO website.

B. *Central Claiming and Ambiguous Patents*

To test the history of methods patenting, we attempted to determine whether each patent claimed a method as opposed to a thing. This was not always easy for two reasons. First, some patents were barely legible, and some included drawings that seemed to contradict their descriptions in the index. We labored to determine whether a method was being claimed, but erred against finding a method if we could not tell.

Second, many patents did not contain any "claims" as we know them now because claims were not required prior to 1836.[39] Indeed, some of the earliest patents did not even contain full specifications, but instead only set forth condensed "schedules" that described the inventions.[40]

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35. We also noted several patents that are inaccurately recorded on available lists.

36. *Search for Patents*, U.S. PATENT & TRADEMARK OFFICE, http://www.uspto.gov/patents/process/search/ (last visited July 3, 2012).

37. GOOGLE PATENTS, www.google.com/patents/ (last visited July 3, 2012).

38 The Franklin Institute was founded in 1824 to advance the "mechanic arts," and its journal was first published in 1826. http://www2.fi.edu/shared/history.php (last visited July 5, 2012). The journal continues today as a peer-reviewed academic journal.

39. *See* Joseph S. Cianfrani, *An Economic Analysis of the Doctrine of Equivalents*, 1 VA. J.L. & TECH. 1, ¶¶ 5–8 (1997) (discussing history of claims requirement).

40. WALTERSCHEID, *supra* note 9, at 297.

As time went on, though, many patents included both specifications and claims. Contrary to conventional wisdom that patentees did not include claims in their patents before 1836, specific claim language such as "I claim" and "I do not claim" appeared in patents much earlier.[41] Such language predated the statutory requirement[42] in large part due to early cases that required patentees to identify the parts of their machines that made them distinct from prior art.[43] Even so, many did not include such helpful language.

Further, even when claims were included, early patents used what is now called "central claiming." Unlike peripheral claims of today,[44] which attempt to define the exact boundaries of a patentee's claim in a patent, central claims described the general nature of the invention and left it to readers (and the courts) to determine the exact boundaries the patent protected.[45]

The *Journal of the Franklin Institute* describes one such patent, Patent No. X9,472, to Nathan Lockling on March 4, 1836. It notes, "This improvement is, to us, truly transcendental; or, in other words, we are unable to follow out the intention of the inventor, even with the aid of a well executed drawing . . . 'We give it up.'"[46] Justice Bushrod Washington, sitting as a circuit justice, described another: "How then can any human being, however skilful in the art, find out, with certainty, or even conjecture, in what the improvement consists, from the patent

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41. *See id*. 41. WALTERSCHEID, *supra* note 9, 41.*See id*.at 7 n.14 (citing pre-1836 patent which included claims); *see also* Lutz, *supra* note 20, at 138–40 (discussing history of claiming from 1790 through 1938); Woodward, *supra* note 20, at 758–60 (attributing "I claim" to Robert Fulton in 1811, and arguing that claims were routinely used before 1836).

42. WALTERSCHEID, *supra* note 9, at 258 (discussing 1828 Patent Office rules recommending use of "I claim" at end of specification).

43. *See, e.g.*, Evans v. Eaton, 20 U.S. 356, 435 (1822) (holding that inventor "ought to describe what his own improvement is, and to limit his patent to such improvement"); Wyeth v. Stone, 30 F. Cas. 723, 727 (C.C.D. Mass. 1840) (No. 18,107); Woodcock v. Parker, 30 F. Cas. 491, 492 (C.C.D. Mass. 1813) (No. 17,971) (explaining that patent for whole machine will only issue if machine is new; otherwise the patent must be confined to improvement); Whittemore v. Cutter, 29 F. Cas. 1120 (C.C.D. Mass. 1813) (No. 17,600). Even when patentees included claims, they were still subject to invalidation for failure to identify the improvement. *Evans*, 20 U.S. at 435.

44. The Patent Act of 1870 was the first to require specific identification of claim boundaries. Patent Act of 1870, ch. 230, § 26, 16 Stat. 198–217 (requiring inventor to "particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery"). Like claiming generally, peripheral claiming predated the statute. Lutz, *supra* note 20.

45. Burk & Lemley, *supra* note 20, at 1746 (describing central claiming approach to patents).

46. *List of American Patents Which Issued in March, 1836, with Remarks and Exemplifications by the Editor*, 18 J. FRANKLIN INST. 312, 320–21 (1836), *available at* http://books.google.com/books?id=IulIAAAAMAAJ&pg=RA1-PA320.

itself, or from the records in the patent office? . . . . As the matter stands, the nature of the improvement is altogether unintelligible."[47]

Central claiming yields some interesting patent language that looks foreign to modern readers. Today, one claims the specific elements of a machine or steps in a process, such as, "I claim a pencil, comprising a graphite writing component embedded in wood." Central claiming, instead, often listed the things that the patentee wished to exclude others from doing. Thus, the pencil claim might read, "I claim the right to exclude others from making pencils by embedding graphite writing components into wood." As a practical matter, both patents exclude the same thing—anyone making a pencil with graphite embedded in wood infringes. However, the central claim looks a lot like a method patent of today, appearing to claim the method of making a pencil, rather than the pencil itself.[48] This leads to ambiguity about how to treat downstream sellers and users of the pencil because they did not actually practice the method, nor did the patentee seek to exclude them.

A real example is illustrated in Patent No. X3,130, to Jethro Wood on September 1, 1819: "In the first place, the said Jethro Wood claims an exclusive privilege for *constructing* the part of the Plough . . . called the mould-board, *in the manner hereinafter mentioned*."[49] This patent could be for the mouldboard with the described configuration, or for the process of manufacturing a mouldboard in a particular manner.[50]

To complicate matters, both the 1793 and the 1836 Patent Acts required inventors of machines to specifically identify the principles that made their machines novel.[51] Prior English cases held that manufactures were patentable but methods were not.[52] Thus, as

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47. Isaacs v. Cooper, 13 F. Cas. 153, 154 (C.C.D. Pa. 1821) (No. 7,096).

48. Using and selling the pencil was still infringement in 1793, but claiming only the making of the pencil might have actually limited the patent.

49. FRANK GILBERT, JETHRO WOOD, INVENTOR OF THE MODERN PLOW 22 (1882) (first emphasis added), *available at* http://books.google.com/books?id=wnIoAAAAYAAJ.

50. Based on the specification, which is amusingly verbose, we coded this particular patent as both a method and a manufacture. The patent issued a mere seventeen days after Wood signed his application. Jethro Wood was well-known for his invention of a plow with replaceable parts. *See id.*

51. Patent Act of 1793, ch. 11, § 3, 1 Stat. 318–323 (repealed 1836) [hereinafter 1793 Patent Act] ("And in the case of any machine, he shall fully explain the principle, and the several modes in which he has contemplated the application of that principle or character, by which it may be distinguished from other inventions"); 1836 Patent Act § 6 ("[I]n case of any machine, he shall fully explain the principle and the several modes in which he has contemplated the application of that principle or character by which it may be distinguished from other inventions . . . .").

52. Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550–1800*, 52 HASTINGS L.J. 1255, 1311–12 (2001) (citing Dollond's Case, 1 Carp. P. C. 28, 30 (C.P. 1758) and Boulton & Watt v. Bull, (1795) 126 Eng. Rep. 651 (C.P.) 662; 2 H. Bl. 463,

discussed further below, early discussion of principles may have been equated with "methods," such that discussions about principles of machines were really discussions about methods of machine operation. Methods of machine operation would usually be considered a "process" now, especially given the expansive definition of "process" in the current patent statute.[53]

Additionally, many inventors claimed improvement in the "art of manufacturing" or the "mode of performing action." It is universally accepted today that the word "process" in the current patent act[54] replaced the word "art" in prior patent acts.[55] Conventional usage also implies that "mode" means process.[56] However, the patentees we studied did not seem to have the same views. In many patents, "art" and "mode" improvements related to machines that were intended to improve processes,[57] and patentees rarely *also* described or claimed use of the machines as separate process inventions. But sometimes they did, which introduced further difficulty.

As a result of all these conventions, many patents simply describe how to make and use a product without actually stating whether the steps for making and using the product were the new process or whether the product itself was the new machine or manufacture. This practice made it very difficult to determine what it was that the inventors actually thought they had invented. They may have thought they had invented new machines, new ways in which a machine might work, new ways to make things using new and old machines in a different way, or perhaps all three.

While some patents appeared to be methods of using new (or old) machines, most did not. Following *Corning v. Burden*,[58] we treated

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485); WALTERSCHEID, *supra* note 2, at 356.

53. *See* 35 U.S.C. § 100(b) (2011) ("[P]rocess means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material" (internal quotation marks omitted).

54. *Id.* at § 101; H.R. REP. NO. 82-1923, at 6 (1952); P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. 1 (West 1954), *reprinted in* 75 J. PAT. & TRADEMARK OFF. SOC'Y 161, 176–78 (1993).

55. 1790 Patent Act § 1. As noted above, however, "art" may well have been narrower than "process" in common parlance.

56. *See, e.g.*, DICTIONARY.COM, http://dictionary.reference.com/browse/mode ("(defining "mode" as "("a manner of acting or doing; method; way").

57. The 1793 and 1836 Patent Acts make clear that disclosure is required of "the several modes in which he has contemplated the application" of a machine. Indeed, today's "best mode" requirement is a vestage of this historical language, even though that term is used to apply to all types of inventions, including processes. *See* 35 U.S.C. § 112 (2006).

58. 56 U.S. 252, 268 (1854) (holding that claim pertained to specific machine, not general process used by machine: "[I]t is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it. . . . It is clear that

most claims as non-methods unless it was clear that that the invention was a process and not just a thing. In *Corning*, the patentee[59] described a new process for making iron puddlers' balls (which were known) by using a new machine. He claimed "[t]he preparing of the puddlers' balls . . . by causing them to pass between a revolving cylinder and a curved, segmental trough adapted thereto, constructed and operating substantially in the manner of that herein described . . . ."[60] His claim was not so narrow, though. He also claimed the formation of puddlers' balls by "causing the said balls to pass between vibrating, or reciprocating, tables, surfaces, or plates, of iron . . . or between vibrating, or reciprocating, curved surfaces, operating upon the same principle, and producing a like result by analogous means."[61]

The United States Supreme Court held, however, that the claim could not be for a process.[62] Instead, the Court determined that a patentable process is very narrow, and—surprisingly—that a process could *not* be achieved with a machine:

> 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, and it will include all methods or means w*hich are not effected by mechanism or mechanical* [combinations].[63]

Because Burden did not claim to discover the "process" of purifying iron, but only claimed to invent the "mechanism," the Court limited his patent to the machine.[64] Interestingly, *Corning* militates directly against

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Burden does not pretend to have discovered any new process by which cast iron is converted into malleable iron[.]").

59. Patent 1890, to Henry Burden on Dec. 10, 1840.

60. *Id*. at p. 2 (col. 4:lns 47-54).

61. *Id.* (col. 4:lns 55-63).

62. *Corning*, 56 U.S. at 267–68.

63. *Id.* at 268 (emphasis added).

64. *Id.* at 269. Another case, decided a year earlier, included similar language. Le Roy. Tatham, 55 U.S. 156, 175 (1852) ("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."). *Le Roy* related, as so many cases did, to interpreting the patent; the majority held that the patent was for machinery while the defense claimed that the patent was for a method of making pipe. *Compare id*. at 176 ("The combination of the machinery is claimed, through which the new property of lead was developed, as a part of the process in the structure of the pipes."), *with id.* at 179 (Nelson, J., dissenting) ("They do not claim, as their invention or improvement, any of the parts of the machinery, independently of the arrangement and combination set forth.").

a historical requirement that processes must use a machine to be patentable; *Corning* holds the exact opposite.

Despite the fact that it is cited for its holding with respect to limitations on patentability,[65] *Corning* was really about interpreting the patent, and it would surely be decided differently today. Perhaps the Court should have decided *Corning* differently at the time;[66] in *Expanded Metal Co. v. Bradford*, for example, the Supreme Court ruled that a patentable process could include mechanical operations.[67] Further, the 1952 Patent Act defines processes to include new uses of machines.[68]

Nonetheless, *Corning* reflects other cases that patentees from the time may have relied on,[69] so we used *Corning* as a basis to err on the side of *not* finding methods where a patentee claimed to effectuate some end using a particular device, without making clear whether the patentee was claiming a new method.

This was not the only patent where Burden claimed a machine for performing a method. For example, Patent No. X8,515, to Henry Burden on December 12, 1834, states, "What I claim as my invention and improvement is the method of forming the heads of nails or spikes in a steel box as above described." However, the introductory language states that the patent is for "a new and useful improvement in the machinery for manufacturing wrought nails or spikes." The diagrams included with the patent are titled: "Machine for heading spikes and nails." We coded this as a machine rather than a method. We called this, and patents like it, a "machine that does it" patent—the claim appears to be for a method, but the method is simply the intended operation of the machine.

In many cases, introductory language such as "[s]pecification of a method of Making . . ."[70] made it easier to determine whether the inventor intended to patent a process. The well-known case *Merrill v.*

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65. *See, e.g.*, Gottschalk v. Benson, 409 U.S. 63, 69 (1972). *But see*, Michael Risch, *Everything is Patentable*, 75 TENN. L. REV. 591, 601 (2008) (arguing that *Corning* is misconstrued as subject matter case).

66. As discussed further below, *Corning* incorrectly followed the English tradition of squeezing all methods into manufactures, because methods were not patentable in England.

67. 214 U.S. 366 (1909).

68. 35 U.S.C. § 100(b) (2006).

69. *See e.g.*, Whittemore v. Cutter, 29 F. Cas. 1123 (C.C.D. Mass. 1813) (No. 17,600) ("[I]f new effects are produced by an old machine in its unaltered state, I apprehend that no patent can be legally supported; for it is a patent for an effect only.").

70. U.S. Patent No. X1,921 (granted May 6, 1813). *Compare with* U.S. Patent No. X2,143 (granted May 27, 1814) ("The invention of this improvement in the manufacturing of scythes being a machine . . . .").

