

No. 13-298

IN THE
Supreme Court of the United States

ALICE CORPORATION PTY., LTD.,
Petitioner,

v.

CLS BANK INTERNATIONAL AND CLS SERVICES LTD.
Respondents.

**On Writ of Certiorari to
the United States Court of Appeals
for the Federal Circuit**

**BRIEF OF *AMICUS CURIAE* THE
AMERICAN ANTITRUST INSTITUTE
IN SUPPORT OF RESPONDENTS**

PROF. SHUBHA GHOSH
UNIV. OF WISCONSIN
LAW SCHOOL
975 Bascom Mall
Madison, WI 53706
(608) 262-1679
ghosh7@wisc.edu

PROF. ANDREW CHIN
UNIV. OF NORTH CAROLINA
SCHOOL OF LAW
160 Ridge Road, CB # 3380
Chapel Hill, NC 27599
(919) 962-4116
chin@unc.edu

*Counsel of Record

ALBERT A. FOER
RICHARD M. BRUNELL
RANDY M. STUTZ *
AMERICAN ANTITRUST
INSTITUTE
2919 Ellicott Street, N.W.
Washington, D.C. 20008
(202) 905-5420
rstutz@antitrustinstitute.org

Counsel for Amicus Curiae

February 27, 2014

TABLE OF CONTENTS

	Page
TABLE OF AUTHORITIES.....	iii
INTEREST OF <i>AMICUS CURIAE</i>	1
INTRODUCTION AND SUMMARY OF ARGUMENT.....	1
ARGUMENT	4
I. THE PURPOSE OF THE ABSTRACT- IDEA EXCLUSION IS TO PREVENT UNDUE HARM TO COMPETITION AND INNOVATION.....	4
II. THE COURT’S LONGSTANDING DISTINCTION BETWEEN A “METH- OD OR MEANS” FOR BRINGING ABOUT A DESIRED EFFECT AND THE EFFECT ITSELF CAN BE USE- FUL IN ABSTRACT-IDEA ANALYSIS...	8
III. ALICE’S PATENT CLAIMS DO NOT RECITE CAUSAL PROPERTIES THAT BRING ABOUT INTERMED- IATED SETTLEMENT.....	13
A. A Claimed Software Solution Is Not Directed to a “Method or Means” If It Is Amenable to Math- ematical Verification.....	13

TABLE OF CONTENTS—Continued

	Page(s)
B. Alice’s Claimed Software Solutions Are Mathematically Verifiable and Not Causally Limited By the Social Interpretations That the Financial Industry Would Give To Their Data Elements.....	17
CONCLUSION.....	21

TABLE OF AUTHORITIES

Page

CASES

<i>Bilski v. Kappos</i> , 130 S. Ct. 3218 (2010).....	passim
<i>CLS Bank Int'l v. Alice Corp. Pty., Ltd.</i> , 768 F. Supp. 2d 221 (D.D.C. 2011).....	5
<i>CLS Bank Int'l v. Alice Corp. Pty., Ltd.</i> , 717 F.3d 1269 (2013).....	passim
<i>Corning v. Burden</i> , 56 U.S. 252 (1853).....	3, 9
<i>Diamond v. Diehr</i> , 450 U.S. 175 (1981).....	passim
<i>Funk Bros. Seed Co. v. Kalo Inoculant Co.</i> , 333 U.S. 127 (1948).....	2, 9, 10
<i>Gottschalk v. Benson</i> , 409 U.S. 63 (1972).....	2, 7, 9, 12
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1976).....	14
<i>In re Bilski</i> , 545 F.3d 943 (Fed. Cir. 2008).....	14
<i>LeRoy v. Tatham</i> , 55 U.S. 156 (1852).....	4, 9

TABLE OF AUTHORITIES—Continued

	Page
<i>Mayo Collaborative Servs. v. Prometheus Labs.</i> , 132 S.Ct. 1289 (2012).....	2, 4
<i>O'Reilly v. Morse</i> , 56 U.S. 62 (1853).....	2, 9, 12
<i>Parker v. Flook</i> , 437 U.S. 584 (1978).....	7, 10, 14, 20

OTHER AUTHORITIES

Jorge Angeles, <i>Fundamentals of Robotic Mechanical Systems: Theory, Methods, and Algorithms</i> (3d ed. 2007)	12
Andrew Chin, <i>On Abstraction and Equivalence in Software Patent Doctrine: A Response to Bessen, Meurer, and Klemens</i> , 16 J. Intell. Prop. L. 197 (2009).....	15
James Bessen & Michael J. Meurer, <i>Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk</i> (2008)	7

