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 FOR *AMICUS CURIAE* ADVANCED BIOLOGICAL LABORATORIES, SA IN SUPPORT OF PETITIONER

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QUESTION PRESENTED

Whether claims to computer-implemented inventions — including claims to systems and machines, processes, and items of manufacture — are directed to patent-eligible subject matter within the meaning of 35 U.S.C. § 101 as interpreted by this Court.

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INTEREST OF *AMICUS CURIAE*[1]

Advanced Biological Laboratories, SA ("ABL") develops advanced software technologies for the personalized management and treatment of diseases such as HIV/AIDS, hepatitis, tuberculosis, and cancer. ABL's TherapyEdge is a computerized expert system for assisting physicians in the treatment of these and similar diseases. TherapyEdge has been demonstrated to improve patient treatment and outcomes.

ABL owns U.S. Patent Nos. 6,081,786 and 6,188,988, which claim a computerized expert system for selecting treatment for patients with identified diseases. These two patents were recently invalidated by the Federal Circuit under § 101 as claiming merely the mental steps performed by a doctor, even though the claims specifically recited computer implementations. See *Smartgene, Inc. v. Advanced Biological Labs.,* No. 13-1186 (Fed. Cir. Jan. 24, 2013).

As *amicus curiae*, ABL proposes an objective approach for the determination of patent eligibility.

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[1] In compliance with Rule 37, counsel for both parties have deposited with the Clerk of this Court general consent to the filing of *amicus* briefs. 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 *amicus curiae*, its members, or its counsel made a monetary contribution to its preparation or submission.

SUMMARY OF ARGUMENT

This Court has long made clear that certain types of inventions—including abstract intellectual ideas—are not eligible for patent protection under 35 U.S.C. § 101. While it may be relatively easy to identify a law of nature or a mathematical axiom, the ability to identify a claim directed only to a proscribed abstract intellectual concept, however, has challenged both courts and litigants. The Court now has an opportunity to articulate an objective framework for evaluating patent eligibility generally, and more particularly, for determining whether a claim preempts an abstract intellectual idea.

The Court has identified preemption as a core approach to patent eligibility. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S.Ct. 1289, 1301 (2012) ("In *Bilski* the Court pointed out that to allow 'petitioners to patent risk hedging would preempt use of this approach in all fields.'") (quoting *Bilski v. Kappos,* 130 S.Ct. 3218, 3231 (2010). However, the courts have struggled with the mechanics of *how* to implement this test, with the result being that the analysis has become primarily subjective. *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1278 (Fed. Cir. 2013) (en banc) (Lourie, J., concurring) ("[D]eciding whether or not a particular claim is abstract can feel subjective and unsystematic, and the debate often trends toward the metaphysical, littered with unhelpful analogies and generalizations.").

Objective preemption provides a solution to the subjectivity that has characterized preemption thus

far and is consistent with this Court's jurisprudence. Objective preemption is based on whether a person of ordinary skill in the art (POSITA) would consider the actual claim limitations to wholly preempt all practical applications of the abstract intellectual idea, law of nature, or natural phenomenon in the real world.

The POSITA's viewpoint is used throughout patent law to provide an objective, technology-neutral basis for evaluating questions of law and fact, including claim construction and obviousness based on underlying factual predicates. Under objective preemption, patent eligibility remains a question of law to be decided by the courts, but which is predicated on facts.

Objective preemption is a methodology that can be readily applied by courts and by the USPTO. Both the courts and the USPTO are familiar with a POSITA analysis in determining the scope of claims and whether claims cover a particular technology. Courts need not delve into policy questions or philosophical speculation when applying objective preemption.

Objective preemption first requires determining whether the claim implicates a law of nature, a scientific truth, a purely mathematical concept, or a purely abstract intellectual idea. Identifying laws of nature (e.g., $E=mc^2$, Newton's laws of gravity, the laws of electromagnetism), scientific truths (e.g., water boils at 100° C), and purely mathematical theorems and axioms (e.g., a+b = b+a) divorced from specific technical applications is relatively

straightforward. The Court in *Benson, Flook*, and *Diehr* deemed the claims in those cases to be in the last category.

More complex is the "abstract idea" exception. This exception to § 101 is for purely *intellectual* ideas that do not have physical or tangible aspects. "Phenomena of nature, though just discovered, mental processes, and abstract *intellectual* concepts are not patentable." *Benson*, 409 U.S. at 67 (emphasis added). Over time the adjective "intellectual" has been dropped from the expression, and this modification has led to much of the confusion in the case law. The Court should clarify that the exception is properly understood in its original sense.

The POSITA recognizes that an abstraction, *i.e.*, a generalization, does not make a claim to an abstract intellectual idea, since all claims must use generalizations to define an invention that is not limited to the specific embodiments: "[T]he Patent Act requires that the claims themselves set forth the limits of the patent grant, but also because persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc). Similarly, the use of mathematical formulae does not make a claim an abstract intellectual idea because mathematical equations are commonly used in technology to precisely describe physical or empirical relationships. Hundreds of thousands of patents recite mathematical expressions for specific practical applications. This is the difference between applied

mathematics (generally patent eligible) and pure mathematics (generally ineligible).

Under objective preemption, a court would first have to identify the claim as directed to a law of nature, scientific fact, or purely abstract intellectual idea divorced from tangible mechanisms, necessarily and inherently mental in nature. The patent specification and file history are objective sources for determining whether there is a law of nature, scientific fact, or abstract intellectual idea in a claim, as well as for identifying significant claim limitations. If a claim does not clearly and unambiguously set forth one of these prohibited categories, then the claim recites a statutory process, apparatus, or article of manufacture and is patent eligible. Only if a claim expressly covers a law of nature, scientific fact, or abstract intellectual idea does the preemption analysis proceed to the next step.

