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In The
United States Court of Appeals
For The Federal Circuit

IN RE BERNARD L. BILSKI
and RAND A. WARSAW

**APPEAL FROM THE UNITED STATES
PATENT AND TRADEMARK OFFICE,
BOARD OF PATENT APPEALS AND INTERFERENCES.**

**BRIEF OF *AMICUS CURIAE*
OF 22 LAW AND BUSINESS PROFESSORS IN
SUPPORT OF APPELLANTS**

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UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

In re Bernard L. Bilski _____ v. _____

No. 2007-1130

CERTIFICATE OF INTEREST

Counsel for the (petitioner) (appellant) (respondent) (appellee) (amicus) (name of party)

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See Appendix A

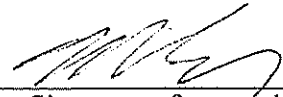
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4. There is no such corporation as listed in paragraph 3.

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STATEMENT OF INTEREST OF AMICUS CURIAE

Amici are professors who teach and write about patent law at law and business schools throughout the United States. A complete list of signatories is attached as Appendix A. *Amici* have no financial interest in the outcome of this case, and no party has authored or paid us for this brief. We are interested in seeing that patent law develops in a way that continues to encourage innovation in all fields of endeavor.

Pursuant to this Court's order setting *en banc* hearing, neither a motion for leave to file the brief nor consent of the parties is required. *In re Bilski*, 2008 WL 417680 (Fed. Cir. Feb. 15, 2008) ("Any amicus briefs will be due 30 days thereafter. Any such briefs may be filed without leave of court").

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SUMMARY OF ARGUMENT

Both the language of section 101 and the legislative history surrounding the enactment of that suggestion are expansive, permitting patent protection for “anything under the sun made by” human endeavor. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 1979, 82nd Cong., 2nd Sess. 5 (1952); H.R. Rep. No. 1923, 82nd Cong., 2nd Sess. 6 (1952)). That expansive scope reflects a wise policy judgment not to discourage innovation in new and unforeseen areas of technology by imposing arbitrary limits on the scope of patent protection.

Any attempt to limit patentable subject matter by identifying some areas of technology as unpatentable would likely be unsuccessful. The history of efforts to cabin patentability of software, beginning with *Gottschalk v. Benson*, 409 U.S. 63 (1972), and ending with *AT&T v. Excel*, 172 F.3d 1352 (Fed. Cir. 1999), is not encouraging. This Court, its predecessor, and the Supreme Court have repeatedly sought to draw lines between software inventions that involved physical transformation and those that represented merely mental steps or mathematical algorithms. At each turn, those lines quickly eroded or had to be abandoned as unworkable. Worse, they were readily gamed, leading to what Cohen and Lemley have called “the doctrine of the magic words,” in which software could be easily patented by those “in the know,” merely by utilizing certain claim language to

describe an invention indistinguishable in substance from a second claim that would be rejected.

If the problem were merely that limiting patentable subject matter required the drawing of arbitrary lines, that fact might not alone be enough to conclude that the effort should be abandoned. But the problem is worse than that. Arbitrary limits on the patentability of particular types of inventions can interfere with the purposes of the patent system. New and nonobvious ideas do not arise only in fields of endeavor classically denominated “technological.” Nor do they always involve the physical transformation of material. And even when they do, the new and nonobvious invention often resides not in the transformation, but in the mental insight that a particular transformation would have an unexpected value. Limiting patent protection to classical physical transformations and excluding inventions based on mental steps or discoveries of natural phenomena might have problematic consequences for a variety of industries, including not just computer software but industries like pharmaceuticals and biotechnology for whom patent protection is critical. Instead, patent protection should be available for new and nonobvious advances in any field, provided they involve the practical application of a new idea or discovery.

We do not intend to suggest that business method and software patents present no problems for society. Patents are sometimes wrongly issued in these

fields, and those patents can have pernicious consequences. But the solution to the problem of bad patents in the software and business method fields is not the creation of absolute rules against patentability, but the application of existing doctrines designed to weed out bad patents, and if necessary the reform of other doctrines that encourage litigation abuse. Recent decisions, including *KSR*, *eBay*, and *Seagate*, give the Court many of the tools it needs both to weed out bad patents and to limit the use of patents to hold up an industry. Indeed, one of the lessons of the prior era of restrictive subject matter is that its primary effect was not to prevent the patenting of software, but to make it harder for the PTO and courts to identify and weed out those bad patents.