TABLE OF AUTHORITIES—Continued

	Page
James H. Fetzer, <i>Program Verification: The Very Idea</i> , 31 <i>Comm. ACM</i> 1048 (1988)	15, 16, 18
Michael A. Heller & Rebecca S. Eisenberg, <i>Can Patents Deter Innovation? The Anticommons in Biomedical Research</i> , 280 <i>Sci.</i> 698 (1998)	7
Ben Klemens, <i>Math You Can't Use: Patents, Copyright, and Software</i> (2005)	15
Philip Kosky et al., <i>Exploring Engineering: An Introduction to Engineering and Design</i> (3d ed. 2013)	12
Mark A. Lemley, <i>Industry-Specific Antitrust Policy for Innovation</i> , 2011 <i>Colum. Bus. L. Rev.</i> 637 (2011)	4
Mark A. Lemley, <i>Software Patents and the Return of Functional Claiming</i> , 2013 <i>Wisc. L. Rev.</i> 905 (2013)	7
Mark A. Lemley & Carl Shapiro, <i>Patent Holdup and Royalty Stacking</i> , 85 <i>Tex. L. Rev.</i> 1991 (2007)	7

TABLE OF AUTHORITIES—Continued

	Page
Elisha S. Loomis, <i>The Pythagorean Proposition</i> (1968).....	11
Donald MacKenzie, <i>Mechanizing Proof</i> (2001).....	15, 16
Robert P. Merges, <i>Software and Patent Scope: A Report from the Middle Innings</i> , 85 Tex. L. Rev. 1627 (2007)	8
Robert G. Sachs, <i>The Physics of Time Reversal</i> (1987).....	13
Carl Shapiro, <i>Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting</i> , in 1 <i>Innovation Pol’y and Econ.</i> (2000).....	7
Stewart Shapiro, <i>Thinking About Mathematics: The Philosophy of Mathematics</i> (2000).....	10
U.S. Const., art. I, § 8, cl. 8	14
U.S. Patent No. 4,872,682 (filed Nov. 17, 1987)	11
U.S. Patent No. 5,970,479 (filed May 28, 1993)	17, 19

TABLE OF AUTHORITIES—Continued

	Page
U.S. Patent No. 6,912,510 (filed May 9, 2000)	17
U.S. Patent No. 7,149,720 (filed Dec. 31, 2002)	17
U.S. Patent No. 7,725,375 (filed June 27, 2005)	17, 19
Oleg Vinogradov, <i>Fundamentals of Kine- matics and Dynamics of Machines and Mechanisms</i> (2000)	12, 13

INTEREST OF *AMICUS CURIAE*

The American Antitrust Institute (“AAI”) is an independent and non-profit education, research, and advocacy organization devoted to advancing the role of competition in the economy, protecting consumers, and sustaining the vitality of the antitrust laws.¹ These goals could be seriously undermined if the Court’s standard for assessing the patent-eligibility of software-implemented inventions does not adhere to the competition policy values rooted in the Court’s refusal to permit preemption of abstract ideas. The Court’s longstanding distinction between a method or means of causing an effect, and the effect itself, can be a useful framework for advancing a preemption-oriented methodology because it may provide an important clue that a claimed invention improperly preempts an abstract idea.

INTRODUCTION AND SUMMARY OF ARGUMENT

The Court has already determined that software-implemented inventions may constitute patent-eligible subject matter. *Diamond v. Diehr*, 450 U.S.

¹ The parties have lodged blanket consents to the filing of *amicus* briefs with the clerk. No person other than *amicus curiae* or its counsel authored this brief in whole or in part or made a monetary contribution intended to fund its preparation or submission. AAI is managed by its Board of Directors, with the guidance of an Advisory Board that consists of approximately 125 prominent antitrust lawyers, law professors, economists, and business leaders. AAI’s Board of Directors has approved this filing for AAI; individual views of members of the Board of Directors or the Advisory Board may differ from AAI’s positions.

