

Spring 2008

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Recommended Citation

David J. Kappos, John R. Thomas, and Randall J. Bluestone, *A Technological Contribution Requirement for Patentable Subject Matter: Supreme Court Precedent and Policy*, 6 NW. J. TECH. & INTELL. PROP. 152 (2008).
<https://scholarlycommons.law.northwestern.edu/njtip/vol6/iss2/1>

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N O R T H W E S T E R N
JOURNAL OF TECHNOLOGY
AND
INTELLECTUAL PROPERTY

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VOL. 6, NO. 2

A Technological Contribution Requirement for Patentable Subject Matter: Supreme Court Precedent and Policy

By David J. Kappos,* John R. Thomas** & Randall J. Bluestone***

¶1 Throughout U.S. history, the constitutional and statutory standard for patent eligible subject matter has been sufficiently flexible to adapt to new technological innovations. For example, during the Industrial Revolution, the Supreme Court in *Cochrane v. Deener*¹ held that an improved method for manufacturing flour was patentable. At the dawn of the Information Age, the Supreme Court held that a claim directed to a chemical process which included a programmed digital computer was patentable,² and the Court's decision in *Diamond v. Chakrabarty*,³ which approved the patenting of a new life form, a microbe capable of digesting petrochemicals, has been credited with advancing the modern era of biotechnology.

¶2 As a general matter, a robust notion of patentable subject matter best serves the United States in the twenty-first century. Within our innovation-driven economy, diverse industries have contributed numerous technical advances that are unquestionably suitable for patenting. The U.S. Patent and Trademark Office (USPTO) has, for example, appropriately awarded patents in the pharmaceutical, biotechnology, computer/electronics, biomedical, financial, mechanical and other important fields.

¶3 Since the Supreme Court last decided an issue of patent eligibility,⁴ however, certain decisions of the Court of Appeals for the Federal Circuit have broadened the scope of subject matter deemed eligible for patenting, particularly in the area of business methods. Under the standard currently followed by the Federal Circuit, an invention is eligible for patenting if it merely achieves "a useful, concrete, and tangible result."⁵ This lenient standard has converted the patent eligibility inquiry into an "end justifies the means" approach, resulting in patents arising from a diverse range of human behavior traditionally outside the realm of patent protection. Areas of endeavor deemed patentable under this lenient standard include, economic analyses,⁶ artistic techniques,⁷ athletic

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¹ *Cochrane v. Deener*, 94 U.S. 780, 781, 791 (1877).

² *Diamond v. Diehr*, 450 U.S. 175, 191-93 (1981).

³ *Diamond v. Chakrabarty*, 447 U.S. 303, 318 (1980).

⁴ *Diehr*, 450 U.S. at 191-93.

⁵ *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998).

⁶ *Method for Simultaneously Improving Educ., Econ., Ecological, Envntl., & Other Processes Vital to Comtys.*, U.S. Pat. No. 7,260,559 (filed Feb. 25, 2003).

⁷ *Painting Kit & Related Method*, U.S. Pat. No. 6,213,778 (filed Dec. 14, 1999) (a method of painting a

skills,⁸ and abstract methods of doing business.⁹ As one Federal Circuit jurist remarked, under that court's case law, "virtually anything is patentable."¹⁰

¶4 The Federal Circuit's permissive patentability standard stands at odds with the Constitution and the Supreme Court's consistent statements that an invention must contribute to the "Progress of [the] . . . useful Arts" in order to be eligible for patenting. In that constitutional context, patentable advances must be tied to a particular machine or apparatus, or alternatively, must reside in the physical transformation of an article to a "different state or thing."¹¹ Although a more recent Federal Circuit opinion has recognized that "the use of human intelligence in and of itself" is not patentable even where a practical result is achieved,¹² the Federal Circuit continues to hold that inventions that do not produce technologically useful results may be patented.¹³ This standard fails to apply an important constraint upon the patent system without any doctrinal justification or alternative tempering principle.

¶5 This article makes the case that the technological contribution requirement for patentable subject matter should be restored. In Part I, this article reviews the extensive body of Supreme Court precedent governing patent eligibility. From this body of case law, we assert that the gravamen of the Supreme Court's precedent is that subject matter patentability is restricted to inventions that involve technological contributions, namely, tangible products or processes that are either (i) tied to a particular machine or apparatus or (ii) cause transformation or reduction of an article to a different state or thing, and in either instance produce technologically beneficial results.

¶6 Part II of this article considers conflicting developments at the Federal Circuit. In *State Street Bank*¹⁴ and other opinions, the Federal Circuit has equated patentability to mere usefulness. This lenient "end justifies the means" standard renders all human endeavors subject to patenting. Although the recently issued panel decisions *In re Comiskey*¹⁵ and *In re Nuijten*¹⁶ have attempted to define some important restrictions upon the lenient patentability standard that was first articulated in *State Street Bank*, these decisions continue to allow patents to be granted on inventions that do not produce technologically useful results. Part II further explains how the Federal Circuit accomplished its shift in patent policy without any evidence suggesting that incentives are needed for innovation with respect to abstract business methods and other non-technological innovations, and without due consideration of the impact of such a shift upon the economy.

¶7 In Part III, this article asserts that the long-standing principles governing subject matter eligible for patenting should be maintained. Although no persuasive justification prompted the abrupt allowance, indeed explosion, of patents for business methods, the

surface using the posterior of an infant).

⁸ Method of Putting, U.S. Pat. No. 5,616,089 (filed Mar. 29, 1996).

⁹ Strategic Capability Networks, U.S. Pat. No. 6,249,768 (filed Oct. 29, 1998).

¹⁰ Hughes Aircraft Co. v. United States, 148 F.3d 1385, 1385 (Fed. Cir. 1998) (Clevenger, J., dissenting) (citing *State St.*, 149 F.3d 1368).

¹¹ See *Gottschalk v. Benson*, 409 U.S. 63, 70-71 (1972).

¹² *In re Comiskey*, 499 F.3d 1365, 1378 (Fed. Cir. 2007).

¹³ *Id.* at 1379-80.

¹⁴ *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998).

¹⁵ *In re Comiskey*, 499 F.3d at 1365.

¹⁶ *In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007).

breadth of coverage of such patents has raised important concerns. Among them are concerns that such patents are not restricted to a specific technological contribution, and therefore, may effectively appropriate all conceivable solutions to a particular problem. Such an overbroad monopoly thwarts progress of the useful arts by precluding legitimate attempts to design around a patent and by providing unjustified rewards beyond the contribution of the inventor. Part IV of this article concludes that, consistent with Supreme Court precedent on patent eligibility, a technological contribution should be required for subject matter patentability.