ARGUMENT

I. “Process” Is Not Limited to a Physical Transformation

We begin with the simple observation that the term “process”, as used in 35 U.S.C. § 101, has a broad sweep. The ordinary meaning of the term— a series of definite steps taken to achieve some end¹—is quite general. Further, the term “process” was written into the statute as a substitute for the term “art.” *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994). In turn, “art,” as used in this context, was historically considered anything that did not fit into one of the other categories, another very broad definition.² *Jacobs v. Baker*, 74 U.S. 295, 298 (1868).

¹ See <http://dictionary.reference.com/search?q=process> for various definitions of “process.”

² *Jacobs* also implies that “useful arts” is not limited to “technological arts.” *Id.*; see also, *Corning v. Burden*, 56 U.S. 252, 267 (1854) (“useful art” is a general term); *Baker v. Selden*, 101 U.S. 99, 102 (1879) (ruling that copyright cannot protect bookkeeping forms because bookkeeping is a “useful art.”).

It is true that early case law might be read to limit a process to the physical,³ but no case that purportedly does so examines any dictionaries, Congressional intentions, patent policies, or any other principled basis for such a narrow interpretation. Limiting interpretations of “process” and other statutory categories have parroted dicta,⁴ while close (and logical) analysis shows that “process” was never intended to be limited to physical processes. *In re Schrader*, 22 F.3d 290, 295 fn. 12 (Fed. Cir. 1994) (noting that subject matter in *Cochrane* was not limited to physical transformation, and transformation of “intangibles” is also statutory subject matter, or else the method used by the telephone would not have been patentable).⁵

³ *Cochrane v. Deener*, 94 U.S. 780, 788 (1877) (“A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.”).

⁴ *See, e.g., In re Comiskey*, 499 F.3d 1365, 1376 (Fed. Cir. 2007) (“[T]he Supreme Court has held that a claim reciting an algorithm or abstract idea can state statutory subject matter only if, as employed in the process, 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.”). However, as we show in this section, there is simply no case that directly holds as much, or even states this rule clearly in dicta.

⁵ *Comiskey* fails to address this aspect of *Schrader*.

Indeed, a non-physical process was not before the Court in *Cochrane*, which affirmed patentability of a physically-transformative method. 94 U.S. at 791. As such, the discussion in *Cochrane* cannot be read as limiting “process” to physical transformations, but instead as an example of a type of process that is clearly patentable. *Accord AT&T v. Excel*, 172 F.3d 1352, 1358-59 (Fed. Cir. 1999) (noting that physical transformation is “merely one example of how a mathematical algorithm may bring about a useful application.”)

There is no principled basis, therefore, to exclude a business method or even a mathematical algorithm from the “process” category. The Supreme Court has recognized this even as it has denied patentability to certain forms of mathematical algorithms; it did so based on grounds other than a narrow interpretation of “process.” For example, in *Gottschalk v. Benson* the 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 patent could ever qualify if it did not meet the requirements of our prior precedents.

409 U.S. 63, 71 (1972). The Court went further, making clear that the “physical transformation” was not necessarily a limitation in *Parker v. Flook*:

The statutory definition of ‘process’ is broad. [] An argument can be made, however, that this Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a ‘different state or thing’

.... we assume that a valid process patent may issue even if it does not meet one of these qualifications of our earlier precedents.

437 U.S. 584, 589 (1978) (emphasis supplied).

Congress has either agreed—or at least acquiesced—to the notion that intangible business methods are “processes” under § 101. In response to this Court’s *State Street* decision, Congress passed 35 U.S.C. § 273, which limits damages for certain infringers of business methods patents. Given this action, there is little possibility that Congress does not understand business methods to be within the statutory definition of “process.”

II. Efforts to Arbitrarily Limit Patentable Subject Matter Are Futile and Counterproductive

Question 4 in the en banc review order in this case asks whether to reinstitute the “physical transformation” requirement that plagued software patent law during the 1980s and much of the 1990s. Although the patent application at issue does not claim a software implementation, returning to a physical transformation requirement would dramatically increase the costs and uncertainty of patenting software while failing to address the concerns some have raised about software patents.