Objective preemption requires that the objective scope of the claim be determined by identifying limitations that are significant to a POSITA. This is because it is the POSITA who would implement a practical application of the idea in the real world. The POSITA would recognize as meaningful limitations that a lay person would consider trivial or insignificant. A plain English gist of the claim is not consistent with the patent statute, which requires that novelty, non-obviousness, enablement, and infringement all be determined with respect to the invention *as claimed*.

Next, a court must determine whether a claim wholly preempts *all* practical applications of a law of nature, scientific fact, or abstract intellectual idea, from the perspective of POSITA. "Pre-emption is only a subject matter eligibility problem when a claim preempts all practical uses of an abstract idea." *CLS Bank Int'l v. Alice Corp. Pty.*, 717 F.3d 1269, 1300 (Fed. Cir. 2013) (en banc) (Rader, C.J., concurring-in-part and dissenting-in-part). The court should determine whether the POSITA would identify practical applications of the abstract idea that do not infringe the claim. The presumption of validity places the burden on the patent defendant to show by clear and convincing evidence that a POSITA would not find any non-infringing practical applications.

Objective preemption avoids the use of *ad hoc*, technology-specific rules to determine whether claim elements contribute to patent eligibility.

Alice's claims are patent eligible under an objective preemption analysis. A POSITA would identify, at the very least, the dual shadow accounts and the settlement ordering as meaningful limitations, since there are other practical applications of the abstract idea of credit intermediation by a third party that would not use these features.

ARGUMENT

I. OBJECTIVE PREEMPTION IS THE BEST FRAMEWORK FOR EVALUATING PATENT ELIGIBILITY

Whether a claim is patent eligible does not turn solely on whether the claim involves an abstract idea, law of nature, or scientific truth. This Court has instructed that it must be determined whether the claim would "preempt all uses" of such subject matter. *Diehr*, 450 U.S. at 203.

However, the precise issue is *how* to implement preemption as a workable doctrine that can be applied by courts and the patent community. The issue is not whether the claim preempts *some* application of the abstract intellectual idea, but whether the claim preempts all practical applications in the real world. *Diehr*, 450 U.S. at 202 ("[T]he court must then determine whether the claim would wholly preempt that algorithm."); see also *CLS*, 717 F.3d at 1281, 1283 (Lourie, J. concurring) ("What matters is whether a claim threatens to subsume the full scope of a fundamental concept, and when those concerns arise, we must look for meaningful limitations that prevent the claim as a whole from covering the concept's every practical application."; "The § 101 preemption analysis centers on the practical, real-world effects of the claim.").

The Federal Circuit has struggled to develop a clear and objective methodology. That court has been unable to distinguish between abstractions generally, and the proscribed abstract intellectual

ideas that are entirely mental in nature. Second, *ad hoc* rules (exclusions of pre-solution and post-solution activity, fields of use, conventional steps), or admonitions (e.g., "so manifestly abstract as to over-ride the statutory language," *Research Corp. Techs. v. Microsoft Corp.*, 627 F.3d 859, 869 (Fed. Cir. 2010)), have become simply automatic proxies for answering the preemption question itself. These proxies are utilized without any objective grounding, and end up being subjective: what one court considers mere post-solution activity, another court considers a significant and meaningful limitation.

To avoid the current subjectivity of § 101 analysis, the preemption analysis must have an objective basis. That objective basis is provided by POSITA. The perspective of POSITA is used to evaluate both the actual limitations of the claims and the facts as to whether the claims cover all practical applications of an abstract intellectual idea in the real world.

Objective preemption is the best framework for addressing § 101. First, it is adaptable. This characteristic is essential because "[t]echnology and other innovations progress in unexpected ways," *Bilski*, 130 S.Ct. at 3227, and unlike fixed talismanic rules that do not adapt over time, the perspective of a POSITA can change to incorporate such advances. The approach is also technology-independent—it does not discriminate for or against specific technologies—because POSITA can be focused on the relevant technology for a case at hand. These two features are necessary for any framework because otherwise there is a serious risk that § 101 will weed

out, rather than "encompass new and unforeseen inventions." *J. E. M. Ag Supply, Inc. v. Pioneer Hi-Bred Int'l, Inc.*, 534 U.S. 124, 135 (2001).

Unlike some policy-based approaches,[2] objective preemption is a methodology that is truly "operational" by a court. Trial courts are adapted to judge facts, not to make philosophical decisions or long-range speculations. They are already familiar with the concept of POSITA and accustomed to the use of experts to determine its content. They have long institutional experience in deciding whether a claim is infringed—precisely the skill needed to decide whether a claim does or does not cover all practical applications of an idea in the real world.

II. POSITA IS COMMONLY USED IN PATENT LAW AS AN OBJECTIVE BASIS FOR DETERMINING PATENTABILITY AND INFRINGEMENT

The perspective of POSITA is commonly used as an objective basis for evaluating requirements of the patent law, including questions of law. The POSITA's view is fundamental to the determination of claim

[2] See, e.g., Lemley, Risch, Sichelman, & Wagner, *Life After Bilski*, 63 Stan. L. Rev. 1315, 1341 (2011), which requires the court to consider such speculations as: "Is the claimed invention potentially generative of many kinds of new inventions; Does the industry rely heavily on cumulative invention? Is the technological field fast-moving? . . . Has the patentee made an important contribution relative to the prior art?" A court would be unable to establish these factors with any degree of certainty.

construction, *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (en banc); indefiniteness, *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1383 (Fed. Cir. 2005); enablement and written description, *Novozymes A/S v. DuPont Nutrition Biosciences APS*, 723 F.3d 1336, 1344 (Fed. Cir. 2013); obviousness, *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007); and infringement under the Doctrine of Equivalents, *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950). See also Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 Berkeley Tech. L.J. 1155, 1186-87 (2002) (noting POSITA's use in definiteness, enablement, best mode, claim construction, and doctrine of equivalents).