Yeomans illustrates helpful specification and claim language.[71] In *Merrill*, the patentee claimed "the above-described new manufacture of hydrocarbon oils, . . .by treating them substantially as is hereinbefore described."[72] The Court held that this was a claim for a particular method of creating the oils, and not for the oils themselves; this ruling allowed others to create the same oils by another method without infringing. The Court reached this conclusion for two primary reasons. First, the claim refers to the process "hereinbefore described." Second, the specification refers to the invention as the method, and not as the oils themselves.[73]

For example, Patent No. X1,865[74] in this study was for an "improvement in the manufacturing of Pitch Forks."[75] The patent first states that: "The characteristic principle is . . . that temper given to steel for a proper spring."[76] But then the inventor states: "The forks being made . . ." and describes a multi-pronged fork made with round or square metal of any material that can be tempered.[77] Finally, the inventor describes that "[i]t is to be tempered in the following manner . . ." and that is all there is to the patent.[78] After describing the tempering process, the patent specification ends without a claim or clarification. This patent is ambiguous—it could be for pitch forks made from spring-tempered steel, or it could be for the method of making pitch forks made from spring-tempered steel.

Because of the introductory language, we coded this as a method despite our leaning toward finding non-methods. First, the introduction makes clear that it is an improvement in manufacturing, not an improved manufacture. Second, the "characteristic principle" is the tempering, as there were surely pitch forks at this time. Thus, this is a better way to make a known thing by tempering the metal.[79] Of course, the patentee implies that spring tempering was already known, so it was probably obvious to spring temper pitch fork tines, but that is not our concern here.

Similarly, Patent No. X109, to Benjamin Tyler on April 15, 1796, states the patent is for a "discovery . . . of an improvement in the mode

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71. 94 U.S. 568 (1876) (determining whether patent claim covered method of manufacture or manufacture itself).

72. *Id.* at 571 (internal quotation marks omitted).

73. *Id.* at 571–72.

74. U.S. Patent No. X1865 (granted Jan. 12, 1813).

75. *Id.*

76. *Id.*

77. *Id.*

78. *Id.*

79. We also found that this did not transform matter to a different state or thing, as the tempered steel is still steel.

of cleaning . . . all manner of grain, a description of the machine invented . . . ."[80] The patent begins: "The operation of cleaning is performed, by first . . . ."[81] What follows is a description of how the machine cleaned the grain. We coded this both as a machine and as a method using a machine.

C. *Finding Business Methods*

We then determined whether methods used a machine or involved a transformation of matter to a different state or thing. We defined "machine" broadly, including essentially anything with moving parts.

Determinations of transformations were more difficult, as some have argued that just about anything can be a transformation, including the motion of a curve ball.[82] We did not use such a broad definition because the Federal Circuit did not do so when it announced the machine-or-transformation test. The court was explicit that a claimed process must transform a particular article into a different state or thing to satisfy the transformation prong of the test.[83]

Thus, two Supreme Court precedents guided us. The first case is *American Fruit Growers, Inc. v. Brogdex Co.*, which held that an orange dipped in borax was *not* a new manufacture despite the preservative nature of the combination.[84] The Court held that such a treatment left the orange no different than it was.[85]

The second case is the one on which the Federal Circuit relied, *Gottschalk v. Benson*, which discusses transforming an article to "a different state or thing."[86] In *Gottschalk*, the Supreme Court quoted examples of processes described in *Corning v. Burden*,[87] and noted: "Those are instances, however, where the use of chemical substances or

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80. U.S. Patent No. X109 (granted April 15, 1796).

81. *Id.*

82. *See* Gerald N. Magliocca, *Patenting the Curve Ball: Business Methods and Industry Norms*, 2009 BYU L. REV. 875, 876 (2009).

83. *In re* Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008), *aff'd but criticized sub nom*. Bilski v. Kappos, 130 S. Ct. 3218 (2010).

84. 283 U.S. 1, 14 (1931).

85. *Id.* at 11–12 ("Addition of borax to the rind of natural fruit does not produce from the raw material an article for use which possesses a new or distinctive form, quality, or property . . . . It remains a fresh orange, fit only for the same beneficial uses as theretofore."). There were process claims at issue in *Brogdex*, but the Court assumed them to be patentable. *Id.* at 13. *See also* Gen. Elec. Co. v. De Forest Radio Co., 28 F.2d 641, 643 (3d Cir. 1928) (holding that tungsten was not patentable when it retained its basic features when purified).

86. 409 U.S. 63, 71. (1972).

87. 56 U.S. 252, 267–68 (1853) ("One may discover a new and useful improvement in the process of tanning, dyeing, &c., irrespective of any particular form of machinery or mechanical device.").

physical acts, such as temperature control, changes articles or materials."[88]

The *Gottschalk* Court further analyzed five cases to define "transformation": *Cochrane v. Deener*,[89] *Tilghman v. Proctor*,[90] *Expanded Metal Co. v. Bradford*,[91] *Smith v. Snow*,[92] and *Waxham v. Smith*.[93] *Cochrane* related to a process in which flour was ground into a fine powder.[94] *Tilghman* involved a chemical interaction between fat and water.[95] *Expanded Metal* considered whether a process could be patentable even if performed by a machine, and allowed patentability of processes involving "mechanical operations."[96] Furthermore, in *Expanded Metal*, the metal was cut and stretched so as to form a lattice,[97] and was thus transformed into something different. *Smith v. Snow* and *Waxham v. Smith* were related cases in which eggs were incubated and hatched,[98] creating a new life form. All of these cases involved transformation of matter to a different state or thing; none of them involved esoteric transformations such as curveballs.

The implication of the *Brogdex* and *Gottschalk* Courts' discussions is that "transformation" means a chemical or mechanical change to a different state or thing and not just a combination of two things without any such change or a treatment that leaves something the same as it was. Accordingly, there are several patents that we did *not* code as transformations because they left the products unchanged.

Finally, we coded for business methods. We did not limit ourselves to information patents only, but instead included all patents that were not particularly technological, which swept in patents such as a method for exercise using a rocking chair. Most business methods we found dealt with ways to manipulate information, including methods of measurement, writing or drawing, or teaching.

The methodology discussed above should make clear that while the coding methodology is reproducible and not entirely subjective, there is

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88. *Gottschalk*, 409 U.S. at 69.
89. 94 U.S. 780 (1876).
90. 102 U.S. 707 (1880).
91. 214 U.S. 366 (1909).
92. 294 U.S. 1 (1935).
93. 294 U.S. 20 (1935).
94. *Cochrane*, 94 U.S. at 785.
95. *Tilghman*, 102 U.S. at 729.
96. *Expanded Metal*, 214 U.S. at 385–86. Note that the Court did not rule that a transformation to a different state or thing was required; its discussion of examples used in precedent (like a process for folding paper) implied that it was an open question, but that it need not reach an answer. *Id.* at 384–85.
97. *Id*. at 374.
98. *Smith*, 294 U.S. at 3; *Waxham*, 294 U.S. at 22–23.

room to nitpick about coding particular patents. However, changing a few categorizations should not affect the results of the study significantly. The number of observations and percentages in each category are sufficient to support this Article's conclusions.

D. *Insights from Interpreting Early Patents*

The ambiguous nature of early patent "claiming" leads to an important insight about how to interpret judicial opinions and commentary from the period. Most early cases stating that "principles" are not patentable were not patentable subject matter opinions; instead, they were attempts to determine what the patent covered.[99] In short, judges were often not opining as to what could be patented in general; they were trying to determine what *was* patented in a particular case.

Specific cases will be discussed below, but trouble understanding vague or ambiguous patenting was not limited to judges. For example, Patent No. X5,451, to Luther Davis on April 14, 1829, is titled "manner of mortising and making tenons on the ends of the spokes of wheels . . .. . . where a square or quadrangular mortice and tenon have heretofore been used." The patent shows a hollow boring device used to make round pegs that fit into round holes, rather than square joints. The *Journal of the Franklin Institute* reported on the patent, stating:

> No particular claim is made. Instruments similar to the hollow auger have been in use from a remote period, and as no particular structure, or indeed any structure, of the auger is described, the patent, of course, is not for this; for what it is, we must leave others to determine.[100]

This insight connecting principles to patent construction is important for understanding modern patentable subject matter debates. The supposed long-standing refusal by courts to patent natural principles[101] is not supported by historical statements and practices of courts. Historic statements that principles are not patentable seem to have been a side issue, rather than a direct consideration of the nature of patentable subject matter.[102]

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99. *See* Burk & Lemley, *supra* note 20, at 1768 (noting connection between "principles" cases and early central claiming style.).

100. 3 *List of American Patents Granted in April, 1829, With Remarks and Exemplifications, by the Editor*, 4 J. FRANKLIN INST. 42, 56 (1829), *available at* http://books.google.com/books?id=d7pIAAAAMAAJ&pg=RA1-PA56.

101. *See, e.g.*, Bilski v. Kappos, 130 S. Ct. 3218, 3225 (2010) ("[T]hese exceptions have defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years.").

102. *See* Risch, *supra* note 65, at 612–21 (discussing repetition of judicial statements about

1. Principles in English Common Law

Early judicial reliance on English law to interpret American patent law emphasized non-analogous statutory language, and continues to create historical confusion when those cases are read today. Early nineteenth-century cases and treatises that referred to the unpatentability of principles in the English common law miss an important difference from American law: methods were patentable in the United States, but not in England.[103] The English Statute of Monopolies only extended to "manufactures."

Because methods were not patentable in England, a patent that described a new process to make an old thing or any process that found a new use for an old thing was suspect.[104] Furthermore, this meant that any patent claiming such a method was consistently compared with principles. The case of *Boulton v. Bull* is illustrative.[105] There, the court struggled with the treatment of James Watt's steam engine because the patent called the invention a "method."[106] Justice Eyre discussed methods patents, like a method of preventing fire by putting iron plates in a building:

> Now let the merit of the invention be what it may, it is evident that the patent in almost all these cases cannot be granted for the means by which it acts, for in them there is nothing new, and in some of them nothing capable of appropriation. . . . In *Hartley's case* [of preventing fires], it could not be for the effect produced, because the effect . . . is merely negative, though it was meritorious. . . . [T]here are several [patents] for new methods of manufacturing articles in common use, where the sole merit and the whole effect produced, are the saving of time and expence, and thereby lowering the price of the article . . . [Y]et the validity of these patents . . . must rest upon the same foundation as that of Mr. Hartley's. The patent cannot be

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natural principles that were never applied to invalidate a patent).

103. Mossoff, *supra* note 52, at 1311–12 (discussing that the debate in *Boulton & Watt v. Bull* was in part about whether patent covered manufacture, which was patentable at the time, or method, which was not); WALTERSCHEID, *supra* note 2, at 356.

104. *See* Boulton & Watt v. Bull, (1795) 126 Eng. Rep. 651 (C.P.) 666; 2 H. Bl. 463, 492–93 (Eyre C.J.) ("Upon this ground *Dollond's* patent was perhaps exceptionable, for that was for a *method* of producing a new object glass, rather than being the object glass produced. If Dr. *James's* patent had been for his *method of preparing* his powders, instead of the *powders themselves*, that patent would have been exceptionable upon the same ground.").

105. *Id*.

106. *See generally id.* (discussing whether a method could be patented as if it were a completely new invention).

> for the effect produced, for it is either no substance at all, or . . . no new substance, but an old one, produced advantageously for the public. It cannot be for the mechanism, for there is no new mechanism employed. It must then be for the method; and I would say . . . it must be for method detached from all physical existence whatever.[107]

It appears that Justice Eyre was criticizing Justice Buller's apparent view in the same case that anything that was not a new manufacture was necessarily an unpatentable method.[108] Eyre seems to disagree somewhat. Nonetheless, this quote illustrates two points. First, for at least some British judges, there was no middle ground. Either the patent was *for* a thing or *embodied in* a thing, which was patentable, or it was for *nothing*, and thus unpatentable. A method was necessarily "detached from all physical existence whatsoever." Any patent that did not embrace a thing was necessarily an unpatentable principle.

Second, it illustrates that British courts discussed principles with respect to patent construction just as American courts did later. As Justice Eyre later noted in upholding Watt's patent:

> An improper use of the word principle in the specification set forth in this case, has I think, served to puzzle it. Undoubtedly there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent.[109]

Even as English courts warmed to the idea that a method *might* be patentable despite not making something new, the judges continued to define abstract principles in terms of things that were not manufactures.[110] This meant that patentability turned on whether the

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107. *Id.* at 666–67; 2 H. Bl. at 4994 (Eyre C.J.).

108. *Id.* at 663; 2 H. Bl. at 486 ("The method and the mode of doing a thing are the same: and I think it impossible to support a patent for a method only, without having carried it into effect and produced some new substance.") (Buller J.).

109. *Id.* at 667; 2 H. Bl. at 495 (Eyre C.J.). The quote continues: "It is not that the patentee has conceived an abstract notion, that the consumption of steam in fire engines may be lessened, but he has discovered a practical manner of doing it . . . Surely this is a very different thing from taking a patent for a principle; it is *not for a principle*, but *for a process*." *Id.* at 667; 2 H. Bl. at 495–96.

110. Rex v. Wheeler, (1819) 106 Eng. Rep. 392 (K.B.) 394–95; 2 B. & Ald. 345, 349–50 (Abbott C.J.) ("Now the word "manufactures" has been generally understood to denote either a thing made, which is useful for its own sake, and vendible as such, . . . or to mean an engine or

method was really a manufacture, which turned on "production" from the application of principles using some specific equipment. Fortunately for patentees, courts were willing to consider most methods such a production.[111] As Justice Eyre noted in *Bull*: "And I think we should well consider what we do in this case, that we may not shake the foundation upon which these [valuable method-like] patents stand."[112]

This dichotomous treatment of methods as either unpatentable principles or patentable manufactures left the law in England very unclear, making it even more difficult to determine what inventors were claiming in their patents.[113]

Unlike the laws of England, which limited patents to manufactures, the Intellectual Property Clause of the U.S. Constitution authorized Congress to create laws to promote the progress of the "useful arts."[114] Thus, early American statutes[115]implicitly allowed, and today's statute[116]explicitly allows, methods even if the method was not carried out in the form of a particular machine.