As we note below, the since-abandoned rule requiring a physical transformation for software patentability resulted from a fundamental misapprehension that software consisted of “abstract algorithms.” Software does

indeed consist of algorithms, but they are anything but abstract. Software programs accomplish specific results. Whatever the cause for original adoption of a physicality requirement, however, it was unwise then and would be even more unwise today.

A. The “Physical Transformation” Requirement Misapprehends Fundamental Elements of Modern Technology

Although reinstating the discredited physical transformation requirement would affect the patentability of software, the effect would be one much more of form than of substance. The lesson of the twenty-five year experiment with some form of physical transformation is that such a requirement cannot prevent an applicant from obtaining a patent on software or, indeed, any other type of invention. The problem is that the “physical transformation” distinction is inherently artificial when applied to technologies like computer software. A computer program by its nature involves the manipulation of electrical impulses to convey information. The connection of those programs to hardware devices can easily produce “physical” transformations, if the information produced by the computer program is used to, for example, turn an oven on or off. *See Diamond v. Diehr*, 450 U.S. 175, 182 (1981). But the invention is the program itself, not the flipping of a switch that turns the oven off. Further, the operation of a computer program itself changes the arrangement of electrical gates within a computer memory. As a result, in the late 1980s and early 1990s this Court noted that

loading a novel computer program into computer memory necessarily created a “new machine” with a different physical arrangement of gates. *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994); *In re Iwahashi*, 888 F.2d 1370 (Fed. Cir. 1989).

Even an attempt to define the word “physical” can quickly become an exercise in metaphysics. In *Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059 (Fed. Cir. 1992), in which the patent at issue included both machine and process claims on a software invention, the court stated in referring to the process claims:

These claimed steps of “converting”, “applying”, “determining”, and “comparing” are physical process steps that transform one physical, electrical signal into another. The view that “there is nothing necessarily physical about ‘signals’” is incorrect.

Id. at 1059. In *In re Nuijten*, 500 F.3d 1346, 1353 (Fed. Cir. 2007), the court agreed with the PTO that a propagated electrical signal is physical, but denied patentability because the signal in question was so transitory as not to fall within one of the statutory definitions of patentable subject matter.

B. Any Physical Transformation Requirement Will be Easily Gamed, As It Has been in the Past.

Thus understood, the physical transformation requirement was effectively meaningless, as this Court recognized in *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374-75 (Fed. Cir. 1998). Instead of drawing a logical distinction between patentable and unpatentable inventions, the

physical transformation requirement simply resulted in tortured claim drafting and an attendant increase in the transaction costs associated with patenting. Julie Cohen and Mark Lemley have described this effect as “the doctrine of the magic words”: Applicants for patents on software inventions that accomplish practical results simply had to claim them as if they were physical machines rather than programs. Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1 (2001). One can find countless examples

of strategic patent claim drafting for software inventions caused by the physical transformation requirement during the period it was in force.⁶

⁶ The following are a few such examples.

- (1) U.S. Pat. No. 5,058,009, “Financial calculator for calculating, graphically displaying and confirming results of loan amortization calculation,” Oct. 15, 1991. Although the patent claims refer to a machine that presents results on a display in graphical form, the invention consists of software embedded in a chip that performs various financial calculations such as amortization, depreciation, mortgage payments, and the like, and creates a display by means of software-generated pixels.
- (2) U.S. Pat. No. 5,717,868, “Electronic payment interchange concentrator,” Feb. 10, 1998. This invention consisted of pure software for allowing financial institutions to exchange information when their data file formats were different. It was claimed as an apparatus (a “concentrator”) that worked with physical “institutions” using a physical “processor” and physical “storage means.”
- (3) U.S. Pat. No. 4,908,502, “Fault tolerant smart card,” Mar. 19, 1990. The invention consists of software that detects failures in software-implemented postage metering systems. The claims cover seemingly physical items such as a “smart card” (an integrated circuit), microprocessors, clocks, and memories.
- (4) U.S. Pat. No. 5,614,892, “Payment slot communicating apparatus for vending prices,” Mar. 25, 1997. Although the patent claims cover an auditing apparatus for use with a vending device including a card with electronic contacts, card slot, a circuit (i.e., an integrated circuit), and means for communicating, the invention consists of software for checking the accuracy of a computerized parking meter.
- (5) U.S. Pat. No. 5,706,420, “Super pipelined speculative execution vector generator,” Jan. 6, 1998. Here, the patent includes claims on both a physical item—a circuit with “adders”—and a method. The physical circuit claims, just like the method claims, cover nothing but algorithms for generating computer graphics.
- (6) U.S. Pat. No. 5,404,580, “Radio having memory means for storing radio user validation code,” April 4, 1995. The claims cover a radio capable of operating with a set of incoming and outgoing operating functions within a system network having a system network operator, including memory means and a plurality of storage locations. The invention consists of software that enables internet radio.