In particular, obviousness is a question of law that is based on the factual predicate of the four factors set forth in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 14 (1966): (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations. Courts rely on a POSITA to answer these factual predicates and avoid unsubstantiated reliance on an allegedly "common sense view" of what is obvious. *Mintz v. Dietz & Watson, Inc.*, 679 F. 3d 1372, 1377 (Fed. Cir. 2012). Claim construction is a question of law, but is based on the facts of the record, and can take into consideration expert testimony as to the meaning of claims.

Similarly, patent eligibility is a question of law, which a court should answer based on the following factual predicates:

(1) the level of ordinary skill in the art;

(2) the abstract intellectual idea, if any, implicated by the claim;

(3) the scope of the claim, including any meaningful limitations; and

(4) whether the scope of the claim covers, or preempts, *every* practical application of the abstract intellectual idea.

These predicates are factual, given the very nature of the preemption: they ask what is practical, what is the effect of the claim in the real world, and whether claim limitations are meaningful or not to a POSITA.

To identify the characteristics of a POSITA, the court should consider the PTO's classification of the invention. See, e.g., *Zobmondo Entertainment, LLC v. Falls Media, LLC*, 602 F.3d 1108, 1121 (9th Cir. 2010) ("Deference to the PTO's [trademark] classification decision is sensible because the PTO has special expertise that we lack on this fact-intensive issue") (internal quotations omitted). *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 447 (Fed. Cir. 1986). The classification informs the court as to the "relevant audience" for the patent claims, *Mayo*, 132 S.Ct. at 1297-98, 1300-01, and thus the appropriate technological orientation of the POSITA. This gives the court an objective basis for interpreting the claim, rather than its own subjective belief as to the relevant audience.

In *Benson, Flook, Diehr*, and *Bilski*, the Court addressed the patent eligibility of a claim in a pending patent application, and hence there was no presumption of validity attached. Those cases could be decided on the record before the Court, and based on a preponderance of the evidence standard. However, given the presumption of validity, an *issued* claim cannot be found patent ineligible unless there is clear and convincing evidence (*e.g.*, expert testimony, prior publications) demonstrating that the real-world effect of the claim is to cover every practical application of the alleged abstract intellectual idea. A court by itself cannot evaluate whether a claim covers every practical application: it has neither the specialized knowledge nor the technical experience to know this. It must rely on facts presented by the parties, and it should use POSITA as the objective basis for making this determination.

III. APPLYING OBJECTIVE PREEMPTION TO PATENT CLAIMS

A. Claim Interpretation Based on the View of a POSITA Avoids the Subjectivity of a Plain English Gist of the Claim

For a patent claim to be eligible, it must have significant and meaningful limitations. *CLS*, 717 F.3d at 1281 (Lourie, J., concurring) ("[W]e must look for meaningful limitations that prevent the claim as a whole from covering the concept's every practical application"). The question must be asked: Significant and meaningful *to whom*?

This is the heart of the problem, because in the absence of an objective standard, each court is left to its own intuition and subjective viewpoint about what is or is not significant. Indeed, as this very case demonstrates, more than anything else, the Federal Circuit is divided in deciding which claim limitations matter and which do not. See, e.g., *CLS*, 717 F.3d at 1330 (Linn., J., dissenting) (stating that the concurrence by Judge Lourie "ignores the substance of the stipulations and assumptions upon which the proceedings below were predicated"); *id.* at 1308 (Rader, C.J., concurring in part, dissenting in part) ("It would be improper for the court to ignore these limitations [of the system claims]").

"What matters is the objective reach of the claim." *KSR*, 550 U.S. at 419. There is no statutory or doctrinal basis for applying a different level of objectivity to claim analysis when considering § 101. While a formal claim construction is not absolutely necessary, a court should interpret the scope of the claim in view of the underlying science and technology. Therefore, an *objective* approach to preemption requires that the claim be interpreted as it would be by a POSITA. This follows from the very nature of the preemption test itself.

First, claim interpretation by a POSITA is necessary because preemption focuses on practical applications in the real world, and it is precisely a POSITA who would create such practical applications. Similarly, whether a claim limitation is meaningful must be determined through the eyes of a POSITA precisely because that is a fictitious person who would understand which claim

limitations have significance and which do not. In other words, for purposes of objective preemption, a claim limitation is meaningful or significant if a POSITA would understand it as being a necessary feature of the invention *as claimed*, because such a limitation defines how the invention is practiced in the real world. In this context, a POSITA would recognize as meaningful and significant those limitations that may incorrectly appear to be trivial to a layperson unfamiliar with the technology's subtleties, the practices of the relevant technological community, and the significance of seemingly minor details. See *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051 (Fed. Cir. 1988) ("That which may be made clear and thus 'obvious' to a court, with the invention fully diagrammed and aided by experts in the field, may have been a breakthrough of substantial dimension when first unveiled") (internal citation and punctuation omitted). Likewise, POSITA would also filter out claim limitations that were mere clever drafting or window dressing.

The use of POSITA ensures that the claim interpretation is consistent with the science and technology underlying a claim. Such an understanding is especially important because in most cases the underlying science or technology is not expressly recited: claims are meant to capture the invention, not explain the underlying science in the field.

Thus, a court should not determine that a limitation is "insignificant" by simply applying *ad hoc* rules against "pre- or post-solution activity," or "conventional and routine" based on its own intuition

or experience, for otherwise it ends up "hunting for abstractions by ignoring the concrete, palpable, tangible limitations of the invention the patentee actually claims." *CLS*, 717 F.3d at 1298 (Rader, C.J., concurring-in-part and dissenting-in-part). Thus, the determination of whether a claim limitation is meaningful is necessarily a question of fact, because it "centers on *practical*, *real-world* effects of the claim." *Id.* at 1283 (Lourie, J., concurring) (emphasis added).