Despite these fundamental differences, early American courts looked to English law for aid in construing patents, and in doing so muddled the analysis. Contemporaneous treatises demonstrate the confusion. For example, treatise author Willard Phillips devoted several

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instrument, or some part of an engine or instrument, to be so employed, either in the making of some previously known article, or in some other useful purpose. . . . Or it may perhaps extend also to a new process to be carried on by known implements, or elements, acting upon known substances, and ultimately producing some other known substance, but producing it in a cheaper or more expeditious manner. . . . But no merely philosophical or abstract principle can answer the word manufactures. Something of a corporeal and substantial nature, something that can be made by man from the matters subjected to his art and skill, or at the least some new mode of employing practically his art and skill . . . is requisite to satisfy this word. A person, therefore, who applies to the Crown for a patent, may represent himself to be the inventor of some new thing, or of some new engine or instrument.").

111. WALTERSCHEID, *supra* note 2, at 356 ("Fortunately for [Watt] two of [the judges] were prepared to accept the view that his specification taught more than merely the application of a principle of nature."); *id.* at 339 n.231 (Buller, J.) ("A patent must be for some new production from those elements, not the elements themselves.").

112. 126 Eng. Rep. at 667; 2 H. Bl. at 494.

113. WALTERSCHEID, *supra* note 2, at 356 ("If at the end of the century it had become the common law that 'any manner of new manufactures' as used in the Statute encompassed improvement inventions but did not cover principles of nature (although there would remain considerable dispute as to what constituted a principle of nature), there was mass confusion as to the extent to which this phrase covered so-called 'method' or 'process' inventions").

114. U.S. CONST. art. I, § 8, cl. 8.

115. The 1790 Act explicitly allowed improvement in the "art." 1790 Patent Act § 1.

116. 35 U.S.C. § 100(b) (2006) ("'[P]rocess' means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.").

pages to discussing the unpatentability of methods, but every case he cited for that proposition was English.[117]

Fessenden's treatise is also illustrative. Thomas Green Fessenden, himself an inventor, wrote the first American patent treatise. In his first edition, from 1810, there is no mention of a limitation on methods: "A patent may be obtained for a new invented *method* of producing a useful effect."[118] In his second edition, from 1822, Fessenden cited new American cases for the proposition that manufactures in the British statute are synonymous with "new and useful art, machine, manufacture or composition of matter"[119] He also removed the statement about general patentability of methods. Thus, the original understanding of the statute was narrowed based on attempts to shoehorn the American statute into the English statute.

Even as late as 1853, in *O'Reilly v. Morse*,[120] the Supreme Court cited to *Neilson v. Harford*,[121]an English case supposedly holding that principles were not patentable. But the *Neilson* court was worried about interpreting the patent as well, because it looked like a patent for a method. As Baron Parke noted:

> Then we come to the question itself, which depends on the proper construction to be put on the specification . . . . [I]t becomes necessary to examine what the nature of the invention is which the plaintiff has disclosed by this instrument. It is very difficult to distinguish it from the specification of a patent for a principle; and this at first created in the minds of some of the Court, much difficulty; but after full consideration, we think that the plaintiff does not merely claim a principle, but a machine embodying a principle, and a very valuable one.[122]

Because "method" implied "principle" in England, the *Neilson* court needed to find a machine rather than a method in order to validate the patent.[123] The patent specification describes a very specific way to carry out the method[124]—far more specific than the broad claim to all printed

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117. PHILLIPS, *supra* note 26, at 82–95.

118. FESSENDEN (1810), *supra* note 27, at 188.

119. FESSENDEN (1822), *supra* note 27, at 365.

120. 56 U.S. 62, 114 (1853).

121. (1841) 151 Eng. Rep. 1266 (Ex.); 8 M. & W. 806.

122. *Neilson*, 151 Eng. Rep. at 1273; 8 M. & W. at 823.

123. Methods were not considered patentable until 1842. *See* WALTERSCHEID, *supra* note 2, at 358, n.211.

124. *Neilson*, (1841) 151 Eng. Rep. at 1267; 8 M. & W. at 807 ("The blast or current of air

electromagnetic communications rejected in *Morse*.[125] Thus, when viewed from an "abstract" principle perspective, it is difficult to see why the *Neilson* court even entertained an argument that the patent was for a principle. However, when considered from a patent construction viewpoint—whether the patent was for a method or a manufacture—it is quite clear why the *Neilson* court discussed "principles."

In sum, it appears that American and British courts agreed on a universal rule that abstract principles like "gravity" cannot be patented. Of course, this is not surprising because such principles are not machines, manufactures, compositions of matter, or even methods. But beyond this agreement, American reliance on English law and its somewhat peculiar "manufacture only" rule led judges on this side of the Atlantic to focus on the machine or composition when discussing principles and methods.[126] Early patentees deepened the confusion by failing to make clear whether they had invented a machine or a method.[127] Even now, judicial focus on methods embodied in machines continues.[128]

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so produced is to be passed from the bellows or blowing apparatus into an air-vessel or receptacle, made sufficiently strong to endure the blast, and through and from that vessel or receptacle by means of a tube, pipe, or aperture into the fire, forge, or furnace. The air-vessel or receptacle must be air-tight, or nearly so, except the apertures for the admission and emission of the air. . . . The air-vessel or receptacle may be conveniently made of iron, but as the effect does not depend upon the nature of the material, other metals or convenient materials may be used.").

125. *Cf.* Risch, *Everything is Patentable*, *supra* note 65, at 601 (arguing that *Morse* is like *Corning*: "[I]f a particular means for achieving an end is invented, then the means may be patented, but the general end may not be patented if it is not new.").

126. Prager, *supra* note 2, at 256 (arguing that Justice Story knew that English law was different than American law, but used English law regardless in attempt to narrow meaning of "art" in statute); *see* Lubar, *supra* note 2, at 939 (arguing that Justice Story disfavored patents in his early years); *see, e.g.*, Barrett v. Hall, 2 F. Cas. 914, 925 (C.C.D. Mass. 1818) (citing English cases for proposition that "the patent should be for the combined machinery, or improvements on the old machine, and not for a mere mode or device for producing such effects, detached from the machinery," while explicitly recognizing that American statute is not as limited as English statute). I have argued elsewhere that courts attached too much weight to Justice Story's early views in the face of statutory change. *See* Michael Risch, *Reinventing Usefulness*, 2010 BYU L. REV. 1195, 1238.

127. Prager, *supra* note 2, at 257 ("Story invoked the supposed rule against 'mere principles' also when confronted with a machine patent which for some reason seemed to him too broad or vague."); *see, e.g.*, Stone v. Sprague, 23 F. Cas. 161, 161–62 (C.C.D.R.I. 1840) ("[A]lthough the language is not without some ambiguity, the true interpretation of it is, that the patentee limits his invention to the specific machinery" because patent claiming process using any machinery to achieve it would necessarily be void as abstract principle or attempt to claim future improvements others made).

128. AT&T Corp. v. Excel Commc'ns, Inc., 172 F.3d 1352, 1357–58 (Fed. Cir. 1999) ("Whether stated implicitly or explicitly, we consider the scope of § 101 to be the same regardless of the form— machine or process— in which a particular claim is drafted. . . . Thus, we are comfortable in applying our reasoning in *Alappat* and *State Street* to the method claims

The differences, though, suggest that American courts' nuance-free reliance on English cases was and is inconsistent with the letter and intent of early patent acts,[129] as well as the current one. For example, in *Howe v. Abbott*,[130] Justice Joseph Story explicitly held that new uses of known processes were unpatentable methods: "The application of an old process to manufacture an article, to which it had never before been applied, is not a patentable invention."[131]

This view was expressly rejected by the drafters of the 1952 Patent Act,[132] to make clear that patent statutes had always allowed patenting of novel uses of known processes.[133]Of course, the claimed new use must be novel and nonobvious; to some extent, cases like *Howe* are really obviousness cases at a time before nonobviousness was a patent criterion. This only exacerbates the confusion when such cases are discussed as if they are intended to limit patentable subject matter.[134]

Despite early cases' continued reference to English law, *Howe* was one of the few early American cases that invalidated a patent relying on British law. Thus, the repetition of quotations and examples from England led to steady growth of doctrine that was neither applicable nor applied to American patents in the early nineteenth century.[135] Neither

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at issue in this case."), *overruled on other grounds* Bilski v. Kappos, 130 S. Ct. 3218, 3224 (2010).

129. *Cf.* Menell, *supra* note 19, at 1294 ("The early treatise writers recognized that U.S. patent law extended to 'art' so as to avoid the problem that English courts had in according protection to manufacturing processes under a statute directed to "new manufactures.").

130. 12 F. Cas. 656, 656 (C.C.D. Mass. 1842).

131. *Id.* at 658; *cf.* Le Roy v. Tatham, 55 U.S. 156, 177 (1852) ("If it is old and well known, and applied only to a new purpose, that does not make it patentable.") (internal quotation marks omitted) (*quoting* Bean v. Smallwood, 2 F. Cas. 1142, 1143 (C.C.D. Mass. 1843)).

132. 35 U.S.C. § 100(b) (2006) (defining "process" as new use for process, machine, or manufacture, among other things).

133. H.R. REP. NO. 82-1923, at 6 (1952); Federico, *supra* note 54, at 176–78. Even the statements in *Le Roy* were reversed later in the same case. Le Roy v. Tatham, 63 U.S. 132, 139 (1859) ("If it be admitted that the machinery, or a part of it, was not new when used to produce the new product, still it was so combined and modified as to produce new results, within the patent law. One new and operative agency in the production of the desired result would give novelty to the entire combination.").

134. Risch, *supra* note 65, at 598 (arguing historic subject matter cases were really based on concerns relating to other patentability criteria); *cf.* Kristen Osenga, *Ants, Elephant Guns, and Statutory Subject Matter*, 39 ARIZ. ST. L.J. 1087, 1091–92 (2007) ("The Patent Office and some commentators are using § 101 rejections as a means to avoid tackling other policy or practical issues that should be handled through other avenues. The rejections thus serve as proxies for inquiries that are made more appropriately under other requirements of patentability, such as utility, novelty, nonobviousness, adequate written description, and enablement.").

135. Prager, *supra* note 2, at 257 ("There was nothing whatever in the statute which called for anti-method law and hardly anything very conclusive which called for the remainder of the

American inventors nor even the Patent Office believed patents were so limited; for example, the Patent Office examined the application in *Howe* under the 1836 Patent Act, yet still granted the patent.

The lasting effect of this confusion is our current misinterpretation of early American judicial discussion of principles of the invention,[136] a confusion that is evident when reading the patents that inventors actually sought, which were rarely, if ever, for truly abstract principles.[137] This misinterpretation leads many courts and commentators today to consider whether methods (and even machines) are cloaked "principles,"[138] even though they are clearly not the type of ephemeral, abstract principles that all agree are unpatentable.[139] This was not the context in the early nineteenth century,[140] and it is no

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anti-principle dicta.").

136. *See* Nicholas J. Szabo, Elemental Subject Matter 10 (Jan. 10, 2006) (unpublished manuscript), *available at* http://ssrn.com/abstract=936326 (arguing that courts should return to rule from *Neilson*).

137. It was so rare, in fact, that the first American treatise did not even mention it until courts started doing so. *Compare* FESSENDEN (1810), *supra* note 27, at 189 ("A patent may be maintained for a principle so far embodied with corporeal substances as to be in a condition to act and to produce useful effects, in any art, trade, mystery, or manual occupation."), *with* FESSENDEN (1822), *supra* note 27, at 369 ("*There can be no patent for a mere principle, or elementary truth*, but for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects, in any art, trade, mystery, or occupation, there may be a patent." (emphasis added)).

138. *See, e.g.*, Bilski v. Kappos, 130 S. Ct. 3218, 3239–40 (2010) (Stevens, J., concurring) (arguing that American subject matter principles should be based on English "backdrop" without noting differing statutory language); *id.* at 3243 (suggesting that "art" means "manufactures"); *id.* at 3246 ("But we consistently focused the inquiry on whether an 'art' was connected to a machine or physical transformation, an inquiry that would have excluded methods of doing business.").

139. Not every court looked through the physical to reject patents. Even as business methods were being viewed with more hostility, many courts upheld patents for physical objects that would likely be considered business methods today. *E.g.*, Carter Crume Co. v. Am. Sales Book Co., 124 F. 903, 903–04 (C.C.W.D.N.Y. 1903) (affirming patent for folded sales book that allowed for carbon copies); Safeguard Account Co. v. Wellington, 86 F. 146, 148 (C.C.D. Mass. 1898) (affirming account book with perforated pages to allow partial page to be used to record information on later pages); Johnson v. Johnston, 60 F. 618, 620 (C.C.W.D. Pa. 1894) (affirming patent for index book with particular alphabetical tables); Thomson v. Citizens' Nat'l Bank of Fargo, 53 F. 250, 254 (8th Cir. 1892) (affirming patent for accounting book that moved last column to next page); Dugan v. Gregg, 48 F. 227, 228 (C.C.S.D.N.Y. 1891) (affirming book with removable index); Norrington v. Merchants' Nat'l Bank, 25 F. 199, 200–01 (C.C.D.R.I. 1885) (affirming patent for checkbook that includes check register).

140. *See, e.g.*, OLIVER EVANS, EXPOSITION OF PART OF THE PATENT LAW 13 (1816) ("[T]he *fundamental* principles [e.g. gravity] may be few. We know that they cannot be invented or created by man; they have co-existed with eternity; and are *common stock,* but may be *discovered* by study and ingenuity, and variously applied to useful purposes, by labour and expense, which constitutes *inherent,* exclusive right. The mechanist knows in the application of which of them, he has discovered an improvement, to improve any art, manufacture, or

wonder that courts and commentators struggle to define patentable subject matter tests now based on inapposite law.[141]

2. Using Principles to Explain Inventions

Apart from application of non-analogous English law, early courts also tried to identify the principles of patents to determine what had been invented.[142] Early rules that the patent specification *could not* reference the drawings made this more difficult.[143]The statute required, though, that patentees describe the principles of their machine inventions.[144] The purpose, in part, was to not limit a patentee to the specific machine described in the patent specification.[145] At least two problems arose from this approach. First, patentees used new principles to develop machines that were barely different from existing machines. Second, patentees used preexisting principles applied in repurposed machines in different fields.