C. The Introduction of A “Physical Transformation” Requirement Would Burden the PTO Without Any Expected Benefit to Society

Reliance on artificial distinctions like the physicality of software inventions also makes the job of the PTO more difficult. The problem results from the inherently imperfect process of mapping the words of patent claims to things. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002). Patent attorneys can use different words to claim the same thing. When a physical transformation rule induces applicants to describe their inventions as pizza ovens rather than software inventions, those applications may be routed to the wrong examining unit and may be harder for examiners to locate as prior art. *See, e.g.*, Julie E. Cohen, *Reverse Engineering and the Rise of Electronic Vigilantism: Intellectual Property Implications of “Lock-Out” Technologies*, 68 S. CAL. L. REV. 1091, 1179 (1995) (documenting this problem). Examiners have insufficient time for adequate study of applications as it is, and artificial definitions not demanded by the Patent Act worsen the situation.

The problems caused by adopting artificial distinctions to bar patentability or to make patents more difficult to obtain are not limited to the physical transformation requirement. A good example is found in the case of software-implemented business method patents. After the court held in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), that business methods were patentable subject matter, the PTO attempted to make it

more difficult to obtain patents on software-implemented business methods by instituting the Second Pair of Eyes (SPER) initiative in March 2000. Although the program included several measures, the most notable was a requirement that applications for patents within PTO main classification 705 would, upon allowance, be subjected to a second-level review before issuance. Recent research has shown that large numbers of patents that clearly should have been covered by the program escaped the additional scrutiny because they were drafted in such a way as to be placed in main classifications other than 705.⁷ See John R. Allison & Starling D. Hunter, *On the Feasibility of Improving Patent Quality One Technology at a Time: The Case of Business Methods*, 21 BERKELEY TECH. L.J. 729, 764-789 (2006).

Although various drafting techniques may be used to avoid having an application placed in classification 705, one method, ironically enough, is to make the invention appear to be *physical*. See, for example, U.S. Patent No. 6,415,555, “System and method for accepting customer orders,” July 9, 2002. The invention covers software enabling restaurant customers to select items from a food menu and transmit the order to the kitchen when the restaurant is very busy and the customer would otherwise have a long wait. The customer does so by using a

⁷ Some of these have secondary 705 classifications, but only applications with a main classification of 705 are covered by the SPER initiative.

kiosk containing a computer. Presumably because the patent claims emphasize the kiosk containing a computer, the patent was placed in classification 52, “Static Structures (e.g., Buildings).”

Like the physical transformation requirement, the emphasis on definitions inherent in the SPER initiative for software-implemented business method patents not only burdens the applicant who must pay her attorney for the additional time required in tortured drafting and increased quibbling with an examiner, but also a PTO that already has its hands more than full and now must find the business method and software inventions hidden in the Buildings class.

III. Arbitrary Limits on Patentable Subject Matter Will Reduce Incentives to Produce Valuable Inventions

The core mission of the patent law is to create incentives for the production, disclosure, and commercialization of socially valuable inventions. This Court, as well as the Supreme Court, has long recognized that Section 101’s limitation on patentable subject matter plays a role in this mission, by placing beyond the realm of patentability certain limited classes of subject matter—classically described as “laws of nature, natural phenomena, and abstract ideas.” *See, e.g., Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981); *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994); *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374-75 (Fed.Cir.1998); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (1999). The worry is that to

allow patentability for these “manifestations of ... nature, free to all men and reserved exclusively to none,” *Chakrabarty, supra*, at 309 (quoting *Funk Bros. Seed Co. v. Kalo Inoculants Co.*, 333 U.S. 127, 130 (1948)), would upset the delicate balance between patentees and the public.