175 (1981). The question in this case is under what circumstances software-implemented methods and systems (collectively “software solutions”) may be found ineligible as directed to unpatentable abstract ideas. The animating concern of the abstract-idea exclusion is that upholding certain patent claims “would risk disproportionately tying up the use” of “the basic tools of scientific and technological work,” *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293-94 (2012). Accordingly, the Court has struck down patent claims that broadly preempt “fundamental economic practice[s],” *Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010), because allowing such patents would “tend to impede innovation more than it would tend to promote it.” *Mayo*, 132 S. Ct. at 1293. Preemptive patents create this socially harmful balance of tendencies because they shrink inventors’ and entrepreneurs’ access to “the storehouse of knowledge of all men.” See *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

It is easy to understand why a claim directed to an abstract idea, as compared to an application of an abstract idea, should not be patentable, and the Court has always made clear that a claim is ineligible if it manifests itself by coverage so broad that “it matters not by what process or machinery the result is accomplished.” *Gottschalk v. Benson*, 409 U.S. 63, 68 (1972) (quoting *O’Reilly v. Morse*, 56 U.S. 62, 113 (1853)). Confusion persists, however, as to when and under what circumstances an abstract idea is sufficiently grounded in some application to warrant patentability. The Court’s longstanding distinction between a method or means of causing an effect, and

the effect itself, *Corning v. Burden*, 56 U.S. 252, 268 (1853), can be a useful framework for advancing a preemption-oriented methodology that is focused on whether a patent claims an abstract idea rather than a concrete application of an abstract idea.

The “method or means” versus “results or effects” distinction is useful in this regard because it implicitly incorporates the concept of causality. A patent claim covering a process to be practiced or a product to be made and used is directed to the method or means of causing a beneficial effect if it *causes* some beneficial *change* in the state of the world as a consequence of its performance. Conversely, a patent claim purporting to cover a property or principle that obtains in the world, *regardless of whether it is preceded by an intervening act*, is directed to the result or effect the property or principle already entails.

This causal relationship between “methods or means” and “results or effects” can help identify a computational process or machine claim that is particularly vulnerable to an abstraction challenge. When a claim to a software solution recites procedural steps or system elements without limitation to any causal properties whatsoever, it is very likely that the claim fails as directed to results or effects that can be derived mathematically from the stipulated properties of a generic computer. In contrast, when a claim delineates procedural steps or system elements in causal terms, the software solution likely provides a specific method or means of causing a computer to produce those results. The latter may well recite an application of an abstract idea to a new

and useful end, but the former very likely recites an abstract idea itself, perhaps with a field of use limitation or insignificant pre- or post-solution activity. They are distinguishable by the fact that the efficacy of the latter will typically be verifiable only by empirical observation, whereas the efficacy of the former will always be verifiable by mathematical proof.

ARGUMENT

I. THE PURPOSE OF THE ABSTRACT-IDEA EXCLUSION IS TO PREVENT UNDUE HARM TO COMPETITION AND INNOVATION

The animating concern of the abstract-idea exclusion is that upholding abstract patent claims “would risk disproportionately tying up the use” of “the basic tools of scientific and technological work.” *Mayo*, 132 S. Ct. at 1293-94. This “preemption” concern is, at its core, a competition policy concern, and the Court has noted that the use of overbroad abstractions in a patent claim can result in unwarranted economic monopoly. *LeRoy v. Tatham*, 55 U.S. 156, 175 (1852) (such claims, “by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws”). More fundamentally, patents that preempt abstract intellectual ideas harm all competition by interfering with access to the building blocks of competitive innovation. See Mark A. Lemley, *Industry-Specific Antitrust Policy for Innovation*, 2011 Colum. Bus. L. Rev. 637, 652 (2011) (explaining that competition law and policy “has a claim to co-equal status with patent law as a promoter of innovation” and arguing that “the interaction between the two should reflect that status”). It

is for this reason that the Court has struck down patent claims that broadly preempt “fundamental economic practice[s].” *Bilski*, 130 S. Ct. at 3231.

As the Court’s precedent makes clear, Alice’s claims should be found patent-ineligible if they would risk disproportionately tying up the use of a fundamental economic practice. The district court characterized Alice’s claims as “directed to . . . employing an intermediary to facilitate simultaneous exchange of obligations in order to minimize risk.” *CLS Bank Int’l v. Alice Corp. Pty., Ltd.*, 768 F. Supp. 2d 221, 243 (D.D.C. 2011). The court concluded that they would “effectively preempt the use of an electronic intermediary to guarantee exchanges across an incredible swath of the economic sector.” *Id.* at 246. Although a plurality of the Federal Circuit agreed, *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1287 (Fed. Cir. 2013) (Lourie, J., concurring) (“upholding Alice’s claims to . . . financial intermediation ‘would pre-empt use of this approach in all fields’” (quoting *Bilski*, 130 S. Ct. at 3231)), several other judges would have found the system claims patentable because they recite a process implemented in a machine, a factor strongly indicative of patentable subject matter. *Id.* at 1305 (Rader, J. et al., concurring in part and dissenting in part) (“If tying a method to a machine can be an important indication of patent-eligibility, it would seem that a claim embodying the machine itself, with all its structural and functional limitations, would rarely, if ever, be an abstract idea.”); *id.* at 1316 (“A *machine is a concrete thing, consisting of parts [T]he requirement of specifying the particular limitations and structure of a claimed machine meaningfully*

limits the claim, such that it amounts to more than the principle or idea that it embodies.”) (citation and internal quotation marks omitted).