I. THE CONSTITUTION AND THE SUPREME COURT'S PRECEDENT ESTABLISH LIMITS UPON THE SUBJECT MATTER ELIGIBLE FOR PATENTING

A. *Formative Principles*

¶8 The Constitution speaks to the sorts of inventions that are appropriately patented. It provides:

The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.¹⁷

¶9 Historical context confirms that the Constitution restricts the scope of patent eligible subject matter. For example, the English Statute of Monopolies of 1623, upon which the U.S. patent system is largely based, provided an exception to the general prohibition against monopolies by granting a “privilege for the term of fourteen years or under [for] the sole working or making any manner of new manufactures . . . to the . . . inventor”¹⁸ Notably, that Statute eliminated commercial practices from the scope of patentable exclusivity:

[T]hose who formulated the Constitution were familiar with the long struggle over monopolies so prominent in English history, where exclusive rights to engage even in *ordinary business activities* were granted so frequently by the Crown for the financial benefits accruing to the Crown only. It was desired that in this country any Government grant of a monopoly for even a limited time should be *limited to those things which serve in the promotion of science and the useful arts*.¹⁹

Contemporaneous use of the term “useful arts” by the Founding Fathers further confirms that patent eligible subject matter was limited to technological or industrial innovations. The term “useful arts” was used in the context of the production of goods and the industrial, mechanical, and manual arts by a delegate to that Convention just days before

¹⁷ U.S. CONST. art. I, § 8, cl. 8. *See also* THE FEDERALIST No. 43, at 294 (James Madison) (M. Walter Dunne ed., 1901) (“The right to useful inventions . . . belong[s] to the inventors.”).

¹⁸ Statute of Monopolies, 1623, 21 Jac. 1, c.3 (Eng.), *reprinted in* 9 DONALD S. CHISUM, CHISUM ON PATENTS, App. 8-3 (2005).

¹⁹ *In re Yuan*, 188 F.2d 377, 380 (C.C.P.A. 1951) (emphasis added).

the Constitutional Convention of 1787.²⁰ Likewise, Alexander Hamilton praised the patent system as a way of encouraging manufacturing industries and “[inventions] which relate to machinery” in the United States.²¹

¶10 Consistent with the constitutional foundation, the current patent statute, 35 U.S.C. § 101, provides:

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, subject to the conditions and requirements of this title.

The Supreme Court has long held that the first three categories enumerated in § 101 — machines, manufactures and compositions of matter — refer to physical products. The Supreme Court has defined the term “machine” in § 101 to mean “a concrete thing, consisting of parts, or of certain devices and combination of devices.”²² The term “manufacture” in § 101 means “the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery;”²³ and the phrase “composition of matter” has been defined to mean “all compositions of two or more substances and . . . all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids.”²⁴

¶11 The fourth § 101 category, “process”, is defined in the patent statute as: “process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.”²⁵

¶12 Although the meanings of the terms “process, art or method” are broad on their face, the Supreme Court’s precedent “forecloses a purely literal reading of § 101.”²⁶ In

²⁰ The delegate gave examples of the “useful arts”:

Under all the disadvantages which have attended manufactures and *the useful arts*, it must afford the most comfortable reflection to every patriotic mind to observe their progress in the United States and particularly in Pennsylvania. . . . Permit me however to mention them under their general heads: meal of all kinds, ships and boats, malt and distilled liquors, potash, gunpowder, cordage, loaf-sugar, pasteboard, cards and paper of every kind, books in various languages, snuff, tobacco, starch, cannon, musquets, anchors, nails, and very many other articles of iron, bricks, tiles, potters ware, mill-stones, and other stone work, cabinet work, trunks and Windsor chairs, carriages and harness of all kinds

TENCH COXE, AN ADDRESS TO AN ASSEMBLY OF THE FRIENDS OF AMERICAN MANUFACTURES, 17-18 (Philadelphia, R. Aitkin & Son 1787) (emphasis added); *see also* JOSEPH BARNES, TREATISE ON THE JUSTICE, POLICY, AND UTILITY OF ESTABLISHING AN EFFECTUAL SYSTEM FOR PROMOTING THE PROGRESS OF USEFUL ARTS 4 (Francis Bailey 1792) (Patentable invention “consists in discoveries in science, and in the useful arts; by means of which agriculture, navigation, manufactures, and manual labor are, not only facilitated, but much promoted; and, indeed, to these they owe their present state of perfection.”).

²¹ ALEXANDER HAMILTON, THE REPORTS OF ALEXANDER HAMILTON: REPORT ON MANUFACTURES (Dec. 5, 1791) 115-16, 175-76 (Jacob E. Cooke ed., Harper & Row 1964).

²² *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 570 (1864).

²³ *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980).

²⁴ *Id.*

²⁵ 35 U.S.C. § 100(b) (2006).

²⁶ *Parker v. Flook*, 437 U.S. 584, 589 (1978); *see also* *Diamond v. Diehr*, 450 U.S. 175, 183 (1981) (“A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts,

particular, the Supreme Court has consistently distinguished between concrete, specific and technologically-grounded aspects of innovative contributions, which are protectable via the patent system, from underlying abstract or general principles, which are not.

¶13 In an early landmark decision regarding patentable subject matter, *O'Reilly v. Morse*,²⁷ the Supreme Court revoked Morse's 8th claim, which recited:

I do not propose to *limit myself to the specific machinery* or parts of machinery described in the foregoing specification and claims; *the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances,* being a new application of that power of which I claim to be the first inventor or discoverer.²⁸

The Supreme Court reasoned that the claim was “not warranted by law” because it would protect, and thereby prevent use of, all conceivable solutions to accomplish the recited result.²⁹

If this claim can be maintained, it matters not by what process or machinery the result is accomplished. For aught that we now know some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. . . . But yet if it is covered by this patent the inventor could not use it, nor the public have the benefit of it without the permission of this patentee.³⁰

¶14 The Court explained that Morse was only entitled to a patent for the method of using electro-magnetism to print marks or signs at a distance that he actually invented: “he has not discovered that the electromagnetic current, used as a motive power, *in any other method, and with any other combination,* will do as well.”³¹

¶15 Twenty years later, in *Rubber-Tip Pencil Co. v. Howard*,³² the Supreme Court invalidated a claim reciting a rubber eraser having a hole to accept a pencil. The Court acknowledged that the idea of a pencil combined with a rubber eraser was a good one, but considered that its implementation so readily followed from the idea that it could not be patented. In striking down the patent, the Court explained that “an idea of itself is not patentable, but a new device by which it may be made practically useful is.”³³

¶16 *O'Reilly* and *Rubber-Tip Pencil* are bedrock cases for determining patent eligibility. Both opinions confirm that the patent system does not protect all types of processes nor does it protect abstract ideas. These cases also reinforce the important policy goal of maintaining “basic tools of scientific and technological work” within the

performed upon the subject-matter to be transformed and reduced to a different state or thing.”).

