BRIEF FOR APPELLEE DIRECTOR OF THE
UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

Appeal No. 2007-1130
(Serial No. 08/833,892)

IN RE BERNARD L. BILSKI and RAND A. WARSAW

Appeal from the United States Patent and Trademark Office,
Board of Patent Appeals and Interferences.

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Representative Claim

1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;

(b) identifying market participants for said commodity having a counter-risk position to said consumers; and

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

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STATEMENT OF RELATED CASES

The Director is not aware of any other appeal from the Board of Patent Appeals and Interferences in connection with application Serial No. 08/833,892 that has been previously been before this or any other court.

There is no known related case pending in this or any other court. However, the Director filed a supplemental letter brief with this Court in *In re Comiskey*, Appeal No. 2006-1286, which, like the present appeal, focused on subject matter eligibility for process claims. The Director is also aware of *In re Ferguson*, Appeal No. 2007-1232, in which the Board rejected method claims of marketing a product under 35 U.S.C. § 101. The Director brings these other pending appeals to the Court's attention because, although unrelated, there have been relatively few decisions examining the eligibility of process claims, and the decision in one appeal could affect the outcome in the others.

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STATEMENT OF THE ISSUE

Appellants' (Bilski) representative claim 1 recites a hedging method in which a commodity provider (1) enters into transactions with consumers, promising to supply each consumer's commodity needs at a fixed price, and (2) enters into a second set of transactions with "market participants" at a second fixed price, where the market participants promise to supply the commodity provider's commodity needs (to give to the consumers) at that second fixed price. The question on appeal is whether the Board properly rejected claim 1 as nonstatutory subject matter under 35 U.S.C. § 101, which includes the following subsidiary issues:

(i) Does a non-machine implemented method, which does not entail any transformation of any underlying subject matter, nevertheless qualify as a "process" under section 101?

(ii) Does Bilski's method claim represent nothing more than a nonstatutory abstract idea?

(iii) Does the claim pre-empt all ways of hedging the consumption risk costs of a commodity?

(iv) Is the "useful, concrete, and tangible result" test confined to computer-implemented inventions, like those in *State Street* and *AT&T*? Can a method that simply forms contractual obligations and does not convert any input(s) into an output be said to produce a result that is "concrete and tangible?"

STATEMENT OF THE CASE

This case presents this Court with an opportunity to clarify the scope of patentable subject matter for process claims. In the section 101 case law cited and discussed by Bilski and amicus AIPLA, *e.g.*, *Diamond v. Diehr*, 450 U.S. 175 (1981); *Parker v. Flook*, 437 U.S. 584 (1978); *Gottschalk v. Benson*, 409 U.S. 63 (1972); *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999); *In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994) (en

banc); and *Arrhythmia Research Technology Inc. v. Corazonix Corp.*, 958 F.2d 1053 (Fed. Cir. 1992), the Supreme Court and this Court grappled with the question of patent eligibility for a then relatively new **technology** – computer-based programming inventions that employ a mathematical formula or algorithm. Ultimately, this Court has adhered to the long-standing judicially-created principle for analyzing the eligibility of process claims – such technological processes are eligible so long as they transform subject matter to a different state or thing. Specifically, this Court applied the transformation principle to computer technology by holding that transformation of computer data signals to produce a useful, concrete, and tangible result satisfies section 101.

Bilski's claimed method, however, is wholly unlike the inventions in the above-cited cases. The Board affirmed the examiner's section 101 rejection of claim 1, because (1) the case law has consistently held that a section 101 "process" transforms matter or energy to a different state or thing, and (2) the claim recites a disembodied concept, running afoul of the abstract idea exception. The question to be resolved in this appeal is how the law in these computer-implemented "mathematical algorithm" cases should be applied to a claim that simply calls for a party to enter into two sets of transactions.

Since this Court's decisions in *State Street* and *AT&T*, many applicants appear to have assumed (as does Bilski) that the sole test for patent eligibility is whether the invention produces a useful, concrete, and tangible result. The PTO has thus been inundated with an unprecedented number of patent applications relating to subject matter that arguably does not fall within the traditional rubric of "inventions" in the "useful arts." The inventions include legal methods, methods of teaching, methods of holding conversations, and even a method for swinging on a playground swing. Oftentimes these claims, typically claimed as processes, do not require any machine or apparatus for implementing the method, nor do the claims require any transformation of subject matter, tangible or intangible, from one state into another. And while many business method patents were historically directed toward computer systems and data processing, a growing number of applications attempt to cover business concepts themselves, without any requirement for processing one set of data into another.