Amicus AAI respectfully suggests that the dissenting judges’ emphasis on the machine element of Alice’s system claims is misplaced, and the Federal Circuit’s fractured *en banc* ruling demonstrates a need for this Court to go further than it did in *Bilski* in articulating that preemption is the broadly applicable limiting principle for the scope and specificity of patentable software-implemented inventions. Lower courts that elevate the machine element of a system claim from “clue,” *Bilski*, 130 S. Ct. at 3227, to dispositive proof of eligibility depart from the preemption principle underlying the Court’s abstract-idea jurisprudence. While the plurality assigned the preemption principle its proper role, *see, e.g., CLS Bank*, 717 F.3d at 1277 (“the Supreme Court’s foundational § 101 jurisprudence . . . turns primarily on the practical likelihood of a claim preempting a fundamental concept . . . [and] we would adopt this approach to address the abstractness of the specific computer-implemented inventions presented in this case”); *id.* at 1280 (“foremost is an abiding concern that patents should not be allowed to preempt the fundamental tools of discovery”), the remaining *en banc* opinions did not address the impact of Alice’s claimed patents on the markets in which they would operate. It is this preemption risk that transforms the patentable subject matter inquiry from a battle over words into a realistic inquiry into how patents lacking specificity may disrupt competition and innovation.

This Court should reaffirm the preemption-oriented methodology of *Benson*, *Flook* and *Diehr* with appropriate emphasis on the harmful market effects of overbroad patents, especially in the software context. See Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 Tex. L. Rev. 1991, 2028-29 (2007); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in 1 *Innovation Pol’y and Econ.* 119, 120 (2000); Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 Sci. 698 (1998). The Court expressed concerns about this harm in both *Benson* and *Flook*. See, e.g., *Benson*, 409 U.S. at 73 (calling on Congress to act in light of the “wide variety of views” and “technological problems” engendered by software patents); *Parker v. Flook*, 437 U.S. 584, 595 (1978) (calling attention to need for more empirical findings by Congress before expanding availability of software patents). And in ensuing decades, the academic community has validated these concerns—particularly with respect to overbroad software patenting, which extends to financial method patents. See, e.g., Mark A. Lemley, *Software Patents and the Return of Functional Claiming*, 2013 Wis. L. Rev. 905, 928, 961 (2013) (noting that “[s]oftware patents are widely acknowledged as creating a large number of problems for the patent system” and that “in software in particular, it is competition and not market dominance that spurs innovation” (footnote omitted)); James Bessen & Michael J. Meurer, *Patent Failure: How Judges, Bureaucrats, and Lawyers Put Innovators at Risk* 187-190 (2008) (describing the problems of granting patents on

software-related claims that are too abstract); Robert P. Merges, *Software and Patent Scope: A Report from the Middle Innings*, 85 Tex. L. Rev. 1627, 1627 (2007) (“firms are integrating patents into the competitive fabric of the industry”).

II. THE COURT’S LONGSTANDING DISTINCTION BETWEEN A “METHOD OR MEANS” FOR BRINGING ABOUT A DESIRED EFFECT AND THE EFFECT ITSELF CAN BE USEFUL IN ABSTRACT-IDEA ANALYSIS

Amicus AAI does not offer a panacea for the “irresolution” that “irreconcilably fractured” the Federal Circuit. *CLS Bank*, 717 F.3d at 1321 (Newman, J., concurring in part and dissenting in part); *id.* at 1314 (Moore, J., dissenting in part). That would require a clear, workable legal standard that distinguishes all sufficient system claims that are concrete applications of abstract ideas from all insufficient system claims that preempt abstract ideas. While this Court has clarified that the machine-or-transformation test is “a useful and important clue,” yet not a definitive test for patent-eligibility, *Bilski*, 130 S. Ct. at 3227, it has not delineated in detail the kinds of limitations that would differentiate a sufficiently “particular” machine from a machine that improperly preempts an abstract idea.