Objective preemption avoids the subjectivity that is inherent in the plain English approach to § 101. When a court reduces the claim to a simplified description in the absence of the perspective of POSITA, it almost unavoidably imposes its own view of which limitations are significant and which limitations are not, and the subjective and unspoken assumptions take over from the start: If a court subjectively believes that a particular limitation is not meaningful, it can simply ignore it entirely or characterize it so generally as to remove any significant functional or structural importance it may play in the overall solution. Further, simplifying a claim in the absence of a consideration of the file history risks ignoring limitations that were specifically used to distinguish the claim over the prior art—which makes such claim limitations meaningful to POSITA because they constrain how the invention may be practiced in the real world. Relying on a plain English reduction of a claim essentially begs the question, since it filters out limitations that the court has implicitly determined to be insignificant, before any evidence has even been considered.

The risk of subjectivity in a plain English gist of a claim is at its greatest for those inventions that make technology simpler and easier to use—indeed precisely the inventions that aid humans in the use of ever more complex and pervasive technologies. Computers and complex systems surround us in every capacity, and yet we must necessarily interact with and control them. Inventions that make products such as software easy to use are especially at risk from a plain English gloss precisely because after the fact they seem simple and easy to understand. An invention that achieves the difficult goal of simplifying complexity can all too easily be trapped by the naïve conclusion that there is no inventive concept and that the invention is nothing more than a simply stated "abstract idea."

B. Objective Preemption Is Consistent with the Patent Statute

Section 101 by its terms implicates § 112(b), stating that a patent on "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof," are "subject to the conditions and requirements of this title," which necessarily includes § 112. Section 112(b) requires claims to what the inventor regards as the invention, for which the specification must provide "a written description of the invention" and must "enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." The *invention* referenced in § 112 is the invention as claimed, not a simplification thereof. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 956 (Fed. Cir. 1983) ("it is for the

invention as claimed that enablement must exist"); see also *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1333 (Fed. Cir. 2003) (in the context of written description support, "under our precedent the patentee need only describe the invention as claimed, and need not describe an unclaimed method of making the claimed product"). Validity under §§ 102 and 103, and infringement under § 274, are all resolved with respect to the claims. Accordingly, where the statute uses the term *invention*, it is understood throughout that this means the *invention as claimed*, not a plain English reduction. See *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 345 (1961) ("[T]here is no legally recognizable or protected 'essential' element, 'gist' or 'heart' of the invention."). There is no legislative history to suggest that § 101 would be based on something other than the claims themselves.

It would be anomalous for Congress to have written the patent statute to require that patents have claims; that the PTO evaluate the claims for compliance with §§ 101, 102, 103, and 112; and that courts determine infringement, prior art validity, enablement and written description with respect to the claims; but then intended § 101 to be decided in litigation based on a subjective, plain English gloss.

C. Objective Sources for Identifying the Abstract Idea

The objective preemption analysis requires the unambiguous identification of the abstract idea in a patent claim. "In short, one cannot meaningfully evaluate whether a claim preempts an abstract idea

until the idea supposedly at risk of preemption has been unambiguously identified." *CLS*, 717 F.3d at 1282 (Lourie, J., concurring). Objective preemption uses the patent and file history as the best objective sources of the abstract idea.

In identifying whether a claim implicates an abstract idea at all, the court must distinguish between the acceptable use of abstractions, and the recitation of "abstract intellectual concepts" *per se*. The exclusion from § 101 is of abstract *intellectual* ideas: "Phenomena of nature, though just discovered, mental processes, and abstract *intellectual* concepts are not patentable, as they are the basic tools of scientific and technological work." *Benson*, 409 U.S. at 67 (emphasis added). "[T]he Court clearly held that new mathematical procedures that can be conducted in old computers, like mental processes and abstract *intellectual* concepts, are not patentable processes within the meaning of §101." *Diehr*, 450 U.S. at 201 (internal citation omitted, emphasis added). The focus on abstract intellectual ideas originates with this Court's concern with "ideas" that are purely mental in nature, such as "mental processes" or "mental steps" that could be performed in the human mind. *Diehr*, 450 U.S. at 195 ("Under the 'mental steps' doctrine, processes involving mental operations were considered unpatentable. The mental steps doctrine was based upon the familiar principle that a scientific concept or mere idea cannot be the subject of a valid patent.") (internal citations omitted). Indeed, the traditional definition of "idea" refers *specifically* to the mental phenomenon: "any conception existing *in the mind* as a result of mental understanding,

awareness, or activity. "Idea," Dictionary.com, http://dictionary.reference.com/browse/idea; see also "Idea," Webster's Third New International Dictionary (2002) ("an object *of the mind* existing in apprehension, conception, or thought; a product of reflection or mental conception").

Thus, there is a difference between an abstraction and an abstract intellectual idea. An abstraction is a generalization—a term or definition that identifies the principal aspects or features of the concept that are relevant to a given context, while removing features that are not important: "the act or process of leaving out of consideration one or more qualities of a complex object so as to attend others." "Abstraction," Webster's Third New International Dictionary (2002).

For example, the concept of a *container* is an *abstraction* over various types such as *cup*, *glass*, *tumbler*, *stein*, *pitcher*, *champagne flute.* The abstraction of a *container* could contribute to eligible subject matter, while the abstract intellectual idea of *government* or *contract* would not.

