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FEB 27 2014

**In The
Supreme Court of the United States**

ALICE CORPORATION PTY., LTD.,

Petitioner,

v.

CLS BANK INTERNATIONAL, et al.,

Respondents.

**On Writ Of Certiorari To The
United States Court Of Appeals
For The Federal Circuit**

**BRIEF OF PROFESSORS PETER S. MENELL
AND JEFFREY A. LEFSTIN AS AMICI CURIAE
IN SUPPORT OF RESPONDENTS**

PETER S. MENELL
Counsel of Record
Koret Professor of Law
and Director
BERKELEY CENTER FOR LAW
& TECHNOLOGY
UC BERKELEY SCHOOL OF LAW
Boalt Hall
Berkeley, CA 94720
(510) 642-5489
pmenell@law.berkeley.edu

JEFFREY A. LEFSTIN
Professor of Law
UC HASTINGS COLLEGE OF LAW
200 McAllister St.
San Francisco, CA 94102

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INTEREST OF AMICI CURIAE¹

The authors of this brief are professors of law at the University of California who study and teach intellectual property law.

Professor Jeffrey Lefstin holds a law degree and a doctorate degree in biochemistry. He worked as a molecular biologist prior to studying law. His scientific papers appeared in *Nature*, *Genes & Development*, and the *Journal of Molecular Biology*. Much of his research has focused on the historical development of patent law and its institutions. He recently completed a detailed historical study of patent eligibility doctrines. See Jeffrey A. Lefstin, *Inventive Application: A History* (manuscript Feb. 23, 2014), available at <<http://ssrn.com/abstract=2398696>>.

Professor Menell holds a law degree and a doctorate degree in economics. Beginning in law school, he has focused a significant portion of his research on legal protection for computer software and intellectual property law more generally. Soon after joining the University of California at Berkeley School of Law faculty in 1990, he laid the groundwork to

¹ Pursuant to Sup. Ct. R. 37.6, amici note that no counsel for a party authored this brief in whole or in part, and no counsel or party made a monetary contribution intended to fund the preparation or submission of this brief. No person other than amici curiae made a monetary contribution to its preparation or submission. Petitioner and Respondents have consented to the filing of this brief through blanket consent letters filed with the Clerk's Office.

establish the Berkeley Center for Law & Technology (BCLT). Since its founding in 1995, BCLT has sought to foster the beneficial and ethical understanding of intellectual property (IP) law and related fields as they affect public policy, business, science and technology through a broad range of public policy conferences, collaboration with government agencies (U.S. Patent & Trademark Office, Federal Trade Commission), interaction with intellectual property practitioners and technology companies, and research and educational initiatives. BCLT has provided a valuable ongoing vantage point for viewing the evolution of the high technology field as well as the challenges posed by legal protection for computer software for inventors, start-up companies, entrepreneurs, established technology companies, patent professionals, government officials, jurists, and the public.

One of Professor Menell's early initiatives at BCLT was to reach out to the Federal Judicial Center to offer assistance in preparing judges to handle the growing wave of intellectual property litigation in the "dot-com era." Since 1998, he has organized and taught more than 50 judicial education programs for the Federal Judicial Center, circuit courts, and district courts on intellectual property law, including an annual multi-day program for 30 to 45 federal judges that covers patent law and patent case management. This experience led him to develop and co-author a treatise for federal judges. See Peter S. Menell, Lynn H. Pasahow, James Pooley, & Matthew D. Powers, *Patent Case Management Judicial Guide* (Federal

Judicial Center 1st ed. 2009, 2nd ed. 2012 (adding Steven C. Carlson and Jeffrey G. Homrig)). These experiences exposed him to the substantial challenges that federal judges encounter in patent litigation.

From June 2012 through June 2013, Professor Menell served as one of the U.S. Patent & Trademark Office's inaugural Thomas Alva Edison Visiting Professionals where he had the opportunity to view firsthand the challenges faced by patent officials in applying court rulings on the scope of patentable subject matter.

This brief draws on the authors' wide range of experience with the patent system and science, technology, and economic research to address the critically important scope of patentable subject matter.