The courts dealt with these problems in two notable ways. First, in cases like *Whittemore v. Cutter*,[146] Justice Story pronounced a requirement that combination and improvement patents must identify how the claimed machines differed from the prior art.[147] It was under this requirement that *Evans v. Eaton*[148] invalidated a patent obtained in 1808 in part because it did not sufficiently identify the novel improvement.[149] Even this part of the decision was reached only because of ambiguity about whether the inventor was claiming the entire machine or just an improvement.[150]

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machine, either to produce equal beneficial effects, at *a less expense,* or a greater *beneficial effect in a given time,* or a more perfect and more *beneficial result.* In either of these cases he knows that he has made *an improvement in the principle,* within the meaning of the 2d section of the act . . . .").

141. Prager, *supra* note 2, at 258 ("The result is that method applications and method patents, while clearly and unrestrictedly approved by the statute, encounter peculiar kinds of trouble before many, if not all, of the patent tribunals of our time."); Risch, *supra* note 65, at 649 ("[A]lthough subject matter restriction can be a 'policy lever,' it is not a very effective lever because the rules cannot be applied narrowly or consistently.").

142. Lutz, *supra* note 20, at 135 ("In passing upon a specification of this kind, the courts attempted to extract its 'principle.'").

143. WALTERSCHEID, *supra* note 9, at 255–56.

144. Patent Act of 1793, ch. 11, sec. 3, 1 Stat. 318 (1793).

145. WALTERSCHEID, *supra* note 2, at 359.

146. 29 F. Cas. 1123 (C.C.D. Mass. 1813).

147. *Id.* at 1124.

148. 20 U.S. 356 (1822).

149. *Id.* at 370, 434.

150. *Id.* at 432–33.

The rule from *Evans* became etched in patent-description practice. For example, in later discussion of patent specifications, the *Journal of the Franklin Institute* assumed that when no claim was made in a patent, it meant that the patentee thought the whole patent description was novel subject matter.[151] If the patentee included a claim, then the novel invention was a particular portion of the described subject matter.

Thus, courts sought to determine the principles upon which patentees were describing and claiming their patents to determine whether the principles were original to the inventor, whether the application of the principles was original, or whether there was an improvement on known principles and applications.[152] As the Court noted in *Evans*: "If [the machines in the patent and the prior art] were the same in principle, and merely differed in form and proportion, then it was declared that the plaintiff was not entitled to recover . . . ."[153]

Justice Story may have explained it best in *Barrett v. Hall*[154]:

> [C]are should be taken to distinguish, what is meant by a principle. In the minds of some men, a principle means an elementary truth, or power; so that in the view of such men, all machines, which perform their appropriate functions by motion, in whatever way produced, are alike in principle, since motion is the element employed. No one, however, in the least acquainted with law, would for a moment contend,

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151. *See List of American Patents Which Issued in May, 1833, With Remarks and Exemplifications, by the Editor*, 12 J. FRANKLIN INST. 309, 321 (1834) (discussing Patent X7,591, to Daniel Williams on May 22, 1833), *available at* http://books.google.com/books?id=cBIGAAAAYAAJ&pg=PA321. "We presume that there is much of novelty in the affair; and the patentee appears to think it altogether new, as he has not made any claim, either particular or general." *Id.*

152. *Whittemore*, 29 F. Cas. at 1124 ("The jury then are to decide, whether the principles of Mr. Whittemore's machine are altogether new, or whether his machine be an improvement only on those, which have been in use before his invention. I have before observed, that the principles are the mode of operation. If the same effects are produced by two machines by the same mode of operation, the principles of each are the same."). This requirement melded some with what we might call obviousness: "It will not be sufficient, to protect the plaintiff's patent that this specific machine, with all its various combinations and effects, did not exist before; for if the different effects were all produced by the same application of machinery, in separate parts, and he merely combined them together, or added a new effect, such combination would not sustain the present patent . . . ." *Id.*

153. *Evans*, 20 U.S. at 431; *see also* Lowell v. Lewis, 15 F. Cas. 1018, 1019–20 (C.C.D. Mass. 1817) (No. 8,568) ("It has been often decided, that a patent cannot be legally obtained for a mere philosophical or abstract theory; it can only be for such a theory reduced to practice in a particular structure or combination of parts. In short, the patent must be for a specific machine, substantially new in its structure and mode of operation, and not merely changed in form, or in the proportion of its parts.").

154. 2 F. Cas. 914 (C.C.D. Mass. 1818).

> that a principle in this sense is the subject of a patent; and if it were otherwise, it would put an end to all patents for all machines, which employed motion, for this has been known as a principle, or elementary power, from the beginning of time. The true legal meaning of the principle of a machine, with reference to the patent act, is the peculiar structure or constituent parts of such machine. And in this view the question may be very properly asked . . . whether the principles of two machines be the same or different. Now, the principles of two machines may be the same, although the form or proportions may be different. They may substantially employ the same power in the same way, though the external mechanism be apparently different . . . . On the other hand, the principles of two machines may be very different, although their external structure may have great similarity in many respects.[155]

This passage illustrates that patents for truly abstract principles were simply unheard of.[156] Instead, seeking to understand the principles of the invention was important to determining novelty and infringement. The end of the quote shows how modern notions of obviousness and infringement by the doctrine of equivalents were at their core based on analysis of inventive principles. Further, this portion of *Barrett* discussing principles is completely disconnected, by several paragraphs and clear break in discussion, from any discussion about patentability of methods.[157] In short, discussion of principles (even abstract ones) had nothing to do with whether a method was patentable. Principles were about patent construction, and methods were about interpreting the English statute.

In addition to determining whether the patent covered an improvement or not, courts also considered the principles of inventions to determine what the invention was in the first place. For example, in *Whitney v. Carter*, a case involving the cotton gin, the court attempted to determine whether prior machines invalidated Eli Whitney's patent

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155. *Id.* at 923 .

156 It also relates to an ongoing debate about whether a programmed general purpose computer is a "new" machine even though the parts are the same as the unprogrammed computer. This quote seems to support the notion that the "principle" of the computer can change with its software, even if the physical components are the same. *See, e.g.*, In re Alappat, 33 F.3d 1526, 1545 (1994), *overruled on other grounds* by In re Bilski, 545 F.3d 943 (Fed. Cir. 2008) ("We have held that such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.").

157. *See supra* note 126 and accompanying text.

due to lack of novelty.[158] To make this determination, the trial court had to first decide what the invention was, and the court

> agreed with the plaintiff's counsel that the legal title to a patent consists, not in a principle merely, but in an application of a principle, whether previously in existence or not, to some new and useful purpose. And [the judge] was also of opinion that the principle of Mr. Whitney's machine was entirely new . . . .[159]

While the court noted that principles were not patentable, the statement was merely an aside to the important question in the case: how the patentee applied the principles and whether the prior art applied the same principles.

There is surely still a place for identifying and excluding abstract principles from patentability. This history implies that the proper place is during claim construction—determining what the patentee invented by identifying the application of the principles described in the patent, just as judges did more than two hundred years ago. The difficulty, of course, is that peripheral claiming is so specific that some claims may not be an application of the principle but, instead, the principle itself, and those claims are likely invalid.[160] Then again, a principle with no application is probably not a machine, manufacture, composition of matter, or process, nor is it practically useful.[161] Either way, the issue is one of claim construction: determining what the patentee is claiming by comparing it with the abstract principle.

II. EARLY PATENTS

This Part presents some summary data and representative descriptions of America's first patents. One prior study has examined patenting by geographic region and industrial category,[162] but none has looked at all the specific inventions from a legal perspective. Further, while some writers have referred to sporadic business methods throughout history,[163] no one has completed a comprehensive survey of early business methods patents.

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158. 29 F. Cas. 1070 (C.C.D. Ga. 1810).

159. *Id.* at 1072–73.

160. *See* Mark A. Lemley et al., *Life After* Bilski, 63 STAN. L. REV. 1315, 1342–43 (2011).

161. *See* Michael Risch, *A Surprisingly Useful Requirement,* 19 GEO. MASON L. REV. 57, 74–75 (2011).

162. *See generally* Sokoloff, *supra* note 3 (analyzing data of patent type by region and other geographical influences).

163. *In re* Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008), *aff'd but criticized sub nom.* Bilski v. Kappos, 130 S. Ct. 3218 (2010) (Newman, J., dissenting).

A. *Technology Classes*

A look at the technology classes the USPTO assigned to early patents sheds some light on the types of patents early U.S. inventors sought. The USPTO has assigned modern classifications to these old patents. To be sure, patent classification is notoriously vague, and the sweeping categories assigned to old patents are even broader. Even so, the general categories will show areas of concentration and obvious gaps.

The following Table shows the top twelve patent classifications of historical patents.

Table II.1: Top Twelve Historical Patent Classifications

Class	Description	Count	Percent
126	Stoves and Furnaces	245	6.58%
460	Crop Threshing or Separating	132	3.54%
241	Solid Material Disintegration	120	3.22%
144	Woodworking	107	2.87%
172	Earth Working	104	2.79%
83	Cutting	100	2.68%
19	Textile Fiber Preparation	87	2.33%
57	Textile Spinning and Twisting	73	1.96%
68	Textile Fluid Treating	59	1.58%
114	Ships	57	1.53%
100	Presses	55	1.48%
415	Rotary Fluid Motors and Pumps	52	1.40%

The categories are the types one might expect from this time period. They are consistent with categories found in other studies of early patenting.[164] It is important to note how small each category is. The most used classification represents only 6.5% of the patents, and the twelfth largest represents 1.4% of the patents. In total, the patents we examined in this study represent 227 primary classifications.

The classifications above represent patents that survived the 1836 fire. The index allows for a count of certain subjects for every patent. For example, 516 patents related to mills, 496 involved steam, and 236 improved plows. Another 381 patents were for some improvement on stoves. A total of 180 patents involved pumps, and 66 patents related to tanning leather. New machines for washing clothes and dishes (mostly clothes) accounted for another 267 patents. Movement was also

164. *See* Sokoloff, *supra* note 3.

important during this time: 213 patents related to propelling something and another 79 harnessed horse power. So was cutting things, with 471 patents. Spinning thread was also popular, showing 192 patents, in addition to 188 cloth patents in the index. Manufacturing materials were relevant as well, claiming 145 brick-related patents and 126 wood-related patents.

An 1823 Patent Office report provides some useful information about the types of patents inventors sought.[165] The report lists the types of models in the Patent Office. Because the Patent Office did not require models for every invention, the list is also helpful to see the types of inventions that did require models.

Table II.2: Number of Models by Type[166]

Model Type	Count
Nail cutting machines	95
Pumps	66
Ploughs	65
Presses	56
Looms	45
Propelling boats	38
Spinning machines	28
Water wheels	26
Saw mills	26
Winnowing machines	25
Thrashing machines	20
Water mills	17
Cloth shearing machines	16
Steam mills	14
Bridges	13
Locks	12
Fire engines	10
Straw cutting machines	10
Carding machines	8
Wind mills	7
Mud machines	7
Flax dressing machines	6
File cutting machines	6

165. *See Report on the Patent Office for 1823*, ANNUAL REPORT OF THE COMMISSIONER OF PATENTS 1790-1836, VOL. 1, *available at* http://www.myoutbox.net/poar1823.htm.

166. *Id.*

Machines for cutting Dye-Woods	6
Making carriage wheels	4
Stocking looms	3
Boring machines	3
Guns	2
Machines for making barrels, &c.	1
Subtotal	**635**
For various other purposes	1,184
Total	**1,819**

By 1823, nearly 3,800 patents had issued, which means that nearly 2,000 patents were not associated with a model.

The Patent Office has now assigned 560 patents (about 15%) to Class 1. Patent Class 1 is reserved for classifications that are no longer valid in today's system.[167] One interpretation of this fact is that many patents are for particular sub-technologies that are now obsolete. Examples of patents in this class are particular types of bedsteads, bee hives, methods of writing and teaching, making boots and shoes, churns, cooking stoves, cotton gins, cutting and shearing, furnaces, horse power, bridge construction, raising water, making four-tined forks, propelling boats or machinery (with steam, primarily), sawing, and tanning.

This does not mean that none of these types of patents are in the classification system. Rather, the specific subject of the patent no longer has a subclass.

B. *Exemplary and Interesting Patents*

A few examples of important and interesting early inventions may be illuminating. An early example is Patent No. X72, to Eli Whitney on March 14, 1794, for the cotton gin. This is the seventh oldest patent to survive the 1836 fire. Interestingly, this patent was not subject to examination, but the historical record suggests that Thomas Jefferson asked for a model, and was also personally interested in how well it might work.[168] Some people dispute whether Eli Whitney himself invented the cotton gin, or whether it was novel at all,[169] which are two

167. *See Examiner's Handbook Chapter 2: Aids to Searching or Placement*, U.S. PATENT & TRADEMARK OFFICE, http://www.uspto.gov/patents/resources/classification/handbook/two.jsp (last visited Jan. 16, 2012).

168. *See* Walterscheid, *supra* note 4, at 298.

169. *See, e.g., Inventing the Cotton Gin? A Class Debate*, NAT'L MUSEUM OF AM. HISTORY,

claims that examination might have tested. However, the patent was considered in two reported court opinions, and both times the court found the invention novel.[170]

The first patent relating to plows was Patent No. X177, to Charles Newbold on June 26, 1797. The patent is just a couple of paragraphs with two drawings and primarily discusses a one-piece cast-iron frame with dual-purpose sheaths and mould plates used for both cutting and turning.