At the same time, however, the law has recognized that the Section 101 limitations on patentable subject matter are a blunt instrument, denying patentability to entire classes of subject matter without regard to the innovative aspects of particular inventions. Expanding these categorical denials of patentability beyond the well-established troika noted above would, we suggest, work a harm of unpredictable magnitude on the incentives to innovate in the United States.

A. The Current Law Protects Innovation by Denying Patentability to Subject Matter Lacking Practical Application

Since the Supreme Court’s decision in *Diehr*, and even more clearly since *Alappat*, *State Street*, and *AT&T v. Excel*, the law has been that while mathematical algorithms, standing alone, cannot be patented, processes or methods that involve mathematics can be patented as long as they involve a practical application. *See Diehr*, 450 U.S. at 188; *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994); *State Street Bank & Trust*, 149 F.3d at 1373; *AT&T*, 173 F.3d 1357-58. Allowing patenting of mathematical algorithms in the abstract would harm innovation by allowing patent-holders to “wholly preempt the mathematical formula,” and thus

encompass every conceivable use of a fundamental principle. *See, e.g., Gottschalk v. Benson*, 409 U.S. 63, 71-72. And yet the law recognizes that in many cases it will be the recognition and implementation of the practical utility of an algorithm that is the source of the innovation: the use of the Arrhenius equation to determine cure time in rubber, the use of basic geometric principles to guide the intensity of pixel display on a screen, or perhaps the use of accounting principles in a hub-and-spoke arrangement among mutual funds. *See Diehr*, 450 U.S. at 178-79; *Alappat*, 33 F.3d 1538-39; *State Street*, 149 F.3d at 1371-72.

The current law thus strikes the correct balance between preventing the patenting of subject matter that, because of its abstract nature, properly belongs in the commons upon which future innovations can be built, “free to all men and reserved exclusively to none,” and subject matter that, builds upon that commons to create an invention of concrete and tangible utility.

B. Denying Patentability on the Basis of A Physical Manifestation or Transformation Will Harm Innovation

The PTO’s argument in this case—that “processes” cannot be patented unless they involve an unmistakable physical component – would alter the line between patentable and unpatentable subject matter from one which requires a practical application of an algorithm to one which requires some form of physical manifestation or transformation. We address the statutory and practical problems with a physical transformation requirement in sections I and II, above. Here, we

address a different problem – the suggestion that not only must an invention include some physical embodiment or transformation, but that the physical embodiment itself must be the point of novelty and nonobviousness in the invention.

The approach suggested by the PTO would return the law to the short-lived and ill-fated rule of *Parker v. Flook*, 437 U.S. 584 (1978), rejected a mere three years later by the Supreme Court in *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) (limiting the effect of *Flook* to a general statement of principles). *See also AT&T v. Excel*, 172 F.3d 1352, 1356 (Fed. Cir. 1999) (“In *Diehr*, the Court expressly limited its two earlier decisions in *Flook* and *Benson*....”). That approach would not merely exclude mental processes standing alone from patentability, but would effectively exclude even ideas or algorithms that have a definite practical application by requiring that it be the *physical embodiment*, not the idea or process itself, that be new and nonobvious. *Cf. In re Comiskey* 499 F.3d 1365, 1378 (2007) (“[T]his court and our predecessor court have refused to find processes patentable when they merely claimed a mental process standing alone and untied to another category of statutory subject matter.”)

The problem with excluding new ideas from consideration in the novelty and nonobviousness inquiry is that doing so would exclude many of our most important inventions from patentability. Take, for example, new uses of existing

chemicals. If a drug company discovers that an existing chemical can be used to treat depression by selectively inhibiting the uptake of serotonin in the human brain, the physical step that follows—putting that chemical into pill form and prescribing it to patients—is straightforward and obvious. The real inventive work is in the discovery of the new use for the chemical.⁸ That discovery, standing alone, may be an abstract idea, or merely the identification of a natural phenomenon—but it would be unwise in the extreme to bar patentability for the practical application of this discovery to a new and useful end merely because that practical application *was* the result of a discovery. The pharmaceutical industry relies on patent protection to recoup the hundreds of millions of dollars it invests in developing and testing new drugs. See Pharmaceutical Research and Manufacturers of America, *Why Do Prescription Drugs Cost So Much . . .*, <http://www.phrma.org/publications/publications/brochure/questions/>.