Because this Court has had little opportunity to address the eligibility of this brand of method inventions, the PTO has struggled to offer its examiners clear guidance on this issue, and therefore welcomes this opportunity for this Court to resolve this important question.

STATEMENT OF THE FACTS

A. Bilski's Invention: Method of Hedging Cost Risk of a Commodity

A hedge is a well-known strategy in which a party enters into one transaction specifically to reduce or cancel the risk taken in another transaction. Home-buyers purchasing fire insurance can be considered one example. The practice of hedging necessarily requires two sets of transactions, in which the "hedger" enters into one transaction with one party and a second transaction with a second party. *See, e.g.*, WEBSTER'S NEW WORLD DICTIONARY, COLLEGE EDITION 671 (12th ed. 1968), "hedge," definition (3) (defining "hedge" as "to try to avoid or lessen loss in (a bet, risk, etc.) by making counterbalancing bets, investments, etc."). The commodity futures market is a classic form of hedging where parties buy and sell futures contracts for commodities to protect themselves against future price fluctuations.[1]

Energy consumers, such as businesses and homeowners, are exposed to substantial risk in the costs of energy they use, due to fluctuations in consumption as well as price per unit of energy. A79-80. Bilski's patent application describes a method of offering consumers a fixed energy bill for the winter so consumers

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[1] *See* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1048 (1993) "hedge," definition (3c) (defining "hedge" as "to buy or sell commodity futures as a protection against loss due to price fluctuations").

can avoid the risk of very high heating bills due to an abnormally cold winter. Regardless of how much gas the consumer will need to use during a very cold winter, she knows that her heating bill remains fixed. Having taken on the risk of a very cold winter, the energy provider hedges against that risk by setting up a series of contracts with other parties (market participants) who are willing to bet that the winter weather will be warmer than normal. A83. A market participant could be, for example, a party who holds a large inventory of gas and desires to guarantee for itself the sale of a portion of its commodity in the future through a contract now. *Id.* Alternatively, a market participant could also be an investment speculator. Claim 1 is representative[2]:

> 1. A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:
>
> (a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed rate based upon historical averages, said fixed rate corresponding to a risk position of said consumer;
>
> (b) identifying market participants for said commodity having a counter-risk position to said consumers; and

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[2] Because Bilski did not argue claims 2-11 separately, either before the Board (A190-97, A216-19) or in his opening brief, these claims stand or fall with claim 1 for purposes of the rejection. *In re King*, 801 F.2d 1324, 1325 (Fed. Cir. 1986).

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.

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According to Bilski's specification (A79-92), setting the fixed bill price for an effective hedging scheme is not a simple process, and Bilski discloses a complicated mathematical algorithm for calculating the price:

$$\text{Fixed Bill} = F_i + [(C_i + T_i + LD_i) \times (\alpha + \beta E(W_i)]$$

A83. The $\alpha + \beta E(W_1)$ portion of the bill represents an approximation of the amount of consumption driven by the weather, which Bilski estimates with an ordinary least squares statistical model. A82. Furthermore, Bilski discloses that the commodity provider must take additional statistical modeling steps (Monte Carlo simulations, one-tail tests) to properly price a deal and estimate an acceptable margin over the entire portfolio of transactions. A84-85. In addition, Bilski discloses strategies for hedging against price volatility in a fixed energy bill as well as for dealing with the problem of wasteful overconsumption by consumers. A85-86. Bilski also discloses a mathematical relationship, ∂Costs/∂/HDD [sic; ∂Costs/∂HDD] = ∂Swap Receipts/∂HDD, for a commodity

provider to use for locating market participants that would be interested in entering into transactions. A84.

None of the above mathematical formulas, statistical modeling, or strategies is recited in claim 1, however. Instead, claim 1 simply proclaims that two sets of transactions take place at two different rates. Bilski's method of how to calculate those rates is not claimed, and no calculation, by machine or human, of the fixed bill is required. In fact, claim 1 does not transform any subject matter (matter, energy or data) to a different state or thing. Claim 1 does not recite any electrical, chemical, or mechanical acts or results. Nor does the claim involve making or using a machine, manufacture, or composition of matter.

Rather, the body of the claim essentially tracks the definition of a commodity cost hedge. Moreover, claim 1 is much broader than the single example disclosed, which describes a scheme for managing weather-related risks in energy costs, and instead encompasses hedging any commodity. A80 ("[T]he present method can be used for any commodity.").