SUMMARY OF ARGUMENT

The Federal Circuit's fractured opinion in this case highlights the difficulty of applying complex, malleable, extra-statutory criteria to the threshold question of patent-eligible subject matter. That difficulty has arisen in part because historical conceptions of subject matter exclusions were rooted not in utilitarian concerns, but in religious and philosophical conceptions of the domain of man as well as limited understanding of scientific principles.

Yet while English and American courts in the foundational periods of patent law voiced subtle

religious and philosophical concerns, their definition of the boundaries of the patent system was clear and straightforward. From the mid 19th century through the mid 20th century, this Court and the lower courts consistently held that while natural laws, physical phenomena, and abstract principles could not be the subject of patents, practical applications of such natural principles and discoveries in a technological field sufficed to confer patent eligibility.

It was not until this Court's *Funk Brothers* decision in 1948, shortly before passage of the 1952 Patent Act, that "inventive application" became a test for patent eligibility. While it is necessary that the patent system have subject matter bounds, a test of inventive application neither serves the underlying purposes of the patent system nor comports with the process of modern technological advance. Particularly in light of past experience, setting inventive application as the test for patent eligibility threatens to undermine the invention incentives, hamper patent prosecution, and greatly complicate patent litigation.

The problems posed by patents on software and other computer-implemented inventions are real, but for the threshold question of patent eligibility this Court should turn away from the *Funk Brothers/Flook/Mayo* paradigm and require only that claims (1) fall within the constitutionally prescribed domain of the useful (technological) arts, and (2) apply scientific principles to specific problems. The issues that arise from software patents are frequently far removed from those that arise in the context of other

classes of inventions. Rather than attempt a universal framework via amorphous and misguided patent eligibility requirements, this Court should instead focus on elucidating statutory patentability requirements as well as clarifying the constitutional and jurisprudential foundation for legislative and administrative solutions that can more directly address the evolving needs of the patent system.



ARGUMENT

There is no greater confusion in contemporary patent law than that surrounding the scope of patent eligibility limitations. Since its enactment in the nation's first legislative session, Patent Act of 1790, Ch. 7, 1 Stat. 109 (Apr. 10, 1790), the Patent Act has broadly authorized the granting of patents for technological arts (processes), machines, compositions of matter, and articles of manufacture without subject matter limitations, see 35 U.S.C. § 101, save an express provision added recently barring "a claim directed to or encompassing a human organism." Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 33, 125 Stat. 284, 340 (Sept. 16, 2011). Yet for almost as long, the courts have recognized non-textual limitations on patent eligibility.

The court-made patent eligibility doctrines emerged in a bygone era when the judiciary played a more active role in fleshing out terse statutory regimes. See Peter S. Menell, *The Mixed Heritage*

of Federal Intellectual Property Law and Ramifications for Statutory Interpretation, Intellectual Property and the Common Law 63, 63-64, 71 n.47 (Shyam Balganesch ed., 2013). Although their legal source – whether constitutional, statutory, or common law – has remained unclear, they continue to operate notwithstanding some tension with contemporary views of statutory construction. See *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010) (observing that “[w]hile these exceptions are not required by the statutory text, they are consistent with the notion that a patentable process must be ‘new and useful.’ And, in any case, these exceptions have defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years.”).

The salience of these doctrines has ebbed and flowed over the arc of U.S. history. Their applicability and contours have long been difficult to discern, but the deep fracturing of the Federal Circuit in this case, see *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269 (Fed. Cir. 2013) (five opinions and additional reflections of the Chief Judge), indicates that the problem has reached dire levels. This confusion undermines the functioning of the patent system on multiple levels: inventors (and their attorneys/agents) cannot readily determine whether and how to draft patent applications; patent examiners cannot predictably evaluate patent eligibility; competitors cannot easily assess freedom to operate and the risks of patent litigation; district and Federal Circuit judges struggle to interpret eligibility boundaries; and

legislators lack clear understanding of the patent landscape as well as their authority to effectuate reform.