²⁷ *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1854).

²⁸ *Id.* at 112 (emphasis added).

²⁹ *Id.* at 113.

³⁰ *Id.* at 112-13.

³¹ *Id.* at 117 (emphasis added).

³² *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498 (1874).

³³ *Id.* at 507.

public domain.³⁴ *O'Reilly* in particular makes it clear that process patents should not be allowed to appropriate all solutions to a problem. The Supreme Court has consistently applied the fundamental principles announced in *O'Reilly* and *Rubber-Tip Pencil* in the intervening years.

B. Modern Supreme Court Cases

¶17 Notably, in a trilogy of cases decided at the dawn of the Information Age, the Supreme Court considered computer-related inventions and confirmed its early precedent as applied to new fields of endeavor. In *Gottschalk v. Benson*,³⁵ the Court considered whether a claimed “method for converting binary-coded decimal (BCD) numerals into pure binary numerals” was eligible for patenting. The Court observed that the claimed method was not limited to any particular apparatus, context, or use. Rather, the claims “purported to cover any use of the claimed method in a general-purpose digital computer of any type.”³⁶

¶18 The *Gottschalk* Court concluded that the claimed method was not patentable.³⁷ Much as “one may not patent an idea,” the Supreme Court explained, one may not patent the “formula for converting BCD numerals to pure binary numerals.”³⁸ Observing that “the mathematical formula involved here has no substantial practical application except in connection with a digital computer,” the Court explained that an issued patent including the claims-at-issue “would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”³⁹ In reaching its decision, the Supreme Court acknowledged that the “[t]ransformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability of a process claim that does not include particular machines.”⁴⁰

¶19 *Parker v. Flook*, the second case, involved claims drawn to a method for computing an “alarm limit” on any process variable involved in the catalytic chemical conversion of hydrocarbons.⁴¹ When a process variable, such as temperature, pressure, or flow rate, exceeded a predetermined “alarm limit,” an alarm signaled “an abnormal condition indicating either inefficiency or perhaps danger.”⁴² The only difference between the claimed method and conventional methods was the mathematical algorithm or formula used to calculate the alarm limit.⁴³

¶20 The Supreme Court held that the claim was ineligible for patenting because it simply provided a formula for computing an updated alarm limit.⁴⁴ The application did not explain how to “select the appropriate margin of safety, the weighing factor, or any

³⁴ See *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

³⁵ *Id.* at 64.

³⁶ *Id.*

³⁷ *Id.* at 71-73.

³⁸ *Id.* at 71.

³⁹ *Id.* at 71-72.

⁴⁰ *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972). See, e.g., *Expanded Metal Co. v. Bradford*, 214 U.S. 366, 385-86 (1909) (sustaining a patent on a process for expanding metal that involved mechanical operations).

⁴¹ *Parker v. Flook*, 437 U.S. 584, 585 (1978).

⁴² *Id.*

⁴³ *Id.* at 585-86.

⁴⁴ *Id.* at 594-96.

other variables. . . . Nor [did] it . . . contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system.”⁴⁵

¶21 In accordance with the *Gottschalk* decision, the Supreme Court in *Parker* confirmed that a process does not automatically fall within the patentable subject matter of § 101 merely because a process implements a principle or mathematical formula in some specific fashion.⁴⁶ To permit otherwise “would make the determination of patentable subject matter depend simply on the draftsman’s art and would ill serve the principles underlying the prohibition against patents for ‘ideas’ or phenomena of nature.”⁴⁷ Justice Stevens took pains to note that the “rule that the discovery of a law of nature cannot be patented rests, not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the kind of ‘discoveries’ that the statute was enacted to protect.”⁴⁸ Justice Stevens further explained that an inventive application of a mathematical formula, principle or phenomenon of nature may be patented, but only if “there is some other inventive concept in its application.”⁴⁹

¶22 The Court further explained that “post-solution activity” — the adjustment of the alarm limit to the figure computed according to the formula — cannot “transform an unpatentable principle into a patentable process.”⁵⁰ Justice Stevens appreciated that a skilled patent drafter could “attach some form of post-solution activity to almost any mathematical formula.”⁵¹ Yet “the concept of patentable subject matter under § 101 is not ‘like a nose of wax which may be turned and twisted in any direction’”⁵²

¶23 In the last case, *Diamond v. Diehr*, the invention was “a process for molding raw, uncured synthetic rubber into cured precision products.”⁵³ According to the patent, the industry had been unable “to obtain uniformly accurate cures because the temperature of the molding press could not be precisely measured, thus making it difficult to . . . determine cure time.”⁵⁴ To overcome this problem, the method required, among other things, constantly measuring the actual temperature inside the mold and then automatically feeding the temperature measurements into a computer that would repeatedly recalculate the cure time by use of a well-known equation.⁵⁵

¶24 The Supreme Court held the claims to be patentable because “a physical and chemical process for molding precision synthetic rubber products falls within the § 101 categories of possibly patentable subject matter.”⁵⁶ Here, the “claims were not directed to a mathematical algorithm or an improved method of calculation but rather recited an improved process for molding rubber articles by solving a practical problem which had

⁴⁵ *Id.* at 586.

⁴⁶ *Id.* at 593.

⁴⁷ *Parker v. Flook*, 437 U.S. 584, 593 (1978).

⁴⁸ *Id.*

⁴⁹ *Id.* at 594.

⁵⁰ *Id.* at 590.

⁵¹ *Id.*

⁵² *Id.* (quoting *White v. Dunbar*, 119 U.S. 47, 51 (1886)).

⁵³ *Diamond v. Diehr*, 450 U.S. 175, 177 (1981).

⁵⁴ *Id.* at 178.

⁵⁵ *Id.*

⁵⁶ *Id.* at 184.

arisen in the molding of rubber products.”⁵⁷ Justice Rehnquist appreciated that “[i]ndustrial processes such as this [sic] are the types which have historically been eligible to receive the protection of our patent laws.”⁵⁸

¶25

The Supreme Court further stated that “a claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer.”⁵⁹ Rather, “when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.”⁶⁰ On the other hand, “laws of nature, natural phenomena, and abstract ideas” are excluded from patent protection.⁶¹ Scientific truths, or the mathematical expression of them, are similarly outside the patent system, but “a novel and useful structure created with the aid of knowledge of scientific truth may be [patentable].”⁶²

¶26

In these and other relevant patent cases, the Supreme Court has developed several cogent principles that constrain subject matter patentability:

- (1) “Excluded from . . . patent protection are laws of nature, natural phenomena, and abstract ideas.”⁶³
- (2) “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”⁶⁴
- (3) One may not patent an idea.⁶⁵
- (4) “Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.”⁶⁶
- (5) Mathematical algorithms are not patentable.⁶⁷
- (6) One cannot patent all solutions to a problem.⁶⁸
- (7) “It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself.”⁶⁹
- (8) Insignificant post-solution activity or limiting an abstract idea to one technological environment will not render an abstract idea patentable.⁷⁰

⁵⁷ *Id.* at 181.