In the software solutions context, another useful and important clue may reside in the Court’s centuries-old admonition from *LeRoy*, *Corning*, and *Diehr* that a patent is granted ““for the discovery or invention of some practical method or means of producing a beneficial result or effect . . . and not for the result or effect itself,”” *Diehr*, 450 U.S. at 182 n.7 (quoting *Corning*, 56 U.S. at 268); *LeRoy*, 55 U.S. at 175 (“A

patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever.”). Virtually all patent claims use abstract terms at some level of generality to describe the kinds of processes and products they purport to cover, yet relatively few raise § 101 concerns. Partly, this is because patent claims are frequently limited to a particular method or means for bringing about a desired effect and not the effect itself. But it is worth paying attention when they may not be so limited.

The Court’s longstanding distinction between a method or means of causing an effect, and the effect itself, can be a useful framework for advancing a preemption-oriented methodology because it implicitly invokes the concept of causality. The subject matter of every patentable invention must be a practicable undertaking—a process to be practiced or a product to be made and used—that is capable of *causing* some beneficial change in the state of the world as a consequence of its performance. See *Benson*, 409 U.S. at 67 (distinguishing natural phenomena and abstract ideas from their “application . . . to a new and useful end.” (quoting *Funk Bros.*, 333 U.S. at 130)); *cf. id.* at 68 (claim to a natural phenomenon manifests itself by coverage so broad that “it matters not by what process or machinery the result is accomplished” (quoting *Morse*, 56 U.S. at 113)).

A property or principle that obtains in the world regardless of whether or not such an intervening act takes place, in contrast, may be better characterized as “part of the storehouse of knowledge of all men ...

free to all men and reserved exclusively to none.” *Bilski*, 130 S.Ct. at 3225 (quoting *Funk Bros.*, 333 U.S. at 130 (ellipsis in original)); see *Flook*, 437 U.S. at 593 n.15 (claimed invention unpatentable where it was an expression of a scientific principle that “reveals a relationship that has always existed,” like Newton’s equation expressing the law of universal gravitation); *id.* at 593 & n.15 (“merely heretofore unknown” expression of a “theretofore existing phenomenon or relationship” is not the kind of “discover[y]” that the statute was enacted to protect” (citation and internal quotation marks omitted)); *Funk Bros.*, 333 U.S. at 131 (rejecting claim to combination of bacteria species because “[t]hey serve the ends nature originally provided and act quite independently of any effort of the patentee”). Claims that effectively cover all applications of such a property or principle in a particular field of use or technological environment, and claims that additionally recite only insignificant extra-solution activity, have something in common: they are more accurately characterized as directed to effects rather than methods or means that *cause* effects. See *Bilski*, 130 S.Ct. at 3231.

In the field of mathematics, the Pythagorean Theorem is a paradigmatic example of an unpatentable abstract idea. See *Flook*, 437 U.S. at 90; cf. Stewart Shapiro, *Thinking About Mathematics: The Philosophy of Mathematics* 66-67 (2000) (treating mathematical objects as paradigmatic examples of noncausal abstractions). The Pythagorean Theorem does not *cause* the square of the hypotenuse of a right triangle to be the sum of the squares of the legs, although it *explains* why this is so. Nor was this proposition *caused* by Pythagoras or by any of the

hundreds of other mathematicians who have furnished proofs over the centuries. See Elisha S. Loomis, *The Pythagorean Proposition* (1968) (presenting 367 ways of proving the Pythagorean Theorem). Rather, the Pythagorean Theorem and its proofs simply reveal a relationship that has always existed among the sides of a right triangle.

Some applications of the Pythagorean Theorem have been deemed patentable. For example, the “Cube Puzzle With Moving Faces” is a patented product that can be made and used for beneficial entertainment and educational purposes. See U.S. Patent No. 4,872,682 (filed Nov. 17, 1987). It includes springs for creating frictional forces between the sliding pieces and the channels in which they slide as the faces of the cube are turned manually. *Id.* at col. 4. These and other built mechanisms for transmitting forces among the cube components can be accurately characterized as means for *causing* the beneficial behavior of the cube. This is true even though the Pythagorean Theorem can be used to verify that a slider in the middle layer of the cube is dimensioned so that it will not slide out of the mechanism when the top or bottom layer is rotated. *Id.* at cols. 8-9. The claimed cube puzzle is a patent-eligible “method or means” for causing beneficial configurations when its faces are rotated by manual forces.

In contrast, consider a hypothetical patent claim directed to a kinematic chain comprising three sequentially linked members each having a given length, the longest of which is the square root of the sum of the squares of the two shorter lengths, whereby the members are constrained to form a right

triangle when the linkage is closed.² If the term “member” in such a claim refers to any structural element capable of being modeled geometrically as a line segment of a given length without limitation as to the forces that may operate on the member in use, then the claim would effectively preempt all uses of the Pythagorean Theorem in the field of mechanical linkages. The claim should therefore be found unpatentable for being directed to an effect itself rather than a “method or means” of causing the effect.