Patent No. X965, to James Park on December 19, 1808, is for an alarm bell attached to fire engines.[171] The bell is attached using a spring so that it rings either by vibration or by the power of the wheels. While this patent is for a manufacture, it is an example of how the actual thing described is less important than the idea it conveys. Assuming that this was the first alarm bell on fire engines (or even the first fire-engine powered, rather than human-powered, bell), the lasting impact of the invention is more than a spring. It is, at best, the idea of an alarm bell, and at least, the idea of powering the bell through the engine's own power. Justice Washington charged a jury the same way: "[T]he question is not, whether bells to give alarm or notice are new, but whether the use and application of them to fire engines, to be rung, not by manual action, but by the motion of the carriage, for the purpose of alarm or notice, is a new invention . . . ."[172]

Similarly, Patent No. X2,244, to Benjamin Freymuth on December 22, 1814, describes what may be the world's first small alarm clock. The alarm is achieved by coiling a ribbon around a spring wheel, which is released as a pocket watch turns to a certain point. While the invention itself is primitive (and a little ridiculous), the idea of sounding an alarm by triggering something at a fixed time in a small bedside device is an important insight and the basic way most analog alarm clocks still work. Indeed, the idea seemed ahead of its time, only catching on some twenty years later, as in Patent No. X7,154, to Robert Wilson on July 3, 1832.[173]

SMITHSONIAN INST., http://invention.smithsonian.org/centerpieces/whole_cloth/u2ei/u2materials/eipac1.html. For a thorough history of Whitney's patent and lawsuits, including some rare source materials showing the Patent Office reconstruction of this patent is inaccurate, see DANIEL A. TOMPKINS, THE COTTON GIN: THE HISTORY OF ITS INVENTION (1901), available at http://www.archive.org/stream/cottonginhistory01tomp.

170. *See* Whitney v. Carter, 29 F. Cas. 1070, 1072–73 (C.C.D. Ga. 1810) (referring to prior Whitney case as well).

171. Interestingly, "Fire Engine" has a dual meaning, as some called steam engines "fire engines." *See* N. Scott Pierce, *Common Sense: Treating Statutory Non-Obviousness as a Novelty Issue*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 539, 557 (2009).

172. Park v. Little, 18 F. Cas. 1107, 1108 (C.C.D. Pa. 1813).

173. U.S. Patent No. X7,154 (granted July 3, 1832); *see also List of American Patents*

Patent No. X2,952, to John Callen on May 4, 1818, is for medicated liquid magnesia—a product that is still sold today.

The index lists a series of patents related to the use of methods and machines to print currency in such a way that would make counterfeiting difficult. These inventions were no doubt a response to improvements in printing in the early nineteenth century. They are debated at length in the *London Journal of Arts and Sciences*.[174]

In the middle of 1829, there were several patents devoted to "felting," or creating cloth without spinning or weaving. In fact, three patents issued within two days,[175] two of which were similar enough that the Patent Office declared an "interference" to determine the rightful inventor. The parties settled the dispute with all patents issuing.[176] These patents are early examples of simultaneous invention. The Franklin Institute noted that new technologies made felting possible.[177] Today, such developments might be at the core of either several obviousness findings, or alternatively, a patent thicket of incremental improvements on a basic technology that block each other.[178]

Patent No. X5,581, to William Burt on July 23, 1829, is for the first typewriter as we know it today. In fact, the specification calls it a "type writing machine." The description of the patent, which appears typed, describes a machine that is quite similar to manual typewriters of today, including "shifting" to use a second letter on the same lever.

Patent No. X1,516, to John Hall on May 21, 1811, is an important patent for two reasons. First, it claims a new way to load firearms—through a hole in the back, rather than with a ramrod. Second, it appears to be a joint patent with William Thornton, the superintendent of patents

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Which Issued in July, 1832, With Remarks and Exemplifications, by the Editor, 11 J. FRANKLIN INST. 93, 93 (1833) (discussing pocket watch alarm bells), *available at* http://books.google.com/books
?id=ygwGAAAAYAAJ&pg=PA93.

174. *See, e.g.,* 1 LONDON J. ARTS & SCI. 64,161 (1820).

175. Patents X5,541, to Van Hosen on June 27, 1829, and X5,548, to Peck and Taylor on June 29, 1829. *List of American Patents Granted in June, 1829, with Remarks and Exemplifications, by the Editor*, 4 J. FRANKLIN INST. 169, 192–193 (1829) [hereinafter *Patents Granted in June 1829*]. The third is unavailable. The PTO mislabeled No. X5,548 as X5,547, and the patent can only be viewed by the mislabeled number.

176. *Patents Granted in June 1829*, *supra* note 166, at 192–93. See also U.S. Patent No. X5,571 (granted July 15, 1829) and U.S. Patent No. X5,572 (granted July 15, 1829), issued only two weeks later.

177. *Patents Granted in June 1829*, *supra* note 166, at ("The revival of this plan for manufacturing cloth, has, we have no doubt, been suggested by the machines now so extensively used in the manufacture of hats . . . .").

178 For a description of simultaneous invention throughout history, *see* Mark A. Lemley, *The Myth of the Sole Inventor*, 110 MICH. L. REV. 710 (2012).

at the time.[179] One explanation is that Thornton saw Hall's invention, had an improvement of his own that he added, and then issued the patent to Hall and himself. However, it is not clear this was really a jointly issued patent. The image of the patent currently available is printed, which means the Patent Office recreated it after the 1836 fire; the typeface is even similar to later-issued patents. We do not know what the original handwritten patent looked like, and recreations were not always accurate.[180] Further, though the header of the patent implies that the patent is joint, each individual's improvement is listed separately—first Hall's, then Thornton's. Finally, an image of Patent No. X1,515 is available, and that patent contains *only* the text of Thornton's invention. Thus, a more likely explanation is that Thornton saw Hall's patent and wrote one of his own, issuing both on the same day. Patent No. X1,515 is Thornton's and Patent No. X1,516 is Hall's; both were combined in an unnumbered patent recreated after 1836; and that recreation was given the number X1,516.

Thornton's version of the patent is also important because it appears to be the first patent to number each part of a drawing and refer to each part of the drawing by number in the patent description. Virtually every patent today follows this practice, but it was extremely rare in the early nineteenth century, in part because the rules forbade it.

Another firearm patent is Patent No. X5,656, to Samuel Farries on October 10, 1829. This patent was for the first "machine gun,"[181] though the description is nothing like the automatic weaponry of today. Instead, the gun was more likely an early revolver, with eight chambers that rotated to load ammunition into the barrel.[182] Yet it was different from revolvers of today, as the chambers spun horizontally like a carousel, rather than vertically like six-shooters today.

Indeed, an automatic machine gun was probably impossible until about the time of Patent No. 147, to Thomas McCarty on March 11, 1837. McCarty claimed what we now think of as cartridges: "[T]he manner of loading the gun by the use of the tube containing the whole charge, with the arm reaching out, so as to be fired by an outside lock, or otherwise; which tube remains until the load is discharged, then to be

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179. Lutz, *supra* note 20, at 137.

180. *See* TOMPKINS, *supra* note 169.

181. JAMES H. WILLBANKS, MACHINE GUNS 25 (2004), *available at* http://www.scribd.com/doc/47576912/Machine-Guns-An-Illustrated-History-of-Their-Impact.

182. *But see List of American Patents Which Issued in October, 1829, with Remarks and Exemplifications, by the Editor*, 5 J. FRANKLIN INST. 22, 25–26 (1830) (arguing that revolving chamber guns existed before this patent, and that all of them would likely fail to operate properly, including this patent), *available at* http://books.google.com/books?id=6-45AQAAIAAJ&pg=PA25.

replaced by another similarly loaded . . . .” McCarty claimed that preloading cartridges would allow for up to ten shots per minute. The *Journal of the Franklin Institute* noted that cartridges had been used before, but for specific guns and not for general use.[183] Nonetheless, the *Journal* was skeptical of the idea, due to the risk of corrosion.[184]

Patent No. X6,728, to Josiah French on August 25, 1831, describes a new mattress made with metal spring coils, which is the foundation of most mattresses today. The Franklin Institute was (again, wrongly) skeptical: “Until experience convinces us that we err in judgment, we shall rest satisfied with, and, we hope, comfortably on, a good curled hair mattrass [sic], or in winter, if pleasure is preferred to health, a well filled feather bed will continue to satisfy us, and be preferred to iron springs.”[185]

Patent No. X6,739, to James Barron on August 30, 1831, claims a machine for filtering water through a process of pushing the water through a sponge. This is a filtration method still in use today, though the patentee did not recognize the importance of the general method because he only claimed the specific machine:

> We apprehend that it would have given greater security, had the patentee claimed the filtering of water through compressed sponge, by means of the foregoing machine, or any other acting upon the same principle, as it certainly would not be difficult to construct a machine, different in its form, and in the arrangement of its parts, in which the same effect should be produced.[186]

This passage is also important because it shows that the editors at the Franklin Institute did not view methods patents as narrowly as some judges.

Patent No. X7,777, to Levi Kidder on September 20, 1833, is for what may be the first street sweeper. It looks like an early version of something that could be in use today. It was, apparently, being tested in New York City at the time it issued.[187]

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183. *See List of American Patents Which Issued in March, 1837, with Remarks and Exemplifications, by the Editor*, 20 J. FRANKLIN INST. 399, 403 (1837), *available at* http://books.google.com/books?id=6ckGAAAAYAAJ&pg=PA403.

184. *Id.*

185. *List of American Patents Which Issued in August, 1831, with Remarks and Exemplifications, by the Editor*, 9 J. FRANKLIN INST. 111, 128 (1832), *available at* http://books.google.com/books?id=RL5IAAAAMAAJ&&pg=PA128.

186. *Id.* at 134.

187. *See List of American Patents Which Issued in September, 1833, with Remarks and Exemplifications, by the Editor*, 13 J. FRANKLIN INSTITUTE 247, 257 (1834), *available at* http://books.google.com/books?id=nB0GAAAAYAAJ&pg=PA257.

Patent No. X6,600, to Joseph Nicolas on June 13, 1831, is for a method of exterminating insects in fields by spraying steam on them. The heat kills them.

Patent No. X8,537, to Benjamin Hays on December 17, 1834, is for an early "easy chair." As the name implies, this may be one of the first recliner chairs—with a backrest that reclines and a footrest that rises, so that "invalids" can obtain relief. Given his stated intention to aid invalids, Hays might be surprised at the ubiquity of recliners today.

Finally, Patent No. X9,274, to William Atkinson on December 2, 1835, is for a method of raising sunken ships by filling them with inflated bags. There is an urban legend that a 1949 Donald Duck cartoon depicting ping pong balls raising a sunken ship was used as prior art to defeat a 1960s Dutch patent.[188] Apparently a U.S. patent predated the cartoon by more than one hundred years.

C. *Primitive Patents*

One of the more amusing features of reading actual patents in the study (as opposed to the opaque index) is learning about all of the technology that is now outlawed or otherwise quite primitive. A few patents, such as Patent No. X8,985, to John Scott on July 21, 1835, describe fireproofing using asbestos. Other patents are methods for making "white lead"—the pigmentable base of lead paint.[189] One patent even claimed the use of barium as a base for paint.[190] Patent No. X7,369, to David West on January 11, 1833, was for a "cosmetic" made with chlorine for the treatment of many skin ailments.[191]

Indeed, it appears that the patenting of useless medications is an old phenomenon. Patent No. X7,574, to Jacob Houck on May 9, 1833, was for a "panacea" that cured no fewer than thirty-five ailments, from colds, to hysterics, to all diseases of impure blood. The primary ingredient was rye whiskey. The *Journal of the Franklin Institute* mocked this patent:

> Why will men be so obstinate as to remain sick for a long time, and at last to die, whilst panaceas, combining nearly all the virtues of the long sought elixir of life, are prepared by so many seventh sons of seventh sons in all our

188. *See* Arnoud Engelfriet, *The 'Donald Duck as Prior Art' Case*, IUS MENTIS (Nov. 30, 2006), http://www.iusmentis.com/patents/priorart/donaldduck/ (last visited Jan. 14, 2012).

189. *See, e.g.*, U.S. Patent No. X5,293 (granted Dec. 4, 1828).

190. U.S. Patent No. X8,699 (granted Mar. 18, 1835). Barium is highly poisonous. *See* MATERION, http://materion.com/MSDS/m000544.htm (last visited Jan. 14, 2012).

191. U.S. Patent No. X7,369 (granted Jan. 11, 1833); see also U.S. Patent No. X8,693 (granted Mar. 18, 1835), to William Gray, for an ointment to cure many diseases.

> cities, and offered for sale at the numerous stores with tinted jars at their windows?[192]

Ironically, the editors at the Franklin Institute were prescient: "That the recipe may not be lost should the patent office be burnt, and the patentee become the victim of his own remedies, we will place it upon our pages, and thus insure to it extensive diffusion and continued duration."[193]

Similarly, Patent No. X7,668, to Daniel Harrington on July 22, 1833, is for a method of treating many diseases by sending electric shocks through the body, primarily through orifices, beginning with the anus, vagina, ears, and nostrils. The patentee even described an additional "appendage" used when shocks are delivered into the rectum. This was one of many patents to Daniel Harrington for curing disease with "galvanic fluids." Harrington is also the inventor of the rocking chair exerciser business method discussed below. He was apparently considered an important inventor in the dental area, if not for his electrical inventions.[194]

Patent No. X178, to Thomas Bruff on June 28, 1797, is a scary looking tooth extractor with a variety of tips for different types of teeth. Patent No. X7,083, to William Fahnestock on May 25, 1832, is for a sharpened hoop used to remove tonsils, which is also a bit daunting.

There were many mortising machines, which were quite important for nineteenth-century construction, but seem primitive next to a mechanical router of today.

Patent No. X5,532, to John Brown on June 11, 1829, is for a method of making combs using pieces of scrap ivory glued together; manufacturing ideas do not get simpler.

Patent No. X5,547,[195] to Ebenezer Mustin on June 27, 1829, is for a method of decorating combs by putting ornaments on them. The *Journal of the Franklin Institute* was especially critical of this one:

> This process is the same that is practised upon chairs, and an infinite variety of ornamented articles; the *invention*, or

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192. *List of American Patents Which Issued in May, 1833, with Remarks and Exemplifications, by the Editor*, 12 J. FRANKLIN INST. 309, 315 (1833).

193. *Id.*

194. *See* 2 BURTON LEE THORPE, HISTORY OF DENTAL SURGERY 234 (Charles R. E. Koch, ed., 1909) ("Dr. Harrington, evidently, was not an expert in electrical science as it was at that time. His galvanic devices were as far outside the pale of science . . . ."), *available at* http://books.google.com/books?id=ccvRAAAAMAAJ&pg=PA232.