By design and practice, patent claims necessarily make use of abstractions. This has been long recognized:

> The difficulty which American courts . . . have had . . . goes back to the primitive thought that an "invention" upon which the patent gives protection is something tangible. The physical embodiment or disclosure, which, in itself is something tangible is confused with

> the definition or claim to the inventive novelty, and this definition or claim or monopoly, also sometimes called "invention" in one of that word's meanings is not something tangible, but is an abstraction. Definitions are always abstractions. This primitive confusion of "invention" in the sense of physical embodiment with "invention" in the sense of definition of the patentable amount of novelty, survives to the present day, not only in the courts, but among some of the examiners in the Patent Office.

Emerson Stringham, *Double Patenting* 209 (1933).

Further, not every abstract idea (or abstraction) is a fundamental truth. In *Benson, Diehr*, and *Flook*, the Court was presented with what it believed to be a scientific truth expressed in mathematical terms. The Court in Benson assumed that the claim embodied the pure mathematics of converting binary coded decimal to binary. In *Flook*, the claim included a broad equation for controlling a catalytic reaction. In *Diehr*, an application of the well-known Arrhenius equation was claimed. Thus, in each case, the Court had before it what it believed to be a "fundamental truth" about the real world, something that no one can be said to have "invented."

However, the abstract ideas and abstractions used in the vast majority of claims are not fundamental or "true" in any sense. Even the broad abstract idea of "presenting information on web pages" is not a *truth*, let alone a *fundamental* one, though it may be a very obvious one. An abstract

idea or abstraction may be very common and well known, but that does not make it a "fundamental truth" of the type that this Court has indicated as being ineligible for patent.

Similarly, mathematical formulas and algorithms themselves are not *per se* scientific truths. Certainly, mathematics can be used to describe fundamental truths, such as $E=mc^2$, but that does not mean that all mathematical equations and formulas are necessarily scientific truths. Mathematics is a language that can be used to precisely express quantitative relationships. Most mathematical formulas, including those contained in patent claims, are applicable only to decidedly mundane things, such as calculating navigation directions for a shortest route to avoid traffic conditions, scheduling airplane landings and takeoffs, or determining the number of unique visitors to a website. Thus the presence of a mathematical algorithm in the claim does not by itself inform whether the claim recites a fundamental truth. See Br. for Ronald M. Benrey as *Amicus Curiae* at 22-25*, Alice Corp v. CLS Bank,* No. 13-298 ("Benrey").

The specification is the best guide to what abstract idea, if any, may be implicated in a claim, since the claims "must be read in view of the specification, of which they are a part." *Phillips,* 415 F.3d. at 1315 (citations omitted). If an inventor is in fact attempting to claim an abstract intellectual idea, the specification would clearly indicate this intent by describing unambiguously "intellectual" concepts, in terms divorced from physical or material things, or processes that inherently require human

judgment. For example, the summary of the invention would articulate the invention in fully abstract and intellectual terms, not merely in broad generalizations of computer applications. The balance of the specification would likewise disclose a primarily conceptual description, with only perfunctory discussions of an actual implementation.

Significantly, software inventions are based on a development process that uses the process of abstraction to define relevant structures and operations. A computer program for a financial institution would have abstractions such as *accounts*, *transactions*, *deposits,* and *payments*. Grady Booch, one of the pioneers in object-oriented programming, describes the importance of abstraction in software development:

> The primary value of such abstractions is that they give boundaries to our problem; they highlight the things that are in the system and therefore relevant to our design, and suppress the things that are outside of the system and therefore superfluous.

Booch, *Object Oriented Analysis and Design*, 162 (1994).

Booch goes on to say that:

> [T]he identification of key abstractions involves two processes: discovery and *invention*. Through discovery, we come to recognize the abstractions used by domain experts; if the domain expert talks about it,

> then the abstraction is usually important. *Through invention we create new classes and objects that are not necessarily part of the problem domain, but are useful artifacts in the design or implementation*.

Id. (emphasis added). Thus, the development of computer applications often includes inventing the appropriate abstractions that are not inherent in the underlying problem.

Claims for software inventions are more at risk for being mistaken as "abstract ideas" by those who are not familiar with the underlying nature of software (as a set of mechanisms for controlling a machine) and the way it is created. Courts should take into account the actual software technology involved in an invention as disclosed and claimed, rather than merely a lay person's interpretation of the claims. A specification with a detailed software implementation, including flowcharts, algorithms, and code examples, is objective evidence that the invention as claimed is a technical invention, not merely an abstract idea *per se*. Kayton, *Patent Protectability of Software: Background and Current Law*, in The Law of Software 1968 Proceedings B-25 (1968) ("Disclosure of apparatus for performing the process without human intervention may make out a prima facie case that the disclosed process is not mental and is, therefore, statutory."). A POSITA can be invoked to determine whether the specification indicates that the inventor intended to patent an abstract idea, or particular applications of that idea.

The abstract idea and significant claim limitations may also be found in the file history. Patent examiners frequently provide a detailed statement of their reasons for allowing the claims, which may describe the particular abstract idea implicated by the claims, and how certain limitations of the claim differentiate over the art.

D. A Claim That Recites an Abstract Idea Is Statutory Where There Are Alternative, Practical, Non-Infringing Ways of Practicing the Abstract Idea

Once the scope of the claim and its meaningful limitations are determined, the final step of objective preemption is to determine whether the claim covers all and every practical application of the abstract idea in the real world, not merely some applications. This, too, is something that POSITA's perspective would assist with. Even a narrow claim covers *some* practical applications; that is a feature of every patent, not a problem. "It is not the breadth or narrowness of the abstract idea that is relevant, but whether the claim covers *every* practical application of that abstract idea." *CLS,* 717 F.3d at 1300 (Rader, C.J., concurring-in-part and dissenting-in-part) (emphasis added).