As the Pythagorean Theorem examples illustrate, the “method or means” versus “result or effect” distinction invites inquiry into whether a machine claim defines its elements using “causal” properties or solely in terms of their “noncausal” (e.g., geometric and kinematic) properties. A claim is likely abstract if it would purport to cover those “noncausal” properties without limitation, no matter “by what process or machinery the result is accomplished.” *Benson*, 409 U.S. at 68 (quoting *Morse*, 56 U.S. at 113). Such a claim would say nothing about the physical configurations and types of elements needed to ensure reliable operation, see Oleg Vinogradov, *Fundamentals of Kinematics and Dynamics of Machines and Mechanisms* 1-3 (2000), and nothing about the

² Kinematics is “the study of motion without regard to the forces that produce the motion.” Philip Kosky et al., *Exploring Engineering: An Introduction to Engineering and Design* 69 (3d ed. 2013). A kinematic chain is a set of rigid bodies (“links”) coupled by pairwise joints that constrain their motion relative to each other. See Jorge Angeles, *Fundamentals of Robotic Mechanical Systems: Theory, Methods, and Algorithms* 129-30 (3d ed. 2007).

“causal” relationships governing the machine’s dynamic behavior in use, see Robert G. Sachs, *The Physics of Time Reversal* 31 (1987). Where claim elements are defined solely in “noncausal” terms, such as by their stipulated mathematical interrelationships, this might be an important indicator that a machine claim is not directed to a method or means of causing a beneficial result or effect, but rather is directed to the result or effect itself.

III. ALICE’S PATENT CLAIMS DO NOT RECITE CAUSAL PROPERTIES THAT BRING ABOUT INTERMEDIATED SETTLEMENT

A. A Claimed Software Solution Is Not Directed to a “Method or Means” If It Is Amenable to Mathematical Verification

If patentability is warranted for the “method or means” of causing a result or effect, and not the result or effect itself, eligible patent claims should be limited in scope and directed to specific entities and processes whose effects in the real world must be observed empirically, rather than derived mathematically from stipulations. This is because, *a fortiori*, results that can be observed only empirically must be the result of some intervening act, whereas results that may be derived mathematically from stipulations might simply be extant, independent of the activity of one who makes and uses a claimed invention.

As the discussion below will show, Alice’s software solution presents computational procedures with mathematically verifiable properties (and a social interpretation of its data elements that is apparently of considerable interest to the foreign exchange

banking community), but it does not offer a “method or means” of causing any results of those procedures. While the abstract idea doctrine applies to more than just mathematical formulas, *see* Respondents’ Br. 19-23, software-solution claims that describe only computational procedures subject to mathematical verification should be in a particularly suspect class with respect to abstract-idea jurisprudence. As the Court has already acknowledged, a mathematical property cannot support a patent.³

Where a software solution, to run on a computer effectively, must be designed to accommodate at least some of the causal influences it has on the computer and the causal consequences of its application on the

³ *Flook* acknowledges that an essentially mathematical invention is not susceptible to examination against prior art under the traditional tests for novelty and nonobviousness. Even previously unknown mathematical properties must be “assumed to be within the prior art” at the outset of a patentability determination. 437 U.S. at 594. Furthermore, a nonobviousness inquiry into the level of ordinary skill in the art, *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966), is misplaced where the art in question, and the field of knowledge being advanced by the patent disclosure, is not one of the “useful Arts,” but mathematics. *Id.* at 6 (“Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must ‘promote the Progress of ... useful Arts.’” (quoting U.S. Const., art. I, § 8, cl. 8)). Under this reasoning, a mathematical property, no matter how significant or surprising, should be barred from patent-eligibility in light of its categorical unsuitability for examination against prior art under the traditional tests for patentability. *See In re Bilski*, 545 F.3d 943, 1013 (Fed. Cir. 2008) (Rader, J., dissenting) (“[A]n abstract claim would appear in a form that is not even susceptible to examination against prior art under the traditional tests for patentability.”).