B. The Board's Decision

The Board agreed with the Examiner that Bilski's claims were not patentable under 35 U.S.C. § 101 for two reasons: (i) Bilski's claimed method failed to meet the requirement for a statutory "process" to transform matter or

energy into a different state or thing, and (ii) it was a disembodied concept that represented nothing more than an abstract idea. A42-43; A50-51.

The Board initially observed that non-machine implemented process claims, such as Bilski's, are more difficult to analyze under section 101, given that they are inherently more abstract than physical, tangible things, such as machines, manufactures, compositions of matter, and machine-implemented process claims. A9-10. The Board also noted that all the statutory categories of invention must fall within the "useful arts," which is the equivalent of technological arts. A16. Because methods which transform subject matter or are machine-implemented necessarily involve technology, the Board concluded that this judicially-created test for process claims was in keeping with the constitutional mandate. A34. Thus, although the case law does not require a separate technological arts inquiry, the determination of whether an invention falls into a statutory class inherently involves a technology-related inquiry. *Id.*

Analyzing claim 1, the Board found that the claim did not require any computer or machine implementation and thus there was no implicit transformation of electrical signals. A47. Nor did the claim transform any physical matter into a different state or thing. Accordingly, the Board concluded that claim 1 did not qualify as a section 101 process. *Id.* Furthermore, the Board

found that the "useful, concrete, and tangible result" test from *State Street* and *AT&T* did not apply in this context, because that test was limited to machines and machine-implemented processes employing a mathematical algorithm. A27-29. Nonetheless, the Board also determined that claim 1 did not produce a "useful, concrete, and tangible result" because its result was not concrete and tangible, nor was it a practical application of the commodity hedging concept. A53-54. In addition, the Board determined that claim 1 sought to patent an abstract idea, since it lacked any underlying subject matter being acted on, and the claim covered all possible ways of hedging the consumption risk costs of a commodity. A50-51.

SUMMARY OF THE ARGUMENT

Bilski's method claim, which calls for initiating two sets of commodity transactions at two different fixed rates, is not a "process" under section 101. The Supreme Court and this Court have always tied a section 101 "process" to transforming matter or energy to a different state or thing, or machine implementation. Bilski's claim, however, does not transform any kind of subject matter and does not require a machine to carry out the recited steps. Moreover, the Supreme Court's refusal in *Benson* and *Flook* to foreclose other possible eligibility tests for process claims does not help Bilski, since the Court's concern was for future, unforeseen technologies, a characteristic claim 1 is wholly lacking. In

addition, claim 1 runs afoul of the abstract idea exception, because it merely recites the disembodied concept for hedging cost risk of a commodity and would pre-empt all applications of that concept.

Moreover, the Board correctly determined that *State Street*'s "useful, concrete, and tangible result" test does not control here, since that test is intended for computer-implemented inventions that employ a mathematical algorithm to transform data signals representing real world activity. But even if it does apply, the Board correctly held that Bilski's claim does not produce a result that is concrete or tangible. Finally, contrary to amicus AIPLA's assertion, *Diehr*'s clarification of the dividing line between impermissibly claiming a law of nature versus an application of a law of nature did not disturb the Court's well-settled precedent requiring a "process" to either transform subject matter or be implemented by a machine.

ARGUMENT

A. Standard of Review

The proper interpretation of the claims is a question of law reviewed de novo on appeal. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). Since claims during prosecution must be given their "broadest reasonable interpretation," this Court reviews the PTO's interpretation of disputed

claim language to determine whether it is "reasonable" in light of all the evidence before the Board. *In re Morris*, 127 F.3d 1048, 1055 (Fed. Cir. 1997).

Whether an invention qualifies as statutory subject matter under 35 U.S.C. § 101 is also a question of law reviewed de novo. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1355 (Fed. Cir. 1999); *Arrhythmia Research Technology v. Corazonix Corp.*, 958 F.2d 1053, 1055 (Fed. Cir. 1992).

B. Bilski's Method Claim 1 Is Not a "Process" Under Section 101

1. The Supreme Court Defines a Section 101 "Process" as Transforming Subject Matter to a Different State or Thing

When construing a statute, "unless otherwise defined, 'words will be interpreted as taking their ordinary, contemporary, common meaning,'" *Diehr*, 450 U.S. at 182 (quoting *Perrin v. United States*, 444 U.S. 37, 42 (1979)). Although the term "process" was not added to 35 U.S.C. § 101 until 1952, a process had long been considered patent eligible with a well-developed case law history. "When Congress approved the addition of the term 'process' to the categories of patentable subject matter in 1952, it incorporated the definition of 'process' that had evolved in the courts." *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994) (footnotes omitted); *see also Diehr*, 450 U.S. at 184 ("Analysis of the eligibility of patent protection for a 'process' did not change with the addition of that term to

§ 101."). Both this Court and the Supreme Court have thus recognized that Congress intended the interpretation of "process" in section 101 to be governed by the already existing, judicially-created definition for that term.