Other examples involve DNA patents or computer programs. There are literally thousands of patents on isolated or chimeric human DNA sequences that

⁸ For example, note the history of minoxidil, which was originally marketed as a drug to treat high blood pressure, and is now better known for its success in treating hair loss (as *Rogaine*). See <http://en.wikipedia.org/wiki/Minoxidil>. See also U.S. PAT. NO. 4,877,805 (Oct. 31, 1989) (“Methods for treating sun-damaged human skin with retinoids”) (new use of Retin-A)

serve an identified purpose. These gene sequences are not, of course, patentable as they exist in the human body, but they have been treated as patentable subject matter when they are removed from the human body and isolated, either in cDNA format or by transfecting them into a bacterial cell. *See, e.g., Parke Davis & Co. v. H.K. Mulford & Co.*, 189 F.95 (S.D.N.Y. 1911) (“[W]hile it is of course possible logically to call this a purification of the principle, it became for every practical purpose a new thing commercially and therapeutically. That was a good ground for a patent.”). But it is not the isolation of the DNA sequence itself that makes the invention socially valuable; it is the identification of the function of the particular gene that makes it useful. Under the *Parker v. Flook* test, though, courts would be forced to disregard the important discovery of the function of the gene, since it was a discovery of a natural principle, and ask only whether the physical isolation of that particular gene was nonobvious given the isolation of thousands of similar genes in the past. The same is true of software: the value of a new program is often not the transformation of a physical object such as a computer but the fact that information is processed differently by the new program or that the program generates new information as results. But again, under *Parker v. Flook* that wouldn’t matter—it is only the incidental change to the physical environment that would determine patentability of the new algorithm or program.

It is true that some would celebrate the effective elimination of software and DNA patents, and perhaps even the elimination of drug patents. But that decision should be made, if at all, by Congress. And we think it unlikely in the extreme that Congress would or should adopt such a restrictive view of patentable subject matter. Pharmaceutical and biotechnology patents are critical to encouraging innovation in those industries. And while there is more controversy over the net benefits of software patents, Congress has not seen fit to abolish or restrict them, and indeed no one has introduced a bill doing so despite intensive Congressional consideration of patent reform over the past four years.

The risk of a limited conception of patentable subject matter is broader than the damage that might be done to existing industries that rely on patent protection, however. A broad eligibility requirement enables the patent system to respond flexibly to the development of new technologies. *See Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (“A rule that unanticipated inventions are without protection would conflict with the core concept of the patent law that anticipation undermines patentability. . . . Congress employed broad general language in drafting § 101 precisely because such inventions are often unforeseeable.”). If patentable subject matter is restricted to nonobvious *physical embodiments*, some new and as-yet-unforeseen field of invention may not qualify for patent protection. A rule that applies modern understandings of what constitutes technology to new fields of

endeavor deprives patent law of the flexibility it needs to provide effective protection to new technologies.

IV. Existing Patent Doctrines Can Deal With the Problems Bad Patent Applications Create

We acknowledge that there are problems with software and business method patents. The PTO has doubtless issued many patents it shouldn't have, the uncertainties of claim construction and other doctrines may allow plaintiffs to overclaim even valid patents, and aspects of damages rules may lead some to seek to capture more than the economic value of their invention. But existing patent doctrines of obviousness, inherency, enablement, claim construction, and remedies are better suited to address bad patents and the problems they create.

A. The Patent Act Provides the Tools to Bar Bad Patents

There are very few, if any, questionable patents that might be barred on subject matter grounds that could not also be barred by other patentability criteria. The BPAI recognized this point in this case, rejecting the patent on subject matter grounds, and only subject matter grounds, to ensure that the Federal Circuit would actually see an appeal on such grounds. *Ex parte Bilski*, Appeal No. 2002-2257 (Sept. 26, 2006). For that reason, even a holding that Bilski's application claims patentable subject matter will not necessarily mean that the invention at issue is patentable.