Because objective preemption considers whether *all* practical applications are encompassed by the claim, the approach can be stated as a question of whether there is at least one alternative, non-infringing, practical application of the abstract idea. "The [system] claims do not claim only an abstract concept without limitations that tie it to a practical

application. Confirming this, someone can use an escrow arrangement in many other applications, without computer systems, and even with computers but in other ways without infringing the claims." *Id.* at 1309 (Rader, C.J., concurring-in-part and dissenting-in-part). "Moreover, because the claims require specific computer components, a human performing the claimed steps through a combination of physical or mental steps likewise does not infringe. In sum, this system does not preempt anything beyond the specific claims, let alone a broad and undefined concept." *Accenture Global Services v. Guidewire Software, Inc.* 728 F.3d 1336, 1348 (Fed. Cir. 2013) (Rader, C.J., dissenting).

It is noted that the Court in *Diehr* stated, "We rejected in *Flook* the argument that because all possible uses of the mathematical formula were not pre-empted, the claim should be eligible for patent protection." *Diehr*, 450 U.S. at 192 n.14. However, this statement is entirely at odds with the requirement that a claim "wholly preempt" "every" practical application, which is how the preemption doctrine is consistently stated *every time in every case*, from *Benson* to *Mayo*. Logically, if there is at least one non-infringing use, then the claim does not "wholly preempt" "every" application.

A court should consider the findings of the patent examiner regarding which limitations distinguish over the prior art as *prima facie* meaningful limits on the scope of the claim, and which must be implemented to practice the claimed invention. These findings are relevant not to show the invention is non-obvious, but rather to provide

intrinsic evidence that certain features of the claims are significant. For example, what a court may deem to be simple "post-solution" activity may be a limitation that was necessary to distinguish over the prior art; POSITA would consider such a limitation meaningful, because it would indicate that there are alternative ways of practicing the abstract idea that did not have the limitation in question, and that the limitation is not conventional or routine. A patent defendant would have the burden to present clear and convincing evidence that rebuts these findings.

Accordingly, the patent defendant would have the burden of providing by clear and convincing evidence that there are no "practical" ways of implementing the "abstract idea" that do not include the significant claim limitations. If the patentee produced evidence of at least one practical, non-infringing alternative, such as prior art that performs the same abstract idea, then a patent claim must be held patent eligible. An expert could provide evidence that POSITA would consider a particular alternative as a "practical" application of an abstract idea, or an impractical attempt, either because the other available technologies would not work, the cost would be infeasible, or for other considerations (though merely being less efficient, more expensive, or less competitive would not disqualify an alternative from being "practical").

Viewing the objective preemption methodology as a question of whether there are alternative, practical, and non-infringing ways of practicing the abstract idea underlying a patent claim has the benefit of being exactly the type of procedure that a

court can readily implement. Courts are already familiar with performing infringement and anticipation analyses by first considering the scope of a claim, and then determining whether a particular "application"—either a defendant's product or an item of prior art—comes within the scope of the claim, the former being an instance of infringement, the latter making the claim invalid by anticipation. Courts are already sensitive to the idea that every claim limitation must be met in the target instrumentality: if a limitation is not found in the defendant's product, then it does not infringe; if a limitation is not found in the prior art, then the claim is not anticipated.

Courts are well-positioned to perform a similar analysis for patent eligibility, but in the converse: if there does exist a prior art device, system, or method that practices the same abstract idea as in the patent claim, but that does not anticipate the claim, then it logically follows that the claim does not preempt all practical applications in the real world. And just as a court can consider expert testimony as to whether a claim limitation is found in the prior art or an accused device, a court can consider expert testimony as to whether a claim blocks all practical applications or whether there is some non-infringing practical alternative.

IV. THE PREEMPTION ANALYSIS SHOULD NOT RELY ON *AD HOC* RULES THAT ARE TECHNOLOGY SPECIFIC

An objective approach to § 101 does not rely on *ad hoc*, technology-specific rules to determine patent

eligibility. Indeed, outside of computer-implemented inventions, no other technology field has *ad hoc* rules applied to determine patent eligibility.

A. *Flook*'s *Ad Hoc* Rules Are Based on a Point of Novelty Approach to § 101

The rules against pre-solution, post-solution, and field of use limitations derive primarily from *Parker v. Flook*, 437 U.S. 584 (1978). That case evaluated § 101 only as it applies the "point of novelty" in the claim, which the Court called the "inventive concept." "Proper analysis, therefore, must start with an understanding of what the inventor claims to have discovered—or, phrased somewhat differently—what he considers his inventive concept to be." *Diehr*, 450 U.S. 204, 212 (Stevens, J., dissenting). The *Flook* Court used the "inventive concept" not as a *conclusion* about whether the invention is novel in fact, but rather as a *label* for identifying the subject matter of the § 101 inquiry. Given this, dissection of a claim was appropriate to identify the features that were believed by the inventor to be his inventive concept. That is, if § 101 analysis were applied only at the point of novelty, rather than to the claim as a whole, it would make sense that pre-solution activity, post-solution activity, or field of use limitations would not confer patent eligibility. If the "solution" step were deemed to be the point of novelty, then it would logically follow that claim limitations as to what happens before (pre-solution and data gathering) and afterwards (post-solution) could not contribute, nor could the restriction of the solution to a particular field.

Justice Stewart, joined by Chief Justice Burger and Justice Rehnquist, emphatically disagreed with this approach of applying § 101 only at the point of novelty, stating: "it strikes what seems to me an equally damaging blow at basic principles of patent law by importing into its inquiry under 35 U.S.C. § 101 the criteria of novelty and inventiveness." *Flook*, 437 U.S. at 600 (Stewart, J., dissenting).