And as thoroughly reviewed by *Diehr*, prior to 1952, the Supreme Court had already provided a well-defined meaning for "process": "'A process is a mode of treatment of certain materials to produce a given result. It is an act, or series of acts, *performed upon the subject matter to be transformed or reduced to a different state or thing.*'" *Diehr*, 450 U.S at 183 (quoting *Cochrane v. Deener*, 94 U.S. 780, 788 (1876) (emphasis added)); *see also id.* at 183-84 ("'The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.'") (quoting *Cochrane*, 94 U.S. at 788). Even before *Cochrane*, the Supreme Court had defined the scope of "process," explaining that "'where the result or effect is produced by chemical action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations, are called processes.'" *Diehr,* 450 U.S. at 182 n. 7 (quoting *Corning v. Burden*, 15 How. 252, 267 (1853)). Finally, quoting from *Benson*, *Diehr* repeated the singular focus of analyzing the eligibility of a process claim: "'Transformation and reduction of an article 'to a different state or thing' is the clue to the

patentability of a process claim that does not include particular machines.'" *Diehr*, 450 U.S. at 184 (quoting *Benson*, 409 U.S. at 70). Accordingly, the Supreme Court has provided a particularized definition for the meaning of a "process," based on the "transformation of an article" principle, which Congress adopted when it added the term to section 101 in 1952.

In *Benson,* the Court illustrated, through its own precedent, how it has consistently applied this definition for "process" in analyzing the eligibility of various inventions. In *Corning*, the patented tanning method was deemed eligible because it "changes articles or materials" and the process steps "transform the raw material." *Benson*, 409 U.S. at 69. *Cochrane* involved a process for manufacturing flour, which the Court sustained because "'a certain substance is to be reduced to a powder.'" *Benson*, 409 U.S. at 70 (quoting *Cochrane*, 94 U.S. at 788). Likewise, in *Tilghman v. Proctor*, 102 U.S. 707 (1880), the Court upheld the claimed process for manufacturing fat acids because Tilghman "'invented a particular mode of bringing about the desired chemical union between the fatty elements and water.'" *Benson*, 409 U.S. at 70 (quoting *Tilghman*, 102 U.S. at 729). And in *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1909), a process for expanding metal "'involving mechanical operations, and producing a new and

useful result'" was held to be eligible for patenting. *Benson*, 409 U.S. at 70 (quoting *Expanded Metal*, 214 U.S. at 385-86).

Similarly, the Court in *Diehr* relied on the transformation definition for "process" to find the claimed method of molding synthetic rubber eligible for patent protection:

> Analyzing respondents' claims according to the above statements from our cases, we think that a physical and chemical process for molding precision synthetic rubber products falls within the § 101 categories of possibly patentable subject matter. That respondents' claims involve the transformation of an article, in this case raw, uncured synthetic rubber, into a different state or thing cannot be disputed.

Diehr, 450 U.S. at 184. Accordingly, the Supreme Court has consistently and exclusively relied on its own definition for "process" in evaluating the eligibility of this category of claims.

While both Bilski and AIPLA argue for a broader, more generic interpretation of "process," the Supreme Court has already pointed out that its decisions have foreclosed an ordinary, dictionary reading of "process." *See Flook*, 437 U.S. at 589 ("The holding that the discovery of [*Benson*'s] method could not be patented as a 'process' forecloses a purely literal reading of § 101."). To be sure, the scope of patentable subject matter under section 101 is broad. But it is

not infinitely broad. "Congress included in patentable subject matter *only* those things that qualify as 'any . . . process, machine, manufacture, or composition of matter, or any . . . improvement thereof . . . ." *In re Warmerdam*, 33 F.3d 1354, 1358 (Fed. Cir. 1994) (quoting 35 U.S.C. § 101) (emphasis added). Thus, "[d]espite the oft-quoted statement in the legislative history of the 1952 Patent Act that Congress intended that statutory subject matter 'include anything under the sun that is made by man,'[citation omitted], Congress did not so mandate." *Id.* Rather, Congress adopted the meaning of "process" already given by the Supreme Court to that term in several