The roots of the problem trace to the common law origins of patentable subject matter limitations during the late 18th and early to mid 19th centuries. In that early scientific era, courts excluded abstract macroscopic “scientific principles” – such as steam power, electricity, and electromagnetism – from patentable subject matter based upon a limited understanding of science as well as religious and philosophical beliefs. See Joshua D. Sarnoff, Patent-Eligible Inventions after *Bilski*: History and Theory, 63 Hastings L.J. 53, 84-90 (2011). Early jurists – writing before important advances in microscopy, classification of the periodic table, Charles Darwin’s *On the Origin of the Species*, Gregor Mendel’s discovery of genetics (and its long-delayed recognition in the scientific community), or the advent of digital computers – distinguished between God’s “natural laws” and human discovery and application of those principles.

At a practical level, however, the distinction operated merely to exclude patents on abstract principles. While abstract ideas and discoveries were not patentable, a practical application by the inventor sufficed for patent-eligibility. That was the teaching of *Neilson v. Harford*, Webster’s Patent Cases 295 (1841), the historic English case on which this Court has based so many of its landmark decisions. See Jeffrey A. Lefstin, *Inventive Application: A History*

24-26 (manuscript Feb. 23, 2014), available at <<http://ssrn.com/abstract=2398696>>. And that was the consistent theory and practice in the United States as well. From the mid 19th century to the mid 20th, patents were limited to the technological arts, but inventors did not encounter eligibility problems where they adequately enabled new machines, processes, compositions, and manufactures. Relying on *Neilson*, this Court made clear in decisions like *Le Roy v. Tatham*, 55 U.S. (14 How.) 156 (1853); *O'Reilly v. Morse*, 56 U.S. (15 How.) 62 (1854); and *Tilghman v. Proctor*, 102 U.S. 707 (1880), that the boundary between unpatentable principle and patent-eligible invention was the requirement of practical application. See Lefstin, *supra*, at 30-34. The requirements of novelty and commensurability between patent scope and disclosure served to confine inventors' rights to their contribution to the art. See *id.* at 34-35. By the 1930s, it was well established that, mental steps and natural products possibly excepted, any practical and tangible application of a fundamental principle might be eligible for a patent. See *id.* at 54-56.

The Court's 1948 decision in *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 effected a significant shift in the patent eligibility standard by injecting an additional requirement: that the inventor show inventiveness in the application of natural principles, whether or not the inventor discovered those principles. Until *Funk Brothers*, American decisions and authorities consistently understood that practical applications of new discoveries might be patented

without any additional requirement of inventive application. See Lefstin, *supra*, at 35-41. That had been a teaching of *Neilson v. Harford* as well. Although the Court's decisions in *Parker v. Flook*, 437 U.S. 584, 592 (1978) and *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 132 S. Ct. 1289, 1300 (2012), suggested that *Neilson* demanded inventive application, the Court of Exchequer sustained Neilson's patent against the defendant's enablement challenge largely *because* Neilson's mode of application was routine and conventional in the field. See Lefstin, *supra*, at 24. Baron Parke's famous statement that Neilson's "principle" should be regarded as "well known" was *not* a holding that his discovery should be treated as part of the prior art, nor that his means of heating need be inventive. It was instead a reference to previous decisions of the Exchequer, where Parke had construed a patent on an adjustable chair to cover other applications of a "well known" principle of mechanics, the lever, by different means. That same doctrine was invoked in *Neilson* to determine that Neilson had claimed a patentable application rather than an abstract principle, and that his patent might extend beyond the exact apparatus he disclosed; the only difference was that Neilson's "principle" was new rather than well-known – an observation that strengthened the case for patentability. See *id.* at 21-23.