⁵⁸ *Id.* at 184.

⁵⁹ *Diamond v. Diehr*, 450 U.S. 175, 187 (1981).

⁶⁰ *Id.* at 192.

⁶¹ *Id.* at 185.

⁶² *Id.* at 188 (quoting *Mackay Radio & Telegraph Co. v. Radio Corp of Am.*, 306 U.S. 86, 94 (1939)).

⁶³ *Id.* at 185.

⁶⁴ *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1852).

⁶⁵ *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972) (quoting *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (20 Wall.) 498, 507 (1874)).

⁶⁶ *Id.*

⁶⁷ See *Diamond v. Diehr*, 450 U.S. 175, 186 (1981); *Parker v. Flook*, 437 U.S. 584, 586 (1978); *Gottschalk*, 409 U.S. at 71-72.

⁶⁸ See *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1853).

⁶⁹ *Diehr*, 450 U.S. at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267-68 (1853)).

- (9) “A claim covers and secures a process, a machine, a manufacture, a composition of matter, or a design, but *never the function or result* of either, nor the scientific explanation of their operation.”⁷¹

¶27 Although the Supreme Court has not addressed the issue of patent eligibility in a generation, its grant of certiorari in *Laboratory Corp. of America v. Metabolite Labs., Inc.* potentially suggests its renewed interest.⁷² Given that the Federal Circuit decision under review included no discussion of § 101 whatsoever,⁷³ *LabCorp* was a rather unlikely candidate for discussion of the statutory subject matter issue. Ultimately this deficiency contributed to the Supreme Court’s disposition of the case by dismissing the writ of certiorari as improvidently granted just three months later.⁷⁴

¶28 Metabolite Laboratories is the proprietor of U.S. Patent No. 4,940,658 (’658 patent), which is directed to a method for detecting cobalamin or folate deficiency. Deficiencies in these vitamins can cause serious illness, but are readily treated via supplements. Claim 13 of the ’658 patent recites:

13. A method of detecting a deficiency of cobalamin or folate in warm-blooded animals comprising the steps of:

assaying a body fluid for an elevated level of total homocysteine; and

correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate.⁷⁵

¶29 It should be appreciated that physicians have long tested blood for levels of homocysteine. The patentable advance of the ’658 patent concerns the second, “correlating” step of claim 13. Arguably, this step merely claims the scientific discovery that elevated levels of homocysteine in the blood tend to demonstrate a deficiency in cobalamin or folate.

¶30 Metabolite brought suit against LabCorp for infringement of the ’658 patent. Metabolite ultimately prevailed, obtaining over two million dollars in damages. On appeal, the Federal Circuit affirmed the judgment of infringement, in part upholding the ’658 patent over LabCorp’s assertions of its failure to satisfy the anticipation, obviousness, definiteness, written description, and enablement requirements.⁷⁶ The issue of statutory subject matter was not discussed in any respect within the court of appeals opinion.

¶31 In late 2004, LabCorp petitioned the Supreme Court for a writ of certiorari.⁷⁷ The Supreme Court responded by requesting the government to file a brief on one of the questions posed by LabCorp. As the Supreme Court framed the question:

⁷⁰ See *Diehr*, 450 U.S. at 191-92; *Parker*, 437 U.S. at 590.

⁷¹ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996) (emphasis added).

⁷² *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004), *cert. granted*, 546 U.S. 975 (2005), *and cert. dismissed*, 126 U.S. 2921 (2006).

⁷³ *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004).

⁷⁴ *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S.Ct. 2921 (2006).

⁷⁵ *Id.* at 2924.

⁷⁶ *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1365-69 (Fed. Cir. 2004).

⁷⁷ *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004), *petition for*

Respondent's patent claims a method for detecting a form of vitamin B deficiency, which focuses upon a correlation in the human body between elevated levels of certain amino acids and deficient levels of vitamin B. The method consists of the following: First, measure the level of the relevant amino acids using any device, whether the device is, or is not patented; second, notice whether the amino acid level is elevated and, if so, conclude that a vitamin B deficiency exists. Is the patent invalid because one cannot patent "laws of nature, natural phenomenon, and abstract ideas?"⁷⁸

¶32 The Supreme Court subsequently granted certiorari notwithstanding the government's conclusion the Court should decline to review the case. Certiorari was granted with respect to the following question:

Whether a method patent setting forth an indefinite, undescribed, and non-enabling step directing a party to "correlat[e]" results can validly claim a monopoly over a basic scientific relationship used in medical treatment such that any doctor necessarily infringes the patent merely by thinking about the relationship after looking at a test result.⁷⁹

¶33 Although the Supreme Court presided over oral argument in the case, it ultimately denied the writ of certiorari as improvidently granted.⁸⁰ The strongly worded dissenting opinion of Justice Breyer (joined by Justices Stevens and Souter) remains of significance, however.⁸¹ These three Justices not only believed that the claimed invention was unpatentable because it recited a phenomenon of nature. They additionally found it an easy case, no matter what the precise scope of the "phenomenon of nature" doctrine. Three Justices is, of course, just one short of the number needed to grant certiorari, and just two short of a majority of the Court. In view of the Court's renewed interest in the patent system, an appropriate case may well provoke a grant of certiorari on statutory subject matter in coming Terms.

C. *The Technological Contribution Standard*

¶34 A comprehensive understanding of subject matter patentability can be deduced directly from the Supreme Court's precedent. More specifically, patentable subject matter is restricted to inventions that involve technological contributions — namely, tangible products or processes that either (i) are tied to a particular machine or apparatus or (ii) cause transformation or reduction of an article to a different state or thing, and in either instance, produce technologically beneficial results. The long-standing principles governing subject matter eligible for patenting should be maintained such that, for example, a method of painting a surface using the posterior of an infant (U.S. Pat. No. 6,213,778) and a method for making jury selection determinations (U.S. Pat. No.

cert. filed, 2004 U.S. Briefs 607, (U.S. Nov. 3, 2004) (No. 04-607).

⁷⁸ *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 543 U.S. 1185 (2005).

⁷⁹ *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 546 U.S. 975 (2005).

⁸⁰ *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S.Ct. 2921 (2006).

⁸¹ *Id.*

6,607,389) are not patentable subject matter because they do not produce technologically-beneficial results.