195. *See* U.S. Patent No. X5,547 (granted June 27, 1829).The USPTO has the wrong patent image associated with this patent number. The image available for X5,547 is actually Patent X5,548, which the USPTO incorrectly states is unavailable. The *Journal of the Franklin Institute* reported X5,547. *See Patents Granted in June 1829*, *supra* note 166, at 191–92.

> *discovery*, therefore, consists in doing that upon combs which has in itself no novelty whatever . . . . Query, is this 'a new and useful improvement on any art, machine, manufacture, or composition of matter, not known or used before the application?'[196]

Patent No. X3,112, to Barnabas Langdon on June 5, 1819, shows a paddle wheel on a boat that is powered by horses running on the deck. While this is probably a good way to move horses, it probably was not the best plan for long voyages. Interestingly, an earlier patentee described the same thing (on land and water) and actually sued someone for infringing it.[197] The defense admitted to using horses to power a boat on the Delaware River, and used a license from Langdon as a defense.[198] A key defense to the requested injunction in that case is applicable to the "patent troll"[199] debate today: no injunction should issue because the earlier patentee was not using his invention. The court went so far as to say that if the patentee's own use occurs after others infringe, no injunction may issue.[200]

Patent No. X5,728, to Stanley Carter on November 25, 1829, is for sign boards with letters formed by pressing letter-shaped heated metal onto wood (like branding, but for boards instead of cows). The *Journal of the Franklin Institute* criticized the patent as primitive, even then:

> We must doubt the validity of such a patent, as it is merely applying to sign boards, &c. what has been known and used upon barrels, &c. time out of mind. May a blacksmith hereafter burn his name upon his door, as we have frequently seen it done in country shops?[201]

We classified this as a business method patent.

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196. *Patents Granted in June 1829*, *supra* note 166, at 191.

197. Isaacs v. Cooper, 13 F. Cas. 153 (C.C.D. Pa. 1821) (describing patent for powering boat using horses). Interestingly, neither the names nor the dates the court cited match a patent in the index. The closest patent appears to be X2,125, to David Cooper. *See* U.S. Patent No. X2,125 (granted May 12, 1814). The court may have considered a reissue, as the court even questions whether the dates provided match. *Isaacs*, 13 F. Cas. at 153–54.

198. *Isaacs*, 13 F. Cas. at 153.

199. "Patent troll" is a pejorative term used to describe patent holders that do not practice their own patents, but enforce them anyway. *See* Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1809–10 & n.3 (2007).

200. *Isaacs*, 13 F. Cas. at 153–54.

201. *List of American Patents Which Issued in November, 1829, with Remarks and Exemplifications, by the Editor*, 5 J. FRANKLIN INST. 126, 138 (1830), *available at* http://books.google.com/books?id=6-45AQAAIAAJ&pg=PA138.

Patent No. X6,490, to James Johnson on April 18, 1831, is for a "Fire Escape." The patent describes a set of wooden stairs on two rolling platforms so as to achieve sufficient height. The *Journal of the Franklin Institute* commented at the time that the invention would have little use because it had to get close to the building (and presumably would then catch on fire) and also might get in the way of firefighters.[202] That said, the idea caught on both in permanent fire escapes and in the ladder fire engines of today.

Patent No. X8,839, to Charles and George Sellers on May 22, 1835, claimed a method of increasing traction by shifting weight to the rear of a train car. We considered this to be a business method, and anyone who has ever put a sand bag in their trunk to drive in the snow may thank the Sellers inventors.

D. *Measurement Devices*

Many of the patents related to new devices for measurement and calculation. Some inventors used these devices to perform business methods. For example, Patent No. X866, to Benjamin Dearborn on April 29, 1808, describes a device for measuring and drawing angles. The patent language implies that use of the device for that purpose is within the scope of the patent. The patentee makes clear, however, that prior devices (squares) were able to make right angles, and disclaims application of the device for drawing right angles. Similarly, Patent No. X3,413, to Gabriel Thompson on December 4, 1821, shows a protractor for measuring angles. Patent No. X8,608, to W.J. Young on January 17, 1835, shows a surveying compass; and Patent No. X8,631, to James Eames on February 11, 1835, shows a different surveying compass.

Dearborn also obtained several patents on balances for weighing and lifting things, such as Patent No. X234 on February 14, 1799, and Patent No.X3,089 on March 24, 1819. Another weighing device is Patent No. X7,425, to Benjamin Morison on February 13, 1833. This is for a balance using plates on each side to measure whether one thing is heavier than the other. The diagram in the Patent Office records looks like a strange and new device, but the diagram and description in the *Journal of the Franklin Institute* imply that the invention was for a device identical to the scales of justice,[203] which was already known at the time.[204]

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202. *List of American Patents Which Issued in April, 1831, with Remarks and Exemplifications, by the Editor*, 8 J. FRANKLIN INST. 108, 125 (1831), *available at* http://books.google.com/books?id=r-85AQAAIAAJ&pg=PA125.

203. Or, for Monty Python fans, a witch detector.

204. *List of American Patents Which Issued in February, 1833, With Remarks and Exemplifications, by the Editor*, 12 J. FRANKLIN INST. 84, 92–93 (1833).

There were also several clothing-measurement devices. Patent No. X4,687, to J.G. Wilson on February 28, 1827, shows a square for measuring cloth for tailoring. Wilson also obtained Patent No. X7,566 on May 3, 1833, for a similar device. Wilson claimed the uses of the tool as well, which makes this a business method patent. Patent No. X5,234, to Allen Ward on October 11, 1828, shows a device for measuring shirts and coats. Patent No. X5,327, to Levi Lemont on January 29, 1829, shows a tall device for measuring the length of coats. Patent No. X7,591, to Daniel Williams on May 22, 1833, was designed to draw plain and spherical triangles.[205] Patent No. X9,110, to John Rockafellow on September 18, 1835, is an improvement on the Williams patent, which is intended to measure the circumference of the human body.

Patent No. X657, to Cephas Thompson on February 5, 1806, is an interesting device that allowed painters to transcribe real-world images onto a canvas by tracing a distant scene appearing in a window.

E. *Methods Patents*

Early inventors were no strangers to claiming methods, though it is clear that most inventive activity lay in the making of new things, even if the primary inventive principle behind the thing was a better method of operation. The very first patent, Patent No. X1 to Samuel Hopkins on July 31, 1790, was for a method of making pot and pearl ashes. About 12% of the patents we studied were methods. The role of machines or transformations will be discussed in Part III, below.

1. Business Methods

While most of the methods studied involved direct manufacturing in some manner, there were still a few business method patents. The following Table summarizes the number of business methods patents, and separates them based on whether they use a machine, transform matter, or do neither:

Table II.3: Business Method Patents

	Methods	Business Method: Using Machine or	Percent	Business Method: No Machine or Transformation	Percent

205. *List of American Patents Which Issued in May, 1833, With Remarks and Exemplifications, by the Editor*, 12 J. FRANKLIN INST. 309, 321 (1833).

		Transforming			
1790–1793	2	0	0.00%	0	0.00%
1794–1836	343	2	0.58%	25	7.29%
1836–1839	116	1	0.86%	8	6.90%
Total	461	3	0.65%	33	7.16%

This Table shows that some early inventors sought business methods patents. Nearly 8% of all methods patents were business methods patents, and the difference between examined and unexamined patents is not statistically significant.[206]

The Table also shows that business methods by and large did not use a machine or transform matter. This comes as no surprise, as one of the definitions of a business method patent is one that uses no machine or transforms no matter. One would further expect early business methods patents to not involve machines because there were no computers to process information. Implications of these findings are discussed in the next Part.

What did early nineteenth-century business methods look like? The first one we found was the 104th patent that we could read;[207] Patent No. X1,377, to Samuel Randall on October 1, 1810, described a new way to teach writing. The concept is simple: lowercase and capital letters are permanently affixed to a board with spaces next to or below them. The student's imitation of the letters is written on the same board, but these letters may be wiped off. Thus, the student may practice writing letters over and over. Similarly, Patent No. X1,642 also to Randall, claimed a new method of teaching handwriting, but this time using letters engraved in metal. Students would trace the letters onto paper placed over the metal. (Ironically, these two patents are nearly unreadable due to illegible handwriting.)

Patent No. X1,659, to Uri K. Hill on February 7, 1812, claimed a new musical notation, consisting of an improved way to lay out lines

206. In a t-test, p=.969.

207. There may have been earlier business methods among the destroyed patents. Candidates include: Patent No. X64, to Joseph Sampson on July 5, 1793, for applying and regulating sails of ships; Patent No. X129, to Mark Brunel on November 16, 1796, for a method of ruling books and paper; and Patent No. X376, to Andrew Law on May 12, 1802, for a new plan for printing music.

and represent notes (described as "do, re, mi . . . ") using different shapes. Hill was a composer of the time.[208]

Patent No. X5,206, to Francis Kelsey on August 26, 1828, is for a method of managing bees. This included blowing tobacco smoke to render them docile, a practice still in use today and derided in the recent animated film *Bee Movie*.[209] The patent also describes a method of harvesting honey by moving all the bees from one hive to another, leaving the first hive empty.

Patent X5,369, to Joseph Manning on February 16, 1829, described an improvement in the art of writing alphabetically called "Lektography."[210] Patent No. X6,504, to Robert McCormick on April 21, 1831, described an improvement in the art of teaching violin playing. The patent included placing special characters on the neck of the violin to teach students where to place their fingers.

Other patents attempted to thwart counterfeiting, but did not involve the engraving plates or machines used in the patents discussed above. Patent No. X2,301, to John Kneass on April 28, 1815, claimed the method of printing on both sides of a bank note rather than on just one side—not a particular way to do such printing, but *any* such double-sided printing. Patent No. 320, to J. Dainty on July 31, 1837, claimed a method of reducing fraud by printing numbers or letters on checks in a book so that each one would be different. Patent No. 871, to Ebenezer Watson on August 3, 1838, claimed "engraving, printing or any way expressing the sum in large letters, words or figures on the face of the note . . . ." The Patent Office examined Patent Nos. 320 and 871 prior to issuing such patents.

Patent No. X3,343, to Reuben Langdon on June 20, 1821, described a method of packaging yarn by putting skeins in colored labels to hold the yarn in a bundle and to provide information about the yarn. Though the patent was invalidated for lack of utility in *Langdon v. De Groot*,[211] the method is still in use today in the sale of yarn.

One business method that involved a machine was a method of washing rags: Patent No. X6,448, to John Ames[212] on April 6, 1831.

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208. *See* 1 CHARLES J. HALL, CHRONOLOGY OF WESTERN CLASSICAL MUSIC VOLUMEVOL1751–1900at102 (2002).

209. BEE MOVIE (DreamWorks Animation 2007).

210. This patent was published with a related book that described alphabetization through sounds. *See* JOSEPH B. MANNING, EPEÖGRAPHY (1829), *available at* http://books.google.com/books?id=rrtYAAAAMAAJ.

211. 14 F. Cas. 1099, 1101 (C.C.S.D.N.Y. 1822) (No. 8,059) ("But here it is the cotton alone which it is intended to buy, and the little label and wrapper appended to it, and which constitute the whole of the improvement, however showy, are stripped off and thrown away, before it can be used.").

212. Ames owned the largest paper manufacturing plant in the United States. A.J.

The patent states: "The improvement which I claim especially as mine is the process or method of washing, or cleaning, rags [with an adapted machine]." While the rags would eventually be used to make paper, a claim to simply washing something is not manufacturing, and is not limited to manufacturing. Instead, a human achieves the result using a machine to perform a non-manufacturing act, which we considered a business method.

Patent No. X4,610, to John Rives on December 22, 1826, describes a detailed lottery system, including different ways to number tickets, and the order of determining winners and giving prizes.

Many other business methods patents involve measurements, including laying out patterns on fabric.[213] For example, Patent No. X9,860, to James Zwisler on July 1, 1836, claimed a method of drawing each part of a garment in such a way as to minimize wasted fabric. Patent No. X7,698, to George Beard[214] on August 5, 1833, described in part a method of laying out clothes based on measuring only one part of the body. The Franklin Institute was skeptical:

> The patentee must, we imagine, have made the notable discovery that not only men and women, but men and boys, are all made to one scale, in length, breadth, and thickness; a thing which had never before been dreamed of, and which, if correct, must lead to very important results. We see no reason, if this be the fact, why by sending to the taylor [sic] the exact length of the leg, or of any other member, we may not, without further trouble, have a suit of clothes made with mathematical precision.[215]

While most of the measurement patents had some sort of end use in manufacturing, the patents themselves did not claim the manufacturing process, but only described the algorithms involved in measurement. One patent, Patent No. X8.867, to Samuel Stone on June 6, 1835, explicitly claimed "the application of the logarithmic calculations as applied to the circle." Another, Patent No. X6,573, to Erastus and Thaddeus Fairbanks on June 13, 1831, described a method of weighing

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VALENTE, RAG PAPER MANUFACTURE IN THE UNITED STATES, 1801–1900: A HISTORY, WITH DIRECTORIES OF MILLS AND OWNERS 7 (2010).

213. *See e.g.*, U.S. Patent No. X7,962 (issued Jan. 18, 1834).

214. Beard was from West Whiteland, Pennsylvania, near the author's home in East Whiteland.

215. *List of American Patents Which Issued in August, 1833, With Remarks and Exemplifications, by the Editor*, 13 J. FRANKLIN INST. 109, 111 (1834), *available at* http://books.google.com/books?id=nB0GAAAAYAAJ&pg=PA111.

objects by counterbalancing weights on the opposite sides of a beam in a slightly different manner than other counterbalance scales.[216]

Finally, perhaps the oldest financial engineering patent[217] (excluding lottery methods)[218] is Patent No. X9,118, to John Golder on September 26, 1835, which claimed an improvement in the "art of finance" by using a credit note that looks like a bond. The Franklin Institute commented on this invention:

> When wheels, levers, or pistons are in question, we feel as though we could talk familiarly and intelligibly about them; but when "Divitial inventions" and "Accumulative Checks" are upon the tapis, we are among foreigners and strangers whose language we do not understand . . . . Under these circumstances we must not be looked to for any explanation of the plan before us, but as some of our readers are versed in the business of stocks and loans, it is, therefore, presented to them for their consideration.
>
> Whether the foregoing is sustainable under a patent, does not depend upon its novelty merely, but more essentially upon the determination of the question whether the *Art of Finance*, can be classed among what are technically called "the useful arts."[219]

The patent and related comments are interesting for at least two reasons. First, at least one inventor thought financing methods were patentable. Second, leading commentators wondered (with apparent skepticism) whether "financial arts" were useful arts, rather than asserting outright that they were not because of some clear meaning of the patent laws from their inception.[220] Finally, Golder did not fly under

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216. *List of American Patents Which Issued in June, 1831, With Remarks and Exemplifications, by the Editor*, 8 J. FRANKLIN INST. 330, 342 (1831) ("[T]he machine now patented is a mere variation of the general principle upon which [prior scales] are made . . . .").