This Court's decision in *Flook*, based on a misapprehension of *Neilson*, hearkened back to *Funk Brothers* for the notion that only an "inventive" application is an invention or discovery within the

meaning of the patent statutes. The Court’s decision in *Diamond v. Diehr*, 450 U.S. 175 (1981) turned away from that approach, perhaps recognizing that the 1952 Patent Act represented more of a rejection of “inventiveness” and “inventive genius” than an endorsement. Yet the *Mayo* decision has revived the *Flook* approach, although without displacing *Diehr* or explaining how the two apparently contradictory decisions can be reconciled. Further complicating the matter, this Court’s decision in *Association for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013) (“*Myriad*”) held that cDNA claims are patent-eligible without applying *Flook*’s inventive application test – despite this Court’s statement in *Benson* that product and process claims are subject to the same analysis for patent eligibility. See *Gottschalk v. Benson*, 409 U.S. 63, 67-68 (1972). After three decades of repose, patent eligibility has re-emerged as the most confusing doctrine within all of patent law, leaving inventors, Patent Office officials, lower courts, and the public with little understanding of how to evaluate the limitations on patentable subject matter.

Advocates of patent reform have latched upon this area as a means for addressing all manner of patent system pathologies. While we share many of those concerns, see, e.g., Peter S. Menell & Michael J. Meurer, Notice Failure and Notice Externalities, 5 J. Leg. Anal. 1 (2013); Peter S. Menell, A Method for Reforming the Patent System, 13 Mich. Telecom. & Tech. L. Rev. 487 (2007); see generally Peter S. Menell & Suzanne Scotchmer, Intellectual Property Law, in

2 Handbook of Law and Economics 1476 (A.M. Polinsky & S. Shavell eds. 2007). Peter S. Menell, Tailoring Legal Protection for Computer Software, 39 Stan. L. Rev. 1329 (1986), we believe that reviving the inventive application doctrine is historically misguided, doctrinally unwise, and likely to exacerbate problems plaguing the patent system. It detracts attention from encouraging substantial scientific and technological advances, destabilizes countless patents that have issued in the decades since the *Diehr* decision, and opens up a veritable Pandora's box of case management issues.

As a result of advances in scientific understanding and methods over the past 150 years, many if not most inventions today explicate, manipulate, and control physical, chemical, biological, and digital phenomena at elemental, molecular, algorithmic, and systemic levels. Doctrines that treat conventional application of even newly discovered computer algorithms, molecular pathways, and chemical synthesis as unpatentable threaten to exclude much of the inventive thrust of modern research. The *Mayo* patent eligibility requirement shifts scientists' efforts from the valuable scientific and technological advances that society seeks toward surmounting an amorphous test of unconventional application. Specific application as the test for patent eligibility better serves the modern scientific and technological age.

The extent of disruption will depend, of course, on the contours of the inventive application doctrine. Nonetheless, history provides an abject lesson. After the Court's sharp departure from prior patent eligibility

standards in *Funk Brothers*, erratic application of the inventive application test by the lower courts led to the invalidation of patents that were unquestionably within the technological arts, and very arguably the precise innovations that the patent system sought to promote. See Lefstin, *supra*, at 66-70. Justice Frankfurter presciently anticipated these problems:

It only confuses the issue . . . to introduce such terms as 'the work of nature' and the 'laws of nature.' For these are vague and malleable terms infected with too much ambiguity and equivocation. Everything that happens may be deemed 'the work of nature,' and any patentable composite exemplifies in its properties 'the laws of nature.' Arguments drawn from such terms for ascertaining patentability could fairly be employed to challenge almost every patent.

Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 134-35 (1948) (Frankfurter, J., concurring).

While the Court acknowledged concerns that ignoring all laws of nature risks eviscerating patent protection in *Mayo*, 132 S. Ct. at 1293-94, 1304, the inconsistency with which lower courts invoked the inventive application test in the years following *Funk Brothers* serves as a warning that inventive application is an imprecise and unpredictable instrument with which to implement the policies underlying subject matter eligibility. Moreover, relying on this Court's seeming repudiation of *Flook* in *Diehr*, neither the Patent and Trademark Office nor the courts have been employing a test of inventive application

since this Court decided *Diehr*. Consequently, a revival of the inventive application test casts doubt on the patent-eligibility of many claims less objectionable than the ones this Court confronted in *Mayo*. See, e.g., *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 2013 WL 5863022 (N.D. Cal. Oct. 30, 2013) (invalidating claim to new test for prenatal screening of genetic abnormalities because application was evident in light of patentee's discovery).