¶35 In summarizing the Supreme Court’s existing standard, we recognize that the Court has used language suggesting that it may not be a definitive rule, but rather more akin to a presumption.⁸² In the intervening years, however, no situation has been presented to the Supreme Court to justify an exception to this standard. This test sets forth a reasonable and balanced standard for subject matter eligibility.

¶36 The requirement for technological contribution is also consistent with numerous cases of the Supreme Court, referring to patents as properly directed toward “technology” and “technological growth and industrial innovation.”⁸³ We have not found any cases from the Supreme Court that are inconsistent with the technological contribution requirement. Until recent years, lower courts had also recognized that patenting was confined to the “technological arts,” a modern term recognized as synonymous with the phrase “useful arts” as it appears in the Constitution.⁸⁴

¶37 This test is rooted in the constitutional requirement that patents are granted to promote the progress of useful arts. In historical context, the useful arts required a technological contribution. Supreme Court precedent reinforces the need for a technological contribution for patent eligibility. A fair reading of controlling Supreme Court cases in the aggregate provides the foundation for the standard that a claim to a process or method is not patentable unless it either (i) is tied to a particular machine or apparatus or (ii) causes transformation or reduction of an article to a different state or thing, and in either instance produces technologically beneficial results.

⁸² The *Gottschalk* Court stated:

It is argued that a process patent *must* either be tied to a particular machine or apparatus or *must* operate to change articles or materials to a ‘different state or thing.’ We do not hold that no process could ever qualify if it did not meet the requirements of our prior precedents.

Gottschalk v. Benson, 409 U.S. 63, 71 (1972) (emphasis added). However, the Supreme Court has not undertaken to define circumstances where a process outside its precedent would qualify for patent protection.

⁸³ See, e.g., *Pfaff v. Wells*, 525 U.S. 55, 63 (1998) (“[T]he patent system represents a carefully crafted bargain that encourages both the creation and the public disclosure of new and useful advances in *technology*, in return for an exclusive monopoly for a limited period of time.”) (emphasis added); *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390 (1996) (“Congress created the Court of Appeals for the Federal Circuit as an exclusive appellate court for patent cases, H.R. Rep. No. 97-312, pp. 20-23 (1981), observing that increased uniformity would ‘strengthen the United States patent system in such a way as to foster *technological growth and industrial innovation*.”) (emphasis added); *Bonito Boats v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150-51 (1989) (same); *Diamond v. Diehr*, 450 U.S. 175, 184 (1981) (“*Industrial processes* . . . have historically been eligible to receive the protection of our patent laws.”) (emphasis added); *Gottschalk*, 409 U.S. at 64 (“The claims were not limited to any particular art or *technology*, to any particular apparatus or machinery, or to any particular end use.”) (emphasis added).

⁸⁴ See *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *In re Bergy*, 596 F.2d 952, 959 (C.C.P.A. 1979) (“We have previously pointed out that the present day equivalent of the term ‘useful arts’ employed by the Founding Fathers is ‘*technological arts*.’”) (emphasis added), *aff’d sub nom.*; *In re Waldbaum*, 457 F.2d 997, 1003 (C.C.P.A. 1979); *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970) (“All that is necessary, in our view, to make a sequence of operational steps a statutory ‘process’ within 35 U.S.C. § 101 is that it be in the *technological arts* so as to be in consonance with the Constitutional purpose to promote the progress of ‘useful arts.’”) (emphasis added).

II. FEDERAL CIRCUIT DECISIONS HAVE APPLIED AN UNJUSTIFIABLY EXPANSIVE PATENT ELIGIBILITY STANDARD

¶38 A specific, and particularly troubling, arena where Federal Circuit rulings diverge from the Supreme Court's precedent is the eligibility of business methods for patenting. Historically, methods of doing business were not patentable subject matter and the 1952 Patent Act did not change this principle.⁸⁵ "Although the term 'process' was not added to 35 U.S.C. § 101 until 1952, a process [as shaped by the Supreme Court's precedent] has historically enjoyed patent protection because it was considered a form of 'art' as that term was used in the 1793 Act."⁸⁶ In an oft-quoted comment, Judge Rich explained that:

Section 101, entitled "Inventions patentable," enumerates the categories of inventions subject to patenting. Of course, not every kind of an invention can be patented. Invaluable though it may be to individuals, the public, and national defense, the invention of a more effective organization of the materials in, and the techniques of teaching a course in physics, chemistry, or Russian is not a patentable invention because it is outside of the enumerated [statutory] categorie Also outside that group is one of the greatest inventions of our times, the diaper service.⁸⁷

¶39 The dicta in the Federal Circuit decision in *State Street*, however, created a dramatic sea-change in the patentability of inchoate business methods. *State Street* involved a patent generally directed to a data processing system for implementing an investment structure that was developed for use in Signature's business as an administrator and accounting agent for mutual funds.⁸⁸ The district court invalidated the

⁸⁵ See, e.g., *Seagram & Sons, Inc. v. Marzall*, 180 F.2d 26, 27-28 (D.C. Cir. 1950) (method for testing beverages and like products to make advance determination of (Cont'd) consumer reactions and preferences not "new and useful art, machine, manufacture, or any new and useful improvements thereof"); *Loew's Drive-in Theatres, Inc. v. Park-In Theatres, Inc.*, 174 F.2d 547, 553 (1st Cir. 1949) (patent claiming arranging automobiles such that occupants would have an unobstructed view of a screen or stage did "not involve an exercise of the faculty of invention"); *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469-72 (2d Cir. 1908) ("cash-registering and account-checking" unpatentable "system of transacting business disconnected from the means for carrying out the system . . ."); *In re Patton*, 127 F.2d 324, 327-28 (C.C.P.A. 1942) (system of fighting fires using standardized and interchangeable firefighting equipment not patentable subject matter; "a system of transacting business, apart from the means for carrying out such system, is not within . . . [the patent statute] . . . nor is an abstract idea or theory, regardless of its importance or the ingenuity with which it was conceived, apart from the means for carrying such idea or theory into effect, patentable subject matter."); *In re Wait*, 73 F.2d 982, 982-83 (C.C.P.A. 1934) (method of buying and selling stocks, wherein one party advertised offer, another party accepted offer and such transaction was recorded, constituted unpatentable method of doing business); *In re Sterling*, 70 F.2d 910, 911-12 (C.C.P.A. 1934) (patent application directed to a particular arrangement of printed matter on bank checks and stubs not patentable subject matter); *Ex Parte Turner*, 1894 Dec. Comm'r Pat. 36, 36-37 (method to secure reading of advertisements not patentable because, *inter alia*, process carried no physical effect; "a plan or theory of action which, if carried into practice, could produce no physical results proceeding direct from the operation of the theory or plan itself is not an art within the meaning of the patent laws."); *Ex Parte Abraham*, 1869 Dec. Comm'r Pat. 59 (method for detecting and preventing tax evasion by employing stamps to be severed upon attachment to an article unpatentable; "[i]t is contrary . . . to the spirit of the law . . . to grant patents for methods of book-keeping . . .").