With respect to business methods patents and “mental steps” claims, the options for barring bad patents are many.

Novelty and Obviousness. One criticism of business method patents has been that the PTO has granted patents to otherwise non-novel and/or obvious methods. This is not a problem of subject matter but of application; after the Supreme Court’s recent decision in *KSR*, it should be easier than ever for specious claims to be rejected or invalidated. *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007). This is what may be happening already; over time, the PTO has more strictly applied patentability criteria and fewer business methods patents have been granted. See Mark A. Lemley & Bhaven Sampat, *Is the Patent Office a Rubber Stamp?*, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=999098 (finding that only 4% of applications in class 705, business methods, had been approved 5 ½ years after filing).

Another concern with business method patents is that they protect methods that are widely practiced, but that the PTO cannot discover such prior art in order to reject patents.⁹ This too is not an issue of subject matter; patent law has never

⁹ 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, 589 (1999).

barred patents because others have used methods secretly. *W.L. Gore & Assoc., Inc., v. Garlock, Inc.*, 721 F. 2d 1540, 1550 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Instead, it reflects a concern, not that existing rules are inadequate, but that they are not always applied in the PTO with enough care.

Complaints about lack of prior art are quite ironic, for they are in part a product of pre-*Diehr* uncertainty about software patents. The perceived inability to patent software-related inventions drove such inventions “underground” into trade secrecy or into disguise as non-software inventions, making them more difficult to find and apply as prior art today. That was a mistake that should not be repeated—the business methods applications of the past decade or more, whether issued as patents or not, will provide a wealth of prior art for future filings. Forcing companies to keep such methods secret or disguise them as other technologies will only further deplete the prior art pool.

Utility. Practical utility requirements serve to bar otherwise abstract ideas and algorithms. For example, a standalone mathematical algorithm would not be patentable because it does not have “practical utility,”¹⁰ even if the algorithm is a

¹⁰ *Cf. State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F. 3d 1368, 1375 (1998) (“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.”).

process under § 101. While such an algorithm may allow for new, faster, or more accurate computation of real world effects, it does not “do” anything unless coupled to some useful process or device, and practical utility requires some contribution beyond the possibility of calculation. *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994) (some sort of practical effect is required, even if not a physical transformation). In general, determining whether a process has practical utility should be less difficult than a determination whether a process is simply a mathematical algorithm, abstract idea, or “tangible” transformation.

Specification and Claiming. A primary concern with any effort to deny patentability to “mental steps” is that human intervention fails the definiteness, description, and enablement tests under 35 U.S.C. § 112, allowing for claims that are far broader than the applicant has disclosed. While this may be true in many cases, there is no need to use the blunt instrument of Section 101 to preclude patentability for every invention that involves human thought. Each claim can be independently examined for definiteness, description, and enablement. *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970) (“Of course, to obtain a valid patent the claim must also comply with all the other provisions of the statute, including definiteness under 35 U.S.C. § 112. A step requiring the exercise of subjective judgment without restriction might be objectionable as rendering a claim indefinite, but this would provide no statutory basis for a rejection under 35 U.S.C.

§ 101.”). We think it is essentially impossible to draw a principled boundary around claims that are completely “mental.”¹¹ By contrast, a rule that permits patenting so long as the mental step is one that is claimed only in connection with a concrete, practical application of the idea avoids this problem.

B. The Same Tools Were Used Historically

The efficacy of other doctrines to weed out bad patents is further evidenced by the fact that subject matter limits have rarely, if ever, been used to deny patentability. For example, despite the standard mantra that “abstract ideas” are not patentable, no court has barred a patent on that ground for at least 150 years. The last court to supposedly do so was *O’Reilly v. Morse*, 56 U.S. 62, 112-21 (1854). In fact, however, the decision in *O’Reilly* more literally held that Morse failed to enable the PHOSITA to make and use his broadest claims. *Id.* at 113 (“In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent.”). Had Morse narrowed his claims to match his disclosure, they would not have read on an abstract idea.

¹¹ This Court’s recent decision in *In re Comiskey*, 499 F.3d 1365 (Fed. Cir. 2007), attempts to draw such a line, but even in that case the existence of “physical” materials in addition to human thought – such as agreements to arbitrate – were undeniably present.