217. For a discussion of why business method patents came about, see generally John F. Duffy, *Why Business Method Patents?*, 63 STAN. L. REV. 1247 (2011).

218. In addition to Patent No. X4,610, discussed above, there appear to be many lottery patents both before and after 1836, though most of the early ones were lost.

219. *Specifications of American Patents*, 17 J. FRANKLIN INST. 270, 277–78 (1836), *available at* http://books.google.com/books?id=OskGAAAAYAAJ& pg=PA277.

220. *See* Jacobs v. Baker, 74 U.S. 295, 298 (1868) (considering, but not ruling, whether patent for including secret passage in jail is "art," but not considering question absurd). *But see* Bilski v. Kappos, 130 S. Ct. 3218, 3245 (Stevens, J., concurring) (noting the argument that at the time of the writing of the Constitution there was little discussion about types of arts that were patentable because it would have been absurd for someone to patent method of doing business) (citing 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,

the radar; he petitioned Congress for aid in enforcing the notes because the patent authorized them[221] (though his plea makes Golder seem more of a crackpot than a serious financier). Either way, Congress did not act on his pleas to either enforce or outlaw his type of patent.

2. Recipes

Some argue today that cooking recipes should not be patentable.[222] However, there were some examples of recipe patents in the study. For example, Patent No. X424, to Christopher Hutter on February 11, 1803, is a recipe for making brandy. Similarly, Patent No. X1,432, to John Sanders on February 11, 1811, is a recipe for making corn whiskey. Patent No. X6,550, to Stephen Hinds on May 11, 1831, is a recipe for beer.

The recipe methods were not all for edibles. For example, Patent No. X110, to Thomas Bedwell on April 20, 1796, provided a recipe for creating a yellow pigment, and there were other recipes for creating pigment as well. Questions arising from this are why recipes for liquor should be patentable, but not recipes for other foods; and why recipes for pigments should be patentable, but not recipes for edibles.

Of course, this does not mean that recipes were legally patented at the time. Instead, it means that some inventors thought that these recipes should be patentable.

F. *Software Patents*

While there were no computers in 1839,[223] there was one software patent. The software patent was Patent No. 546, to E.B. Bigelow on January 6, 1838, which claimed "[t]he application of a prism and pattern card, to regulate the operation of the hooks or teeth or dents to produce the variations in the pattern or figure." The pattern card was a primitive punch card[224] that guided the operation of the loom to make a certain

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585 (1999)).

221. John Golder, Presenting His Views of Finance (Sept. 25, 1837), *in* Documents of the House of Representatives (Thomas Allen ed.), Doc. 33, 25th Congress, First Session, *available at* http://books.google.com/books?id=9YcFAAAAQAAJ&pg=PA267.

222. *See, e.g.*, Emily Cunningham, Note, *Protecting Cuisine Under the Rubric of Intellectual Property Law: Should the Law Play a Bigger Role in the Kitchen?*, 9 J. HIGH TECH. L. 21, 32–35 (2009) (discussing pros and cons of patenting cooking recipes).

223. Peter D. Junger, Manuscript, *You Can't Patent Software: Patenting Software Is Wrong*, 58 CASE W. RES. L. REV. 333, 414–17 (2008) (describing first patented computer). Charles Babbage is credited with designing the first digital computer, known as the "Analytical Engine," although it was never built. *Id.* Some debate whether primitive punchcards machines like the loom or player pianos can be compared to complex data processing of modern software.

224. The author recalls his father's stories of carrying a box of punch cards around Berkeley's electrical engineering campus in 1969 so that he could run the computers there.

rug design.[225] We coded this not as a method but as a machine because the patentee claimed the prism as well as the particular machine that read the pattern card, rather than the particular design on the pattern card.

However, this patent highlights the very problems facing courts today when computers can be either single- or multi-purpose. One could make new designs by altering the overall loom design so that the hooks and teeth were permanently tied to a particular pattern, and presumably patents would be issued on each machine variation if it were nonobvious.[226] It seems odd to call each redesigned "hardwired" loom a "method," but some call reprogrammed computers methods and machines interchangeably.[227]

By introducing the pattern card, the inventor designed a single, programmable machine. Each pattern card would, in essence, create the same designs as a prior "hardwired" loom. It seems odd to call each new loom and card combination a new machine, but those who favor broad software patentability might argue that a programmed computer becomes a new machine,[228] or at least a new use of an old machine.[229]

Thus, the tension is similar to that when considering today's computers. Should the patent be granted on a method of weaving if computer software that controls the loom for the new pattern is nonobvious? Many people today would say no, but it is unclear why nonobvious "hardwired" variations in loom design should be patentable, while nonobvious "software" variations of loom punch card design should not be, when the resulting products are the same.

Many have struggled to resolve this tension. This Article does not seek to do so,[230] but instead merely points out how old the tension is. Indeed, one of the oldest, most ridiculous business methods patents

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225. Punch card looms existed earlier than 1838; Joseph-Marie Jacquard patented them in 1804. *See* JAMES ESSINGER, JACQUARD'S WEB: HOW A HAND-LOOM LED TO THE BIRTH OF THE INFORMATION AGE 35 (2004). Many other Jacquard loom patents followed Bigelow's. *See, e.g.*, Patent Nos. 1,964 (issued Feb. 3, 1841); 4,537 (issued May 28, 1846),;5,033 (issued Mar. 27, 1847), 5,937 (issued Nov. 28, 1848); 5,939 (issued Nov. 28, 1848); and 6,806 (issued Oct. 23, 1849).

226. Of course, there was no obviousness standard at the time.

227. *See* AT&T Corp. v. Excel Commc'ns, Inc., 172 F.3d 1352, 1357–58 (Fed. Cir. 1999) (holding that subject matter tests apply to software identically whether claimed as method or apparatus).

228 In re Alappat, 33 F.3d 1526, 1545 (1994), *overruled on other grounds* by In re Bilski, 545 F.3d 943 (Fed. Cir. 2008) ("We have held that such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software.").

229 35 U.S.C. §100(b) (2006).

230. The author has proposed that we stop trying, at least as a matter of patentable subject matter. *See* Risch, *supra* note 65, at 650.

involved a claim to a machine. Patent No. X6,514, to Daniel Harrington on April 23, 1831, described a "machine" for "exercising invalids in their rooms." The machine was a rocking chair with springs. The chair and the springs were not new and thus, the patent's primary claim was the method of exercise by rocking back and forth against the tension of springs. (This makes a method for exercising a cat[231] look like déjà vu.) Nonetheless, despite its harsh criticism of other patents, the Franklin Institute had nothing bad to say about this one.[232]

G. *Implications*

This survey of patents issued more than two hundred years ago provides a historical reason to reject Justice John Paul Stevens's claim, in *Parker v. Flook*, that "[i]t is our duty to construe the patent statutes as they now read, in light of our prior precedents, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress."[233] In short, the types of patents obtained in the early nineteenth century bear little resemblance to many of the current patent classifications today, despite the fact that the statute has changed little.[234] Semiconductors, computers, telephone communications, radio communications, pharmaceuticals, biotechnology, nanotechnology, automobiles, and other technology areas were completely unforeseen in 1790 when Congress enacted the first patent statute. Yet, each of these new areas was easily incorporated into the patent system as inventions arose. Had the courts waited until Congress acted when each unforeseen breakthrough occurred, patenting would have screeched to a halt.

On the other hand, devices for carrying out and implementing mathematical algorithms *were* foreseen in the early patent system.

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231. U.S. Patent No. 5,443,036 (filed Nov. 2, 1993) (claiming method of exercising cat by moving laser pointer).

232. *See List of American Patents Issued in April, 1831, With Remarks and Exemplifications, by the Editor*, 8 J. FRANKLIN 163, 168–69 (1831).

233. 437 U.S. 584, 596 (1978). Interestingly, the Court cited *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 531 (1972), to support its position. Congress enacted 35 U.S.C. § 271(f) in direct response to that case. Microsoft Corp. v. AT&T Corp., 550 U.S. 437, 441–424414244142 (2007); Pub. P.L. No. 98-622, § Title I, § 101(a), 98 Stat. 3383 (Nov. 8, 1984). This implies both that Congress can act if it so desires, albeit slowly, and more importantly, that the Court in *Deepsouth* need not have interpreted the statute so narrowly.

234. *Compare* 35 U.S.C. § 101 (2006) ("Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor . . . ."), *with* 1790 Patent Act § 1 ("[Whoever] invented or discovered any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used, and praying that a patent may be granted therefor . . . ."), *and* 1793 Patent Act § 1 ("[Whoever] invented any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter . . . .").

There were many patents on simple measuring and calculation devices. Thus, the prohibition on proceeding cautiously for new technology should not have applied to the very invention that Justice Stevens was considering.[235] The patent application in *Flook* was, arguably, the very type of invention others had sought since the beginning of the patent system—not often, to be sure, but certainly not unforeseen.

Finally, there are a sufficient number of patents relating to non-manufacturing methods, describing both business methods and non-business methods, to infer that early patentees did not believe that patents were limited to "mechanical arts" or "technological arts," as some have argued the term "useful arts" means.[236] This Article takes no position on the meaning, but merely points out that this evidence points in a different direction.

III. THE "MACHINE-OR-TRANSFORMATION" TEST

Just about everyone hates business methods patents, especially the weak ones, but the question is how to deal with them. The courts have developed one way to eliminate patents claiming business and information processing methods: barring all methods that do not pass the "machine-or-transformation" test.[237] Put simply, to be patent-eligible, a process must either be tied to a machine or transform something physical.[238] If a claim does not pass this test, it is not patentable regardless of how novel and nonobvious it may be.

Of course, the test is both under- and over-inclusive of business methods by design. The Federal Circuit devised it to deal with a patent that claimed hedging commodity purchase transactions—a "business method patent." The hope, perhaps, was that the test would help identify areas where no patent should be granted. One would think that the test's goal would be to identify business methods, but in fact, the court made clear that business methods were *not* barred wholesale.[239] Thus, the only

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235. *Flook* involved measuring conditions during catalytic conversion and calculating whether the results exceeded predefined alarm limits. *See Flook*, 437 U.S. at 584–85.

236. *See, e.g.*, Pollack, *supra* note 2, at 86–108 (arguing that there is "no record that the first United States Congress or the first United States Patent Board considered business methods to be patentable subject matter" but acknowledging that records are incomplete).

237. *In re* Bilski, 545 F.3d 943, 954 (Fed. Cir. 2008), *aff'd but criticized sub nom.* Bilski v. Kappos, 130 S. Ct. 3218 (2010).

238. *See In re* Bilski, 545 F.3d at 961.The transformation can also be a transformation of data representing something physical, such that processing heart rhythm data is a transformation, while processing money data is not a transformation. *See id.* & n.26.

239. *See id.* at 960 (affirming that business method exception to patent eligibility was unlawful). The Supreme Court agreed that business methods should not be barred wholesale. Bilski v. Kappos, 130 S. Ct. 3218, 3228 (2010) (concluding business methods are within scope of 35 U.S.C. § 101).

thing the test purportedly identified were claims that did not use a machine or transform matter. And those methods were not patent-eligible based on the court's interpretation of Supreme Court precedent, regardless of the label attached to them.[240] As a result, the test could apply to all methods and not just suspect ones; it would bar those that fail even if they are not business methods and it would allow those that pass even if they are clearly business methods.

Second, it is not entirely clear whether "machine" really means machine. This Article assumes as much because the court's clear language requires that a process must be implemented on a machine, and the court even questioned whether a process performed on a computer is tied to a "particular machine."[241] The Federal Circuit has defined "machine" as "a concrete thing, consisting of parts, or of certain devices and combination of devices. This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result."[242] To satisfy the machine prong of the machine-or-transformation test, the claim must be tied to a particular machine and impose meaningful limits on the claim's scope; if a claim merely references a machine, it will not satisfy the test.[243]

Third, a machine is not always a "machine" and a transformation is not always a "transformation." The court also mandated that "insignificant post-solution activity" does not count as a machine.[244] In other words, one may ignore non-inventive machines or transformations that are part of the claim, rendering the process "not implemented on the machine" even if that is the only way to perform it.

Fourth, the machine-or-transformation test is not really the test for patentable subject matter. The Supreme Court ruled that only abstract

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240. For an explanation and critique of the reasoning, see Michael Risch, *Forward to the Past*, 2010 CATO SUP. CT. REV. 333.

241. *See Bilski*, 545 F.3d at 962. *See, e.g.*, CLS Bank Int'l v. Alice Corp. Pty. Ltd., 768 F. Supp. 2d 221, 237 (D.D.C. 2011) ("The Court concludes that nominal recitation of a general-purpose computer in a method claim does not tie the claim to a particular machine or apparatus or save the claim from being found unpatentable under § 101.").

242. SiRF Tech., Inc. v. Int'l Trade Comm'n, 601 F.3d 1319, 1332 (Fed. Cir. 2010) (quoting *In re* Ferguson, 558 F.3d 1359, 1364 (Fed. Cir. 2009)) (internal quotation marks omitted); *see also* Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can., 771 F. Supp. 2d 1054, 1063–65 (E.D. Mo. 2011) (discussing claim that failed to satisfy machine prong of machine-or-transformation test).

243. *See* Fuzzysharp Techs. Inc. v. 3DLabs Inc., Ltd., 447 Fed. App'x 182, 185 (Fed. Cir. 2011) (holding that implementation of process on "general purpose" computer does not satisfy the machine test); *CLS Bank*, Int'l v. Alice Corp. Pty. Ltd., 768 F. Supp. 2d at221221, 238–39. (D.D.C. 2011).