⁸⁶ *Diehr*, 450 U.S. at 182 (citing *Corning v. Burden*, 15 How. 267-68, 252, 14 L.Ed. 683 (1854)).

⁸⁷ Giles S. Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 393-94 (1960). Judge Rich was one of the principal drafters of the 1952 Patent Act as well as a Judge of the Court of Customs and Patent Appeals and the Court of Appeals for the Federal Circuit from 1957 to 1999.

⁸⁸ *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1370 (Fed. Cir. 1998).

patent for failure to claim statutory subject matter under § 101.⁸⁹ The Federal Circuit reversed the district court, ruling that the claims were directed to patentable subject matter because they produced a “useful, concrete and tangible result”:⁹⁰

[T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces “a useful, concrete and tangible result” — a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.⁹¹

¶40 Furthermore, although *State Street* quotes from *Diehr* that “anything under the sun made by man is patentable,” that quote was taken out of context.⁹² Congressional reports employed that phrase only with respect to machines and manufactures.⁹³ Certainly, § 101 does not say “anything under the sun made by man” is patentable subject matter, but rather references four specific categories.

¶41 While the Federal Circuit’s holding in *State Street* regarding the claim at issue can be justified, we believe that dicta in the decision ignited the explosion of non-technological business method patents seen today. The Federal Circuit concluded that the claim was drawn to a system, not a method of doing business, and it included a number of structural elements as limitations — thus, the claimed invention was a machine that implemented a process. However, the expansive dicta in *State Street* are inconsistent with the Supreme Court’s precedent.⁹⁴

¶42 Acquiescing to the demands of patent applicants and responding to the *State Street* dicta, the USPTO dramatically changed course. Thus, for example, the USPTO promulgated “interim guidelines” stating that an invention need not lie within the “technological arts” to be patented.⁹⁵ Issued patents from such diverse areas as architecture, athletics, insurance, painting, psychology, and the law itself, reveal just how far afield the patent system has gone in granting patents in virtually any area of human endeavor, such as teaching a golf putting stroke or a method for lifting a box.⁹⁶

⁸⁹ *Id.*

⁹⁰ *Id.* at 1375.

⁹¹ *Id.* at 1373.

⁹² *Id.*

⁹³ See S. REP. NO. 82-1979, at 2399 (1952) (“A person may have ‘invented’ a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.”); H.R. REP. NO. 82-1923 (1952) (same).

⁹⁴ See, e.g., *State Street*, 149 F.3d at 1375 (“We take this opportunity to lay this ill-conceived exception [i.e., that business methods are not patentable] to rest.”).

⁹⁵ *Official Gazette of the U. S. Pat. & Trademark Off.*, 1300 O.G. 142, No. 4 (Nov. 22, 2005). In reaction to the sweeping impact of *State Street*, Congress passed the First Inventor Defense Act of 1999, i.e., 35 U.S.C. § 273, to provide a defense to infringement of a business method patent if the accused infringer “had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent.” First Inventor Defense Act of 1999, Pub. L. No. 106-113, 113 Stat. 1536 (codified as amended at 35 U.S.C. § 273 (2000)). Beyond that limited purpose, there is nothing in the legislative history to suggest Congress intended to make any other changes to the United States patent laws. Thus, the Supreme Court’s precedent on section 101 patent eligibility for business methods — as articulated in the *Gottschalk-Parker-Diehr* trilogy — remains the controlling standard.

⁹⁶ See, e.g., Method For Demonstrating a Lifting Technique, U.S. Patent No. 5,498,162 (filed Sept. 6,

¶43 In the context of business methods, the broad dicta in *State Street* reduced the historically separate subject matter requirement of § 101 to a mere “practical utility” determination.⁹⁷ The contrast in approach is clearly evident from the Supreme Court’s precedent. In *Parker v. Flook*, for example, the case turned “entirely on the proper construction of § 101 of the Patent Act, which describes the subject matter that is eligible for patent protection.”⁹⁸ Whether subject matter is eligible for patenting is an entirely separate inquiry from whether the claimed invention provides some useful result, i.e., whether it meets the separate utility requirement of § 101.⁹⁹

¶44 No decision of the Supreme Court supports the broad proposition that merely because a method yields a useful result it should *ipso facto* be eligible for patenting. Rather, the Supreme Court has recognized that the utility requirement of 35 U.S.C. § 101 is a distinct and separate test from the eligibility requirement of § 101. A mere “useful result” standard is much too lenient to determine whether subject matter is eligible for patenting. As Judge Rich so aptly stated decades ago, the diaper service (prior to the advent of disposable diapers) was undoubtedly one of the greatest business creations in its day, invaluable to countless individuals. However, despite its usefulness, the diaper service does not fall within one of the four enumerated categories of § 101.¹⁰⁰

¶45 In his dissent from the Supreme Court’s dismissal of the writ of certiorari in *Metabolite* as improvidently granted,¹⁰¹ Justice Breyer recognized as much. Identifying this inconsistency between the Court’s precedent and that of the Federal Circuit, Justice Breyer explained that the Supreme Court had never equated patentable subject matter with mere utility. He further identified three cases where the Court held a claimed invention to constitute unpatentable subject matter despite the fact it had achieved a useful, concrete, and tangible result.¹⁰²

¶46 Although only two Justices joined with Justice Breyer in his dissenting opinion, his observations had no direct impact upon the law of patent eligibility. They appear to have been keenly felt nonetheless. Possibly influenced by Justice Breyer’s dissent from the dismissal of certiorari in *Metabolite*, the Federal Circuit recently issued two decisions that revisited, and essentially revised, the holding of *State Street*. In *In re Nuijten*,¹⁰³ and *In re Comiskey*,¹⁰⁴ the Federal Circuit imposed restrictions on the broad scope of patentable subject matter it first announced in *State Street*.

1994), Method and Apparatus for Improving Putting Skill, U.S. Patent No. 6,447,403 (filed Sept. 11, 2000), Methods of Exchanging an Obligation, U.S. Patent No. 6,912,510 (filed May 9, 2000), Character Assessment Method, U.S. Patent No. 5,190,458 (filed Apr. 17, 1991), and Method and Apparatus For Funding Education By Acquiring Shares of Students Future Earnings, U.S. Patent No. 5,809,484 (filed May 24, 1995).