More recently, in *Gottschalk v. Benson*, 409 U.S. 63 (1972), the Supreme Court considered a patent relating to the mathematical conversion of “binary coded decimals” into binary pure binary format, a conversion that was known and could be done by pencil and paper. *Id.* at 66-67. *Gottschalk* is often cited for the notion that “pure mathematical algorithms” are unpatentable subject matter, but the opinion’s text implies that the Court was more concerned with the inventor’s failure to describe the process in such a way that it was clear that the applicant actually invented the claimed invention. 409 U.S. at 68.¹² In none of these cases did the Court create *ad hoc* subject matter limitations outside the statute. *See, e.g., Diamond v. Chakrabarty*, 447 U.S. at 308 (“We have also cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed.”)

C. Other Doctrines Limit the Harm from Weak Patents

To the extent that the traditional statutory patentability criteria do not weed out bad patents, recent changes in the law will reduce the harm caused by those weak patents. For example, in *MedImmune, Inc. v. Genentech, Inc.*, 127 S. Ct. 764

¹² The Court states: “Here the ‘process’ claim is so abstract and sweeping as to cover both known and unknown uses of the BCD to pure binary conversion. The end use may (1) vary from the operation of a train to verification of drivers’ licenses to researching the law books for precedents and (2) be performed through any existing machinery or future-devised machinery or without any apparatus.” *See also, id.* at 69-70 (discussing other cases in terms of definiteness).

(2007), the Supreme Court loosened the standards for declaratory judgment of patent invalidity, making it easier for potential defendants to seek to invalidate patents. Similarly, this Court's recent determination in *In re Seagate Tech., LLC*, 497 F.3d 1360, 1371 (Fed. Cir. 2007), that willful infringement requires objective recklessness reduces the risks associated with reviewing patents in any given subject area. As such, *Seagate* will allow potential defendants to read patents and decide whether to design around or challenge weak patents rather than simply close their eyes to the existence of weak patents.

Finally, in *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), the Supreme Court held that lower courts have discretion to deny injunctive relief in accordance with the principles of equity. District courts can use this discretion to deny injunctions in cases in which the owner of a valid patent seeks to "hold up" a defendant by threatening to shut down a large, multi-component product because of infringement of a small piece of that product.¹³

¹³ These reforms do not end the problem of holdup, of course, though they reduce it.

In sum, the courts have a combination of statutory and doctrinal tools available to reject, invalidate, or narrow patents which might otherwise be considered problematic. Those tools are far better suited toward limiting the social harm from inappropriate claims than any “subject matter” test will ever be. As such, they should be used in lieu of difficult-to-enforce subject matter bars.

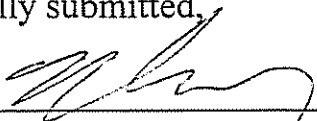
V. Conclusion

The patent statutes were wisely drafted with an expansive vision of patentable subject matter. Efforts to graft judicially-created limitations onto that expansive scope in the past have proven fruitless and indeed counterproductive. This Court should not reimpose a requirement that patentable inventions require a physical transformation of some material. It should instead maintain the rule that patents are available for “anything under the sun made by” mankind, including discoveries of ideas or natural phenomena, so long as the new discovery or idea is put to a practical application. This is the standard set forth in *State Street* and *AT&T*, and those cases need not be overruled.

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APPENDIX A

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I certify that on this 7th day of April, 2008, the required number of the Brief of *Amicus Curiae* were hand-filed at the Office of the Clerk, United States Court of Appeals for the Federal Circuit.

I also hereby certify that on this 7th day of April, 2008, two (2) bound copies of the foregoing Brief of *Amicus Curiae* were served, via U.S. Mail postage repaid, addressed to the following counsel of record:

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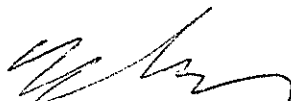
CERTIFICATE OF COMPLIANCE

I certify that the foregoing Brief for Amicus Curiae Patent Law Professors contains 6,386 words, excluding the parts of the brief exempted by FRAP 32(a)(7)(B)(iii), as measured by the word processing software used to prepare this brief.

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