computer, the solution can accurately be deemed “causal.”⁴

But some software solutions are designed to solve formalized problems using idealized and generic computational models. These solutions assume away causal factors that might influence the execution of the program. See James H. Fetzer, *Program Verification: The Very Idea*, 31 Comm. ACM 1048, 1057 (1988) (explaining that even the outcome of a four-line Pascal program “obviously depends on various different causal factors, including the characteristics of the compiler, the processor, the printer, the paper and every other component whose specific features influence the execution of such a program”). Unlike the correctness of causal solutions, the correctness of solutions that solve these formalized problems is demonstrable through mathematical proof. Such software solutions are properly characterized as employing mathematical properties, which computer scientists recognize as abstract contributions to mathematical knowledge. See *id.* at 1056.⁵

⁴ Although some contend otherwise, see Ben Klemens, *Math You Can't Use: Patents, Copyright, and Software* 35, 44–47 (2005), not all software-implemented inventions are reducible to abstract mathematical discoveries, see Andrew Chin, *On Abstraction and Equivalence in Software Patent Doctrine: A Response to Bessen, Meurer and Klemens*, 16 J. Intell. Prop. L. 197, 227–37 (2009).

⁵ While there has been considerable debate in the computer science community as to the range of software solutions that are amenable to mathematical verification, see Donald MacKenzie, *Mechanizing Proof* 197–218 (2001), mathematical techniques are typically used to verify algorithms (whether expressed in natural language, pseudocode, or flowcharts) designed for abstract

For example, consider a claim purporting to cover a system for reconciling a checking account comprising an arithmetic unit configured to add deposits (D) and interest (I) to, and deduct checks (C) and withdrawals (W) from, the previous month's balance (B_0). This claim is broad enough to cover any software solution that produces a result B_1 satisfying the mathematical property $B_1=B_0+D+I-C-W$, where the field of use is limited to the reconciliation of checking accounts (wherein the terms "deposits," "interest," etc. have their customary interpretation in the banking industry). The recitation of the generic term "arithmetic unit" does not limit the claim to any causal method or means of bringing about this result, because the correctness of the claimed software solution logically follows from the arithmetic unit's stipulated properties (namely, that it can correctly add and subtract). Just as the length of a hypotenuse under the Pythagorean Theorem explains but is not the cause of a surveyor's measurement, *see Flook*, 437 U.S. at 590, a computation of B_1 satisfying the mathematical property $B_1=B_0+D+I-C-W$ is not the cause of the checking account's reconciliation, although it may explain to someone in the banking industry why the account's balance is or is not correct. Such a claim should be held patent-ineligible as preempting the use of the mathematical property $B_1=B_0+D+I-C-W$ in the field of checking account reconciliation.

machines whose causal properties are stipulated by definition, such as those disclosed and claimed by Alice. Fetzer, 31 Comm. ACM at 1058.

B. Alice's Claimed Software Solutions Are Mathematically Verifiable and Not Causally Limited By the Social Interpretations That the Financial Industry Would Give To Their Data Elements

Alice's four patents in suit are based on highly similar specifications that, despite their length, provide essentially no disclosure regarding the causal requirements of the system for which the claimed software solution has been designed. While various specific product models are named in the specification, these are intended to be merely exemplary, and the invention is not directed to any of the named models. Instead, the disclosed software solution is designed to run on a "generic 'system'" comprising a collection of "data processing units," "mass data storage units," "communications controllers," "communications hardware products," and "information recordal devices," all of which may occur in "many varied configurations, relating not only to the number and types of stakeholders, but also the 'architectures' realisable [sic] by the system hardware and software in combination." U.S. Patent No. 5,970,479 cols. 7-8 (filed May 28, 1993); U.S. Patent No. 6,912,510 cols. 6-8 (filed May 9, 2000); U.S. Patent No. 7,149,720 cols. 7-8 (filed Dec. 31, 2002); U.S. Patent No. 7,725,375 cols. 6-8 (filed June 27, 2005). This concession to "generic" specifications that may occur in "many varied configurations" is effectively an open acknowledgment that Alice's claimed software solution is based on abstract types of computer system components with stipulated properties, such as the ability of a mass storage unit to store mass data. In other words, Alice claims a

software solution that will work equally well on any hard drive, optical drive, RAID system (and so on for the other recited system elements), much like the unpatentable “1+1=2” formula will work equally well on a slide rule, abacus, pocket calculator or iPhone app.