B. *Diehr* Rejected *Flook*'s Approach, but Retained *Flook*'s *Ad Hoc* Rules

The dissent in *Flook* became part of the majority in *Diehr* and correctly rejected *Flook*'s point of novelty approach. The *Diehr* Court held "the fact that one or more of the steps in respondents' process may not, in isolation, be novel or independently eligible for patent protection is irrelevant to the question of whether the claims as a whole recite subject matter eligible for patent protection under § 101." *Diehr*, 450 U.S. at 193. See also *In re Taner*, 681 F.2d 787, 791 (C.C.P.A. 1982) ("*Diehr* rejected the 'point of novelty' analysis saying 'the 'novelty' of any element or steps in a process...is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter") (citation omitted). Because § 101 applies to the claim as a whole, "it is inappropriate to dissect the claims into old and new elements," even if one of those elements is a law of nature or a scientific truth. *Diehr,* 450 U.S. at 188.

While *Diehr* rejected *Flook*'s dissection approach, it kept the *ad hoc* rules set forth in *Flook* without applying them in fact to the claims before it. It is

incontestable that the remaining steps of Diehr's claim were all conventional pre-solution and post-solution activity. *Diehr*, 450 U.S. at 207-209 (Stevens, J., dissenting) (discussing the conventional limitations of Diehr's claim). Had the *Diehr* Court applied the exclusions of pre-solution, post-solution and field of use limitations, it would have had to conclude that the claims were not patent-eligible. *Id.* ("if the Court accepted my reading [of the claim], I feel confident that the case would be decided differently"). Essentially, the *Diehr* Court kept the *ad hoc* rules without appreciating that they were valid only in the context of the point of novelty approach to § 101.

C. *Mayo* Resurrected *Flook* and Extended the *Ad Hoc* Rules

Diehr remained good law for over 30 years, and several million patents were issued based on its approach—until *Mayo. Mayo* resurrected *Flook* and returned to what amounts to claim dissection. While citing *Diehr* for the proposition that the claims must be viewed as whole, *Mayo* held that it is proper to determine patent eligibility by identifying an "inventive concept" and applying § 101 only to that element. *Mayo* further extended *Flook*'s *ad hoc* rules to include "well-understood, routine, conventional activity," previously engaged in by those in the field, *Mayo*, 132 S.Ct. at 1298. Consideration of whether individual steps are conventional directly contradicts *Diehr*, 450 U.S. at 193. Indeed, the bulk of Diehr's claim was conventional, *Diehr*, 450 U.S. at 207-208 (Stevens, J., dissenting), and thus this rule clearly cannot be correct in all cases.

The conflict between *Flook-Mayo* and *Diehr* has been widely recognized. See Katerina E. Milenkovski, *Prometheus's Patent Ruled a Myth*, American Bar Association Litigation News (May 29, 2012) http://goo.gl/LxksgX ("'Despite quoting heavily from *Diehr* in its *Prometheus* analysis, the Supreme Court nevertheless did exactly what *Diehr* instructed not to do,' according to Robert M. Asher, Boston, co-chair of the Patents Subcommittee of the Section of Litigation's Intellectual Property Litigation Committee."); Eric W. Guttag, *Selective Precedent Amnesia: The Nonsensical Reasoning in the Supreme Court's Mayo Collaborative Services Decision Part 3*, IPWatchdog (March 28, 2012), http://goo.gl/eX2ldL ("Breyer's opinion in *Mayo Collaborative Services* repeatedly doing what this paragraph from *Diehr* says not to do in an analysis of method or process claims under 35 U.S.C. § 101 . . . But frankly such mishandling of binding Supreme Court precedent in *Mayo Collaborative Services* is a huge problem.").

Flook's *ad hoc* rules continue to be used today, but they do not accurately reflect the nature of the inventive process or of how computers operate. The rules against considering claim limitations that are pre-solution or data gathering activity overlooks a variety of situations where the solution is not in the creation of a new formula, but in some other inventive contribution.

For example, the inventive concept can come from identifying, of potentially thousands of variables, which ones are important to solving a known problem and which are not. This is common in many

of the sciences. Similarly, pre-solution activity provides a new way of obtaining data for use in an existing algorithm, or specific "pre-processing" steps that beneficially transform the data so that it can be more efficiently used. This was the case in *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1055 (Fed. Cir. 1992) (pre-processing of the electrocardiographic signal was a "critical feature of the Simson invention."). A rule against post-solution activity likewise improperly disregards situations where the inventive concept is the new use of results of a known algorithm, or a new way of presenting the results. There are many patents based on these kinds of inventive contributions.

A rule against field of use limitations also has unintended consequences. One of the most powerful forms of invention is to apply knowledge developed in one field to an entirely different and unrelated field. "Transforming concepts from one form into another can yield discoveries in any field." Robert and Michele Root-Bernstein, *Sparks of Genius: The 13 Thinking Tools of the World's Most Creative People* 286 (1999). The inventive contribution comes from realizing that a particular mechanism used in one field of technology solves a problem in a different field of technology. In such cases, a limitation that substantively restricts the application of an existing solution to a new field should be acceptable and should not be ignored for purposes of patent eligibility—specifically if it is desired to encourage this type of cross-disciplinary innovation.

None of these situations was at issue in *Benson*, *Flook*, or *Diehr*, and yet the *ad hoc* rules against pre-solution, post-solution, and field of use limitations would exclude these types of inventions as a matter of course. Objective preemption would not automatically invoke these rules to exclude limitations as being insignificant *per se*, but would instead use POSITA to determine whether a limitation is meaningful, regardless of whether it is pre-solution, post-solution, or a field of use.

Another *ad hoc* rule is that computers perform essentially mental steps. "As the Supreme Court has explained, "[a] digital computer . . . operates on data expressed in digits, solving a problem by doing arithmetic as a person would do it by head and hand." *Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada*, 687 F.3d 1266, 1277 (Fed. Cir. 2012) (citing *Benson*, 409 U.S. at 65). Computers do not perform even basic arithmetic in the same way a human does. See Benrey at 10-16. Prior to *Benson*, the mental steps doctrine was limited to claims that specifically required human cognition or judgment, and *Benson* extended the doctrine to computers based on the incorrect assumption that they perform calculations as do humans. See Benrey at 25-29.