Beyond its potential to destabilize the patent regime in particular fields of technology, the contours and nature of an inventive application doctrine open up a host of complex case management challenges. The inherent nature of a patent *eligibility* inquiry implies that it serves as a threshold doctrine. Thus, trial courts would need to confront this question early in the case management process. Yet it remains uncertain what sorts of evidence would be necessary to make a threshold determination. Courts would likely need to hear from expert witnesses to determine what is “well-understood, routine, conventional activity,” *Mayo*, 132 S.Ct. at 1299, presumably as of the time that an invention was made. This could entail substantial discovery. Furthermore, factual disputes would presumably need to go to a jury. If done at a full trial on the merits, juries could easily be confused disentangling the threshold patent eligibility inquiry of inventive application from the already challenging determination of non-obviousness under 35 U.S.C. § 103. If the test for patent eligibility is bound to a fact-intensive inquiry into the state of the art and the capability of workers in the field, then it

will only add to the notorious cost and complexity of patent litigation, rather than permitting early resolution of cases involving claims to patent-ineligible inventions.

Decrying the preemptive effects of protecting applications of scientific discoveries contradicts the very mechanism by which the patent system operates: the granting of exclusive rights to inventors. The constitutionally appropriate means of addressing such concerns is through legislative reforms. Extrapolation of amorphous, macroscopic patent eligibility limitations to exclude microscopic scientific and technological discoveries from the scope of patentable subject matter perpetuates the confusion surrounding patent eligibility and undermines the development of a coherent system for claiming modern advances. A coherent patent system requires clear standards that focus on the object of scientific and technological research, not the conventionality of their implementation. A relatively uniform patent system will inevitably result in over- and under-protection across its many domains, but Congress is the constitutionally and institutionally appropriate body to steer the course.

Yet even the legal foundation for non-textual patent eligibility standards remains unclear. The Court has never articulated the basis for such doctrines. Are they constitutionally based – derived from a constitutional requirement of invention? Are they based on an interpretation of the Patent Act? Or are they merely “common law” in nature? At a minimum,

the Court should clarify such questions in order to enable Congress to know the limits of its power in patent system reform.

Based on a modern agnostic understanding of scientific and technological progress and the Patent Act, we believe that patent eligibility should turn on two inquiries: (1) whether patent claims fall within the useful arts (a constitutional constraint), see *Bilski*, 130 S. Ct. 3218, 3231-57 (Stevens, concurring); Peter S. Menell, *Forty Years of Wondering in the Wilderness and No Closer to the Promised Land: Bilski's Superficial Textualism and the Missed Opportunity to Return Patent Law to its Technology Moorings*, 63 Stan. L. Rev. 1289 (2011); and (2) whether claims apply scientific principles to specific problems – i.e., barring abstract claims (a statutory constraint). The former ensures that business competition, athletic techniques, expressive works, and other non-technological fields do not become encumbered by patents, a regime intended to promote technological innovation. The latter addresses concerns about overbroad patent scope. See Mark A. Lemley, Michael Risch, Ted Sichelman, & R. Polk Wagner, *Life After Bilski*, 63 Stan. L. Rev. 1315 (2011).

None of this is to suggest that clarifying these principles will effectuate an ideal system for promoting progress in the useful arts. There is ample cause for deep policy reservations about overprotection of computer software. Much of that responsibility, however, lies outside the purview of the judiciary. Moreover, perpetuating incoherent and amorphous

patent eligibility doctrines is not an effective means for addressing the larger problems of a flawed, one-size-fits-all patent system. To the contrary, such confusion exacerbates such problems by producing needless uncertainty at all stages of the system.

Rather than apply amorphous doctrines grounded in outdated scientific understanding, the Court should break from the *Funk Brothers*, *Flook*, and *Mayo* line of cases and focus attention on whether a claimed invention applies a discovery or invention to technological ends, leaving the statutory patentability doctrines of utility, novelty, non-obviousness, and adequate disclosure and scope (limiting protection to particular applications and barring abstract ideas) to serve as the principal screening filters. Such an approach respects the legislative judgment, since the nation's founding, to authorize patent protection for new and useful machines and improvements thereof. Computers unquestionably fall within that domain. Computer software serves as the gears and levers of such machines. To treat algorithms embodied in patent claims as part of the prior art contradicts longstanding legislative authorization for machine-based patents. Under existing law, a claim embodying computer software should be eligible for patent protection so long as it applies a discovery or invention to technological ends.