In support of its claims, Alice’s specifications at no point disclose or even suggest any causal characteristics of the data processing, communications, and recordal devices, all of whose specific features would have to influence the execution of the contemplated software on an actual system. *See* Fetzer, 31 Comm. ACM at 1057-58. In particular, Alice’s data processing algorithms are disclosed through a combination of flowcharts and screenshots depicting user views of the system, all of which specify computational behavior that is amenable to mathematical verification. *See id.* at 1058 (distinguishing between the mathematical verifiability of encodings of algorithms that can and cannot be compiled for purposes of assessing abstraction in the computer science context). While the flowcharts might appear impressively detailed, this disclosure of mathematically verifiable data processing procedures is essentially an elaborate presentation of various mathematical properties that have particular salience in the context of Alice’s approach to intermediated settlement. But as in the checking account reconciliation example above, these results of mathematical inferences are not the cause of any intermediated settlement or escrow services.

The process claims, which a 7-3 majority of the en banc court held to be unpatentably abstract, recite

various data processing procedures that take place over the course of a day. *See, e.g.*, U.S. Patent No. 5,970,479 col. 33 (filed May 28, 1993). The data elements involved in these procedures are recited in terms meaningful to the community of stakeholders in the trading of risk management contracts, *see id.* (reciting “credit record,” “debit record,” “shadow credit record,” “shadow debit record,” “start-of-day balance,” “transaction,” “adjustment,” “credits” and “debits”). These social interpretations, however, have no effect on the mathematically specified behavior of a system performing the disclosed and claimed data processing procedures.

The system claims, on which the Federal Circuit was equally divided, describe the components involved in performing these data processing procedures in similarly generic terms. *See, e.g.*, U.S. Patent No. 7,725,375 cols. 1 & 26 (filed June 27, 2005) (reciting “a first party device,” “a data storage unit,” “a computer,” and “a communications controller”). As the *en banc* plurality noted, these structural elements are not described as practical methods or means of producing beneficial results or effects, but instead are defined solely in terms of the results or effects themselves: a data storage unit stores data, a computer computes, and a communications controller controls communications, all without regard to the kinds of causal processes involved in supporting these functions. *See CLS Bank*, 717 F.3d at 1290 (Lourie, J., concurring) (“Instead of wholly implied computer limitations, the system claims recite a handful of computer components in generic, functional terms that would encompass any device capable of performing the same ubiquitous calculation,

storage, and connectivity functions required by the method claims.”). As such, these elements are of no more help in establishing causal properties than the abstract kinematic structural term “member” in a claim preempting all structural uses of the Pythagorean Theorem. Contrary to Judge Moore’s view, Alice is not “walk[ing] up to the § 101 gate holding a computer in [its] arms,” *id.* at 1321 (Moore J., dissenting in part) (emphasis omitted), it’s purporting to hold *every* computer in its arms.

The asserted claims recite data processing systems and methods for performing various calculations and transmissions involving formally specified data elements. The remaining claim language merely provides instructions as to how these calculations, transmissions and data elements are to be understood by the community of stakeholders involved in the simultaneous exchange of obligations through an intermediary to minimize risk. While this interpretive context confines the preemptive effect of Alice’s claims to the financial industry, field of use limitations give Alice no cover. *See Diehr*, 450 U.S. at 192 n.14 (“A mathematical formula does not suddenly become patentable subject matter simply by having the applicant acquiesce to limiting the reach of the patent for the formula to a particular technological use.” (citing *Flook*, 437 U.S. at 586)). Alice’s claims are not limited by any disclosure as to the causal processes within the financial institutions involved in an intermediated settlement.

CONCLUSION

The Court should clarify that preemption is the foremost concern of the abstract-idea exclusion. The

Court's longstanding distinction between a method or means of causing an effect, and the effect itself, can be a useful framework for advancing a preemption-oriented methodology that is focused on whether a patent claims an abstract idea or a concrete application of an abstract idea. Alice's patent claims are not limited to any causal methods or means for bringing about intermediated settlement, but instead are directed to the results of mathematical properties derived from stipulations about a generic computer. This strongly suggests Alice's claims are unpatentably abstract.

Respectfully submitted,

PROF. SHUBHA GHOSH
UNIV. OF WISCONSIN
LAW SCHOOL
975 Bascom Mall
Madison, WI 53706
(608) 262-1679
ghosh7@wisc.edu

PROF. ANDREW CHIN
UNIV. OF NORTH CAROLINA
SCHOOL OF LAW
160 Ridge Road, CB # 3380
Chapel Hill, NC 27599
(919) 962-4116
chin@unc.edu

ALBERT A. FOER
RICHARD M. BRUNELL
RANDY M. STUTZ *
AMERICAN ANTITRUST
INSTITUTE
2919 Ellicott Street, N.W.
Washington, D.C. 20008
(202) 905-5420
rstutz@antitrustinstitute.org

*Counsel of Record
February 27, 2014

Counsel for Amicus Curiae