⁹⁷ *State Street*, 149 F.3d at 1375 (“The question of whether a claim encompasses *statutory subject matter* should not focus on which of the four categories of subject matter a claim is directed to — process, machine, manufacture, or composition of matter — but rather on the essential characteristics of the subject matter, in particular, its *practical utility*.”) (emphasis added).

⁹⁸ *Parker v. Flook*, 437 U.S. 584, 588 (1978).

⁹⁹ *See id.*

¹⁰⁰ *See Rich*, *supra* note 87, at 393.

¹⁰¹ *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S.Ct. 2921 (2006).

¹⁰² Justice Breyer identified *O’Reilly v. Morse*, *Gottshalk v. Benson*, and *Parker v. Flook* as involving claimed inventions that achieved useful, concrete, and tangible results that nonetheless were held not to be patentable subject matter.

¹⁰³ *In re Nuijten*, 500 F.3d 1346 (Fed. Cir. 2007).

¹⁰⁴ *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007).

¶47 In *In re Nuijten*,¹⁰⁵ the Court of Appeals concluded that claims directed toward transitory electrical and electromagnetic signals propagated through a medium were not encompassed with any of the categories of statutory subject matter. Judge Gajarsa took pains to note that *State Street* should not be read to hold that the four subject matter categories were “rendered irrelevant, non-limiting, or subsumed into an overarching question about patentable utility.”¹⁰⁶ According to *Nuijten*, the statutory subject matter inquiry required a careful review into whether the claimed invention could be fairly identified as a process, machine, manufacture, or composition of matter.¹⁰⁷ If the claimed invention did not fall into at least one of those categories, it was not patentable, whether or not it achieved a useful result.

¶48 In a second opinion, *In re Comiskey*,¹⁰⁸ the Federal Circuit ruled that claims directed solely towards a “method for mandatory arbitration resolution regarding one or more unilateral documents” also did not comprise patentable subject matter. Upon reviewing the Supreme Court opinions, Judge Dyk reasoned that the prohibition against patenting abstract ideas incorporated two aspects.¹⁰⁹ First, he explained, abstract ideas that lack a practical application are unpatentable. Even if an abstract idea may be put to practical use, however, the idea may only be patented if “it is embodied in, operates on, transforms, or otherwise involves another class of statutory subject matter, i.e., a machine, manufacture, or composition of matter.”¹¹⁰ The Federal Circuit concluded that controlling precedent held “that the application of human intelligence to solve practical problems is not in and of itself patentable.”¹¹¹

¶49 Applying these standards to the case before it, the *Comiskey* court held that claims directed towards the “mental process of resolving a legal dispute between two parties by the decision of a human arbitrator” were not patentable. Because such claims sought to patent the “use of human intelligence in and of itself,” they were held to be unpatentable.¹¹² However, the Federal Circuit determined that other claims calling for a computer implementation of the arbitration method were considered patentable subject matter. According to the Federal Circuit, “these claims in combining the use of machines with a mental process, claim patentable subject matter.”¹¹³ As a result, the Court of Appeals remanded the matter to the USPTO to determine whether the computer-implemented claims would have been obvious.

¶50 *Nuijten* and *Comiskey* took steps towards reconciling Federal Circuit standards with controlling Supreme Court precedent. In our view, however, these two decisions do not fully reconcile the case law of the Court of Appeals with that of the Supreme Court. In particular, the Federal Circuit still considers computer-implemented methods to constitute patentable subject matter, no matter what the nature of the method or the outcome it achieves. We know of no Supreme Court opinion that allows patents to issue on computer-implemented methods where essential features of a claimed invention are not

¹⁰⁵ *In re Nuijten*, 500 F.3d at 1369.

¹⁰⁶ *Id.* at 1354.

¹⁰⁷ *Id.*

¹⁰⁸ *In re Comiskey*, 499 F.3d at 1381.

¹⁰⁹ *Id.* at 1376.

¹¹⁰ *Id.*

¹¹¹ *Id.* at 1378.

¹¹² *Id.* at 1379.

¹¹³ *Id.* at 1380.

technological. In particular, the Court's latest statement concerning patentable subject matter, *Diamond v. Diehr*, emphasized that the claimed mathematical algorithm was put to use in curing rubber, an industrial process that had long been subject to patenting.¹¹⁴ This invention could not contrast more strongly with the invention in *Comiskey*, where the claimed method resulted in the resolution of legal disputes.

¶51 The distinction between *Diehr* and *Comiskey* is significant. Given the ubiquity of computers and other enabling technologies in modern life, a rule by which unpatentable subject matter is transformed into a patentable invention by coupling it with a machine significantly dilutes the practical import of statutory subject matter limitations within the patent law. Under the *Comiskey* rule, the patent drafter need merely claim an invention in terms of a "system" or "machine" for accomplishing a particular method. The *Comiskey* rule is one of mere formality, for such drafting techniques qualify otherwise unpatentable methods as statutory subject matter, yet place few practical limitations upon the scope of the claims. In such a world, the policy rationales supporting limits on the scope of patentable subject matter are poorly served.

¶52 It is easy to imagine, for example, patents upon all manner of artistic methods implemented using computers or cameras, or even painting or sculpting clay. The results of such aesthetic methods have long been the subject of protection via copyright, rather than patents. They are traditionally classified as fine, rather than useful arts, and they are not amenable to the objective analyses that patenting standards such as novelty, nonobviousness, enablement, and claim definiteness require.¹¹⁵ In addition, the performance of such aesthetic methods relies upon human judgment rather than being repeatable in an industrial sense. The scope of protection of such patents also raises significant concerns. The enclosure of an entirely new art movement — such as cubism, impressionism, or even expressionism — through patenting seems entirely possible, for if such a movement can be articulated in words, it may be captured in a patent claim. Under the *Comiskey* rule, such aesthetic methods nonetheless can qualify as patent eligible subject matter if their claims call for the nominal use of a machine, manufacture, or composition of matter.

¶53 Despite these shortcomings, *Nuijten* and *Comiskey* do take steps towards reviving patent eligibility principles which restore boundaries upon the scope of patent eligible subject matter to maintain both incentives to innovate and the ability to compete, and ultimately provide a sound balance between proprietary rights and preservation of the public domain. Movements at the Federal Circuit have also been reflected at the USPTO where a number of decisions of the Board of Patent Appeals and Interferences have affirmed rejections based on non-statutory subject matter, including a method of hedging commodity consumption risk costs,¹¹⁶ a method of bringing new "startup" products to market,¹¹⁷ and a method of evaluating an intangible asset.¹¹⁸ As these decisions are appealed to the Federal Circuit, and perhaps ultimately subject to consideration by the

¹¹⁴ *Diamond v. Diehr*, 450 U.S. 175 (1981).

¹¹⁵ See *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342 (Fed. Cir. 2005) (concluding that the claim limitation "aesthetically pleasing" was indefinite).