That said, the patents at issue in this case fail because they do not advance the technological arts – they do not contribute to machine technology or serve a technological function. As Justice Stevens's

concurrence in *Bilski* explains, the U.S. Constitution limits Congress's patent power to inventions that promote the useful arts. See Peter S. Menell, *Forty Years of Wondering*. Business methods, even if implemented in a computer, are not eligible for patent protection. Form should not trump substance. Unless the method advances the functioning of the computer or serves a technological function – as opposed to a business purpose – then it is excluded from the scope of patentable subject matter.

CONCLUSION

Just as “[i]t is revolting to have no better reason for a rule of law than that so it was laid down in the time of Henry IV” and “still more revolting if the grounds upon which it was laid down have vanished long since, and the rule simply persists from blind imitation of the past,” Oliver Wendell Holmes, Jr., *The Path of the Law*, 10 Harv. L. Rev. 457, 469 (1897), it may be worse to perpetuate doctrines grounded in misapprehended, inchoate, religion-tinged views of science held in the time of George III. The ambiguous provenance of these doctrines, their common law character, and their unworkability justify moving to more coherent eligibility principles.

Aligning patent eligibility with modern agnostic scientific understanding would bring clarity to the patent system, thereby enabling inventors, competitors, patent examiners, jurists, legislators, and the public to assess patent eligibility with reasonable confidence.

References to the storehouse of knowledge available to all confuse the inquiry. The statement that a claim for patentability “is weaker than the (patent-eligible) claim in *Diehr* and no stronger than the (unpatentable) claim in *Flook*,” *Mayo*, 132 S. Ct. at 1299, without any explanation of how *Diehr* and *Flook* can be reconciled affords little guidance to the many constituencies seeking to assess patent eligibility. The appropriate eligibility inquiry should focus simply on whether a patent claim applies a discovery or invention to technological ends.

It should be acknowledged, however, such simplification of patent eligibility standards would not solve many of the other serious problems plaguing the patent system. But it would eliminate incoherent, unworkable, and obsolete constructs that destabilize the patent system. Perhaps more importantly, jettisoning the “law of nature” inquiry might galvanize Congress and the Executive Branch to pursue patent reforms aimed at the root causes of the patent system’s problems.

The best way to address the software patent crisis lies not in philosophical inquiry about whether an inventor has contributed a sufficient “inventive concept” beyond an algorithm or scientific principle but in carefully considered policy reforms. Promising ideas include: legislation to address patent-related distortions in software markets (e.g., an independent invention defense, shorter duration for software-based inventions, expanded and expedited Patent Office review of software patents); legislation to promote cumulative innovation (such as broader scope for

experimental use); initiatives to improve the quality of Patent Office determinations, enhance notice (claim clarity, ownership transparency, and tools for assessing freedom to operate), and address problems within the patent litigation system; legislation to balance litigation (fee shifting, alterations to the presumption of validity with regard to prior art that was not considered by the Patent Office); and contractual restrictions on the exploitation of patents funded through public research grants. The courts have other opportunities to make measured adjustments – as reflected in pending consideration of the patent indefiniteness doctrine and innovations in patent case management – but reviving an incoherent, amorphous, and outdated patent eligibility standard moves the law in the wrong direction.

Respectfully submitted,

PETER S. MENELL
Counsel of Record
Koret Professor of Law and Director
BERKELEY CENTER FOR LAW
& TECHNOLOGY
UC BERKELEY SCHOOL OF LAW
Boalt Hall
Berkeley, CA 94720
(510) 642-5489
pmenell@law.berkeley.edu

JEFFREY A. LEFSTIN
Professor of Law
UC HASTINGS COLLEGE OF LAW
200 McAllister St.
San Francisco, CA 94102

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