244. *Bilski*, 545 F.3d at 957.

ideas are unpatentable, but noted that the machine-or-transformation test was a "clue."[245]

Fifth, even though the test is not really the whole test, courts appear to be applying it as the test almost exclusively.[246]While the Supreme Court rejected the machine-or-transformation test as a bright-line rule,[247] courts and the USPTO continue to *first* apply the test and *then* look for reasons whether to overrule its presumptive results.[248] Indeed, some courts continue to begin and end their analysis with the machine-or-transformation test, without looking to the general principles the Supreme Court set forth. In short, despite the Supreme Court's rejection, courts frequently use the machine-or-transformation test, and it is nearly as important today as it was before the Court ruled.

A. *Testing the Historical Criticism*

The Federal Circuit claimed that the machine-or-transformation test was based on historical Supreme Court precedent.[249] However, one critique of the test[250] is that it in fact ignores history. In particular:

> [I]n its effort to deal with high technology, the [Federal Circuit] abandoned low technology. There are many patented processes that have nothing to do with machines

245. Bilski v. Kappos, 130 S. Ct. 3218, 3227, 3231 (2010).

246. *See, e.g.*, Ultramercial, LLC v. Hulu, LLC, 657 F.3d 1323, 1328 (Fed. Cir. 2011); Prometheus Labs., Inc. v. Mayo Collaborative Servs., 628 F.3d 1347, 1355 (Fed. Cir. 2010) *rev'd*, 132 S.Ct. 1289 (2012); *Ex Parte* Johnson, No. 2009-006718, 2010 WL 2998170, at *3 (B.P.A.I. July 29, 2010) (finding that "claim "is therefore directed to software per se, which falls outside the scope of patentable subject matter."); *Ex Parte* Christian, No. 2009-006589, 2010 WL 3389297, at *2 (B.P.A.I. Aug. 23, 2010) (holding that "[a] claim that recites no more than software, logic, or a data structure (i.e.,.. an abstraction) does not fall within any statutory category. . . . [A]bstract software code is an idea without physical embodiment."); *Ex Parte* Tse-Huong Choo, No. 2009-006352, 2010 WL 2985362, at *3 (B.P.A.I. July 28, 2010); *Ex Parte* Heuer, No. 2009-004590, 2010 WL 3072973, at *8 (B.P.A.I. Aug. 4, 2010).

247. *Bilski*, 130 S. Ct. at 3227 ("The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible 'process.'").

248. *See CLS Bank*, 768 F. Supp. 2d at 221, 234, 243 (D.D.C. 2011) (analyzing patent under machine-or-transformation test first, then under abstract exception); *see also Prometheus Labs.*, 628 F.3d at 135513471347, 1355 (Fed. Cir. 2010), *cert. granted*, 131 S. Ct. 3027 (2011) (starting patent eligibility analysis with machine-or-transformation test); Lemley, et al., *supra* note 160, at 1319–22 (discussing persistence of machine-or-transformation test).

249. *Bilski*, 545 F.3d at 961.

250. This Article does not challenge the wisdom of the machine-or-transformation test as a tool for weeding out unmeritorious patents; other articles have done so. *See, e.g.*, Lemley et al., *supra* note 160; Risch, *Everything is Patentable*, *supra* note 65, at 647. *But see* Nikola L. Datzov, *The Machine-or-Transformation Patentability Test: The Reinvention of Innovation*, 33 HAMLINE L. REV. 281, 310–324 (2010) (discussing benefits and necessity of machine-or-transformation test).

> or transformations—methods for measuring fabric, methods for harvesting fruit, and methods for manufacturing products by hand (for example, forming wrought iron). At worst, these types of historically patentable inventions would now be unpatentable. At best, determining what is patentable and what is excluded became much more difficult.[251]

To test this assertion, this Article looks to its unique data set to consider whether early inventors thought that patentable methods were limited to those that used a machine or transformed matter to a different state or thing.

B. *Results*

The following Table summarizes the numbers and percentages of patents from the period of 1790–1839 that were methods, as well as those that used machines or transformed matter:

Table III.1: Methods Patents and Patents Involving Machines or Transformations

	Coded Patents	Methods	% Method	Use Machine? Transform?	% Machine or Transform
1790-1793	5	2	40.00%	2	100.00%
1794-1836	2477	343	13.85%	199	58.02%
1836-1839	1182	116	9.81%	73	62.93%
Total	3664	461	12.58%	274	59.44%

The pattern shows that methods were only a small fraction of all patents. However, when inventors chose to patent methods, those methods did not necessarily involve a machine or transform matter to a new state or thing. More than 40% of all methods patents did *not* include the characteristics that courts are using today as presumptive features of patentable methods. Even if we wrongly coded half of the patents we read, the percentage would still be high enough to question the machine-or-transformation test's historical validity.

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251. Risch, *supra* note 220, at 345 (describing consequences of Federal Circuit's machine-or-transformation test).

Examples of non-machine and non-transformative patents might be helpful. The first clear example is Patent No. X168, to Isaac Garretson on May 29, 1797, which described a method for manufacturing boats using tubes. The method could be carried out by hand, and the tubes were still tubes – there were not transformed into a different state. The next is also a method of constructing boats, Patent No. X449, to William Hopkins on May 13, 1803. The patent describes how to heat wood with steam so that the wood bends without breaking, a method still used today. Here, too, the wood is still wood, and making steam may transform water, but that is not the method that is being claimed. The third is Patent No. X617, to Ebenezer Lester on May 10, 1805, describing a method of making molds for cast iron screws by imprinting sand with a wooden model of the screw. The patent covers packing sand (which is not transformed), not the casting of screws. The fourth is Patent No. X856, to Roswell Pitkin on April 23, 1808. This patent describes how to prepare fabric by pressing on it with rollers or plates. The fabric, though flatter and without wrinkles, is unchanged.

Four patents failing the machine-or-transformation test in the first 850 may not seem like many. Note, though, that only fifty-eight patents from this group were available and legible, and only seventeen of those described methods. Thus, about 25% of the methods patents from this first group would have failed the test.

Patent Nos. X5,532[252] and X5,547,[253] both discussed above as relating to making combs from scrap parts and decorating combs, are examples of non-transformative methods. Neither transforms the ivory into something new. However, they are both clearly directed toward manufacturing; they are not business methods, and they are not abstract.

Furthermore, some important patents would fall prey to the rule. For example, Patent No. X7,061, to Thomas Ewbank on May 16, 1832, is for a method of coating pipes with tin. The method involved dipping a completed pipe into tin, thus coating the pipe. A rosin is used to bind the tin to the pipe. The inventor describes why this is an important improvement over the prior art, which involved making separate pipes with tin. It is important enough that rosin flux still forms the basis for coating and soldering today.[254] However, this patent does not use a machine, nor does it transform matter into a different state or thing. The pipe is still a pipe, and the tin is still tin.[255] Perhaps one could argue that

252. To John Brown on June 11, 1829.

253. To Ebenezer Mustin on June 27, 1829.

254. *See, e.g.*, *How to Solder*, AUBUCHON HARDWARE, http://www.hardwarestore.com/LearningCenterArticle.aspx?t1=14&a=114 (last visited Jul. 1, 2012).

255 The process does not form a chemical bond; it is similar to painting, and the flux strips a layer from the surface of the pipe to aid adhesion.

the tin is melted, but the process neither involves a method of melting the tin nor a method of hardening the tin—it is already melted and is simply coated onto the pipe in liquid form.

The results did not change after the patent commissioner and his assistants began examining patents in 1836. The percentage of non-machine-or-transformation patents drops from 42% to 37%t, but the drop is not statistically significant.[256] Even if the change were significant, the number of methods that would fail the test is still high enough to reject any claim that early patent examiners believed that all methods must be tied to a machine or transform matter.

Example patents show that the types of examined claims failing the test were similar to those filed before 1836. The first such patent is Patent No. 13, to John Sowle on August 31, 1836, which described a method of gluing veneer onto mouldings by using a "double caul."[257] The double caul pressed on two sides at once, allowing two pieces of moulding to have veneer added at the same time. The next such patent is Patent No. 54, to Matthias Baldwin on October 15, 1836, which claimed a method for preparing a fire in a grate that could be moved to a train locomotive. While there is transformation of matter in this case (the fire), such transformation would surely be considered unpatentable post-solution activity[258] because the claim is to the movement of the fire, not the method (hopefully obvious to the inventor) of creating fire in the first place.

The trend does not end with early patents. The last patent in the examined group to fail the machine-or-transformation test was Patent No. 1,139, to Abraham Van Vorhes on May 3, 1839, which claimed a method for making pumps watertight by using tarred rope in a groove. The last method is a critically important teaching on the use of modern day O-rings, yet would be presumptively invalid today.

C. *Implications*

These historic patents—indeed, prehistoric patents, given the loss of so many—have relevance to today's machine-or-transformation test. Put simply, even if the test is based on Supreme Court discussion, it is not based on historical practice. Further, the potential for error is great, even as applied to high technology.

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256. In a t-test, p=.352.

257. A caul is a specially shaped piece used to press the veneer to the wood. *See* Karl Shumaker, *Building a Veneer Press*, AM. WOODWORKER, Oct. 1990, at 30, *available at* http://books.google.com/books?id=jfsDAAAAMBAJ&pg=PA30.

258. *In re* Bilski, 545 F.3d 943, 957 (Fed. Cir. 2008), *aff'd but criticized sub nom*. Bilski v. Kappos, 130 S. Ct. 3218 (2010).

1. Problems with the Basis for Machine or Transformation

Any implication that methods patents always used a machine or transformed matter ignores history. The critique quoted above, that the test sacrifices low-technology methods to weed out business methods, appears accurate.[259] The test would, as predicted, bar a substantial percentage of the patents early inventors sought. The trend continues with patents granted after the institution of an examination system. Thus, there is no reason to believe that there was a selection bias prior to the examination system (with respect to this issue, at least).

It is possible that the Federal Circuit just did not think of low-technology methods because it sees very few of them, especially in today's high-technology litigation climate. Even the dissent missed the history, attributing the test to "the past"; but the dissent did not look far enough into the past.[260]

But the rare low-technology patent is no reason to eliminate all low-technology methods. The reason we might not allow many such patents today is that they are likely old or obvious. Low-technology methods should be judged on these factors rather than be excluded wholesale by an over-inclusive rule.

Yet, the allure of easy decision making beckons. Drawing clear subject matter lines barring inventions that are meritless anyway is potentially efficient. Even so, the shortcut is unpalatable in the face of inventive history. The statutory definition of patentable subject matter has not changed significantly since 1790.[261] To suddenly and categorically bar many types of patents that were state of the art when the statute was first enacted cannot be a principled answer to the patentable subject matter problems of today.

2. Identifying Business Methods

The irony, of course, is that the machine-or-transformation test appears to be quite accurate in identifying historic business methods patents. Almost all of the business methods we identified did not use a machine or transform matter.

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259. *See supra* text accompanying note 242.

260. *See In re Bilski*, 545 F.3d at 1011 (Rader, J., dissenting) ("Much of the court's difficulty lies in its reliance on dicta taken out of context from numerous Supreme Court opinions dealing with the technology of the past. In other words, as innovators seek the path to the next techno-revolution, this court ties our patent system to dicta from an industrial age decades removed from the bleeding edge.").

261. *Compare* 1790 Patent Act § 1 (noting that an invention or discovery is eligible for patent protection if it is—any useful art manufacture, engine, machine, or device), *with* 35 U.S.C. § 101 (2006) (noting that "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof" may be patented).

However, this finding does not mean that the test should be used today. Even as applied in history, use of the test would have barred five times as many false positives (about 150) as true positives (about 30). Thus, even if the test appears accurate when applied to business methods, it would eliminate far too many "proper" patents.

The test is also likely under-inclusive today because more and more business methods use machines to do the processing. The institution of the machine-or-transformation test makes this especially true because it put applicants on notice that they should add "on a computer" to all their claims. While the test supposedly disregards "insignificant" use of a computer, there are bound to be many false negatives—that is, the approval of business methods claims because they seem to use a machine. There are also bound to be many false positives—the rejection of manufacturing and other non-business methods claims because a computer is considered to be insignificant post-solution activity.

In short, the limited predictive ability of the test is outweighed by the probability of both false positives that would reject "good" low-technology methods and false negatives that would allow "bad" high-technology business methods.

CONCLUSION

In *Bilski v. Kappos*, the Supreme Court held that nothing in the Patent Act excludes business methods per se, but that abstract principles are not patentable.[262] Justice Stevens's concurrence criticized this holding as ignoring the history of caselaw to the contrary.[263] That history, though, never starts at the beginning, and is never read in the proper context of English law, early patent construction, and early patenting without machines or transformations. Indeed, there were business methods patented early in our nation's history, and—as the caselaw shows—throughout history until today. While many may not like business methods, neither patentees nor the Patent Office objected to them for much of our history.

Thus, it may be that the *Bilski* Court got it right: there is nothing in the statute that categorically bars business methods patents, and court opinions throughout history that narrowed patentability were wrong. Of course, it is unlikely that this Article will convince those that oppose broad patentable subject matter to change their minds.

Hopefully, however, the findings here will focus the discussion on the appropriate areas. Some examples of areas for discussion include:

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262. *See* Bilski v. Kappos, 130 S. Ct. at 3228, 3231 (2010).

263. *See id.* at 3235 (Stevens, J., concurring).

1. whether useful arts are limited to manufacturing and, even if so, whether changing technology over time means that our view of useful arts should expand;
2. whether early judicial decisions hostile to patentable processes should be relied on today, despite later rejection by the Supreme Court and contrary language in the 1952 Patent Act;
3. whether courts should disregard patents claiming physical processes and machines to instead find abstract principles;
4. whether there are policy reasons to limit business methods patents despite their apparent patentability, and how to identify such patents; and
5. whether there are existing and generally applicable reasons to disfavor business methods, such as obviousness or lack of practical utility.

These and other issues are quite important. This Article provides some insight into how we should view them in light of our early inventive history. In short, we must consider these issues today, because history does not provide the answer.