¹¹⁶ *Ex parte Bilski*, No. 2002-2257 (Sept. 26, 2006).

¹¹⁷ *Ex parte Feguson*, No. 2003-1044 (Aug. 27, 2004).

¹¹⁸ *Ex parte Bowman*, No. 1999-0583 (June 12, 2001).

Supreme Court, further opportunities will exist to further define limitations on the scope of patentable subject matter.

III. INNOVATION AND COMPETITION POLICY CONCERNS RAISED BY BUSINESS METHOD PATENTS

¶54 Not only is an unrestricted sense of patentable subject matter disfavored by sound innovation policy, it conflicts with the requirement, stipulated by the Constitution and consistently articulated by the Supreme Court's precedent, that patentable subject matter must fall within the "useful arts." Allowing methods of doing business lacking a technical contribution to be patent eligible subject matter raises important innovation and competition policy concerns.¹¹⁹

A. *Patent-Based Incentives are not Needed to Spur Business Method Innovation*

¶55 The decision to issue patents on particular subject matter involves, in the words of Thomas Jefferson, a determination of those "things which are worth to the public the embarrassment of an exclusive patent" ¹²⁰ In this regard, the evidence suggesting a sudden need for patent-based incentives to promote the development of business concepts is conspicuous by its absence. "Nowhere in the substantial literature on innovation is there a statement that the United States economy suffers from a lack of innovation in methods of doing business. Compared with the business practices of comparable economies we seem to be innovators" ¹²¹

¶56 Among the reasons for the persistent, favorable record of commercial entrepreneurship in the United States are existing federal and state regimes, including unfair competition law, trade secrets, copyright, and the misappropriation doctrine, that have long policed free riding and allowed business pioneers to reap the rewards of their ideas.¹²² In conjunction with market-based incentives, including the desire to seize first-mover and learning-curve advantages, the current legal framework has resulted in a flourishing environment for business innovation in the United States. No plausible argument supports the view that patent protection is needed for non-technological business methods to solve a market failure problem, fill a legal void, or ultimately enhance social welfare.

B. *Business Method Patenting Raises Significant Competitive Concerns*

¶57 Although no convincing justification exists for allowing patents on non-technological methods of doing business and other abstract ideas, the breadth of coverage of such patents has raised significant competitive concerns. Among them is that such patents are not restricted by the Constitution and the precedent articulated by the

¹¹⁹ Examples of abstract business methods include U.S. Patent Nos. 5,947,526 (claim 1 reciting method for tracking personal expenditures) and 5,668,736 (claim 1 reciting method for remodeling an existing building).

¹²⁰ *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966).

¹²¹ Leo J. Raskind, *The State Street Bank Decision: The Bad Business of Unlimited Patent Protection for Methods of Doing Business*, 10 *FORDHAM INTELL. PROP., MEDIA & ENT. L.J.*, 61, 92 (1999).

¹²² *See id.* at 93.

Supreme Court. Rather, they may effectively appropriate all possible solutions to a particular problem. This direct restraint upon the ability of competitors to develop alternatives to the patented invention thwarts a principal aspiration of the patent system — fostering new alternatives.¹²³

¶58 Consider, for example, the ubiquitous automated teller machine (ATM). A review of the patent rolls reveals numerous ATM patents concerning such mechanical, electrical, and computer-implemented inventions as card readers, touch screens, cash dispensers, statement printers, and antitheft mechanisms. As evidenced by the robust competition within the contemporary ATM industry, such patents have both preserved the incentives of industry participants to innovate and allowed their competitors to market alternative designs. However, in view of the Federal Circuit’s endorsement of patents on inchoate business methods, a contemporary inventor’s claim to the very concept of an ATM would be considered eligible for patenting under § 101. Much like claim 8 of Morse’s telegraphy patent, such a patent would effectively prevent all others from designing alternative mechanisms for meeting the same marketplace needs. The potential adverse impact of this hypothetical patent upon competition not just in the ATM industry, but within the banking industry itself, is apparent.

¶59 The lack of a plausible justification for patents on non-technological business methods and human behavior, coupled with the anticompetitive consequences of issuing these patents and the Supreme Court’s precedent in this area, counsels for reassertion of Supreme Court jurisprudence to restrict patentable subject matter to instantiated products and processes. Modern society’s dizzying pace of technological change, with its accompanying changes to marketplace conditions and commercial practices, should by no means lead to an alteration of these established principles. Nor does the Supreme Court’s recognition that the patent system should keep pace with unforeseeable fields of scientific or technological discovery¹²⁴ compel a contrary result. Business concepts are not an unforeseeable field, and in fact, they long predate the patent system.¹²⁵

¶60 In *State Street*, the Federal Circuit articulated broad-sweeping dicta without making an inquiry into whether the patenting of non-technological methods of doing business raises competitive concerns or whether traditional patent-based incentives were actually needed to spur methods of doing business. “Jefferson saw clearly the difficulty in ‘drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.’”¹²⁶ The ambit of patentable subject matter should return to that range of innovation that truly justifies tolerating the “embarrassment of an exclusive patent.”

¹²³ See *Brenner v. Manson*, 383 U.S. 519, 534 (1966) (“Until [a] process claim has been reduced to production of a product shown to be useful, the metes and bounds of that monopoly are not capable of precise delineation. It may engross a vast, unknown, and perhaps unknowable area.”); *Slimfold Mfg. Co. v. Kinkead Indus., Inc.*, 932 F.2d 1453, 1457 (Fed. Cir. 1991) (“Designing around patents is, in fact, one of the ways in which the patent system works to the advantage of the public in promoting progress in the useful arts, its constitutional purpose.”).

¹²⁴ See *Chakrabarty*, 447 U.S. at 315-16.

¹²⁵ See, e.g., John R. Thomas, *The Patenting of the Liberal Professions*, 40 B.C. L. REV. 1139, 1145-46 (1999).

¹²⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966).

IV. CONCLUSION

¶61 The gravamen of the Supreme Court's precedent is that subject matter patentability is restricted to inventions that involve technological contributions, namely, tangible products or processes that either (i) are tied to a particular machine or apparatus or (ii) cause transformation or reduction of an article to a different state or thing, and in either instance, produce technologically-beneficial results. In *State Street*, the Federal Circuit departed from this standard without any evidence that incentives are needed for innovation with respect to abstract business methods and other non-technological innovations, and without due consideration of the impact that such a shift would have on the economy. Although more recent Federal Circuit cases have moved toward restoring controlling Supreme Court standards, their holdings continue to allow patents to issue on products and processes that achieve only non-technological results. Consistent with the Supreme Court's precedent on § 101, a technological contribution should be required for subject matter patentability, which would render non-technological business methods outside the scope of patentable subject matter.