Further, the use of a general purpose computer to implement an invention should not be discarded as having no contribution to patent eligibility. Section 100(b) of the patent statute expressly contemplates that process claims include a new use of a known process or machine. If a new use were found for a common and conventional mechanical machine, such as a printing press to "print" a food product, one

would not ignore a claim limitation reciting the machine in deciding whether a process claim for printing food was statutory. Similarly, there is no logical reason to ignore a general purpose computer or elements recited in a software process claim, and doing so directly contradicts the language and intent of § 100(b). If Congress intended to require that "conventional, routine" elements could not contribute to patent eligibility, it would not have extended the definition of process to include the use of a known "*process, machine*, manufacture, composition of matter," exactly as recited in § 101 (emphasis added).

Finally, the expression *general purpose computer* is often misunderstood. A general purpose computer *does not* mean a computer executing basic software such as a word processor or an Internet browser. Rather, the term refers to the underlying *hardware* architecture of a processor ("CPU"), a memory from which a stored program can be retrieved and executed. See "Computer," http://en.wikipedia.org/wiki/Computer. Once a program is executed by the processor, the computer is in fact operating as a particular machine, essentially a special purpose computer. This is a consequence of the foundational work in computer science by Alan Turing, who proved in the 1930s that a general purpose computer (what he called a "Universal Turing Machine") executing a program can perform the operations of any specific hardware. See Benrey at 33-35; "Universal Turing machine," http://en.wikipedia.org/wiki/Universal_Turing_machine#Stored-program_computer/.

This also demonstrates that the holding in *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) is scientifically correct: "such programming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Id.* at 1545.

V. ALICE'S PATENT CLAIMS ARE PATENT ELIGIBLE UNDER OBJECTIVE PREEMPTION

Alice's patent claims recite statutory subject matter under the objective preemption framework.

First, the record shows that a POSITA would be "a person with experience in banking operations and systems, including at least five years experience in the financial services industry with knowledge of and experience in large value trading, settlement, and payment computer systems and methods. This could, for example, be a person with a financial business background who has specified technology requirements for payment systems or other financial systems." JA118 ¶ 6. This is consistent with the classification of Alice's patents in U.S. patent classification 705/37, pertaining to "the trading or exchange of securities or commodities within an organized system."

Second, there was record evidence that a POSITA would understand that the method claims necessarily require a computer to perform the steps, including the creation and adjusting of the shadow

credit and debit records. JA128 ¶ 26, JA124 ¶ 17, JA1322 ¶ 29; see *CLS*, 717 F.3d at 1330 (Linn, J., dissenting). POSITA would observe that the 100-plus page patent specification provides an extremely detailed and lengthy description of the computer algorithms, data structures, databases, and screen displays used by the system. JA1325 ¶ 33. Reading the Disclosure of the Invention of U.S. Patent No. 5,970,479, for example, there is no suggestion that the inventors specifically sought to patent an abstract intellectual idea such as credit intermediation *per se*, but only "methods and apparatus," including a recitation of both computer system and a computer-implemented method, both of which recite the use of shadow credit and debit records. JA249-251. Given the detailed descriptions and the disclosure of the invention, POSITA would understand that the computer-implemented shadow records are inherent in the solution, not a mere afterthought. Thus, POSITA would consider Alice's "inventive concept" to be computerized systems and methods for using shadow credit and debit records used by a supervisory institution for managing settlement risk. JA126 ¶ 21. None of these facts or inferences were contradicted by CLS's expert declaration, JA102-115.

Thus, POSITA would not conclude that Alice's patent merely recited an abstract idea. However, for the sake of this analysis it is assumed the claims implicate an abstract idea, such as "reducing settlement risk by effecting trades through a third-party intermediary (here, the supervisory institution) empowered to verify that both parties can fulfill their obligations before allowing the

exchange—*i.e.*, a form of escrow." See *CLS*, 717 F.3d at 1286 (Lourie, J., concurring).

POSITA would recognize various limitations as being significant since they allow for practical applications of the abstract idea that do not infringe Alice's claims. For example, POSITA would recognize having both a shadow credit and debit account for every party as one such limitation. This is because a supervisory institution instead could use a single account for each party, similar to the conventional use of a single bank account for both credits and debits. This would still provide a practical way of reducing settlement risk using a third party without coming within the scope of the claims.

The requirement to adjust the credit and debit accounts of each party in chronological order is also a meaningful limitation. POSITA would recognize that the adjustments could be made in a different order, such as largest amounts first, a practice commonly used in banking. While not as effective as the claimed method, it would still be a practical application of the abstract idea.

Given the presumption of validity, all reasonable inferences from these facts must be drawn in Alice's favor. Thus, POSITA would recognize that the claims do not preempt all practical applications of this idea. Accordingly, these claims should be patent eligible.

CONCLUSION

Section 101 is broadly stated precisely because it focuses not on the past, but on the unknowable future. It beckons inventors to create inventions that by definition cannot be predicted. Restrictions on future inventions, particularly through the narrowing of § 101, need to be carefully crafted, and should not discriminate, intentionally or otherwise, against particular technologies.

The patent law must provide clear and objective standards to enable innovators to readily determine whether their inventions are patent eligible, and competitors to practice their existing approaches, as well as to learn and adapt in view of patented inventions. The public benefits from both types of activities.

Objective preemption serves all of these goals. The Court should adopt objective preemption as a methodology for deciding patent eligibility. It should further reverse the decision below and find Alice's claims eligible under § 101.

Respectfully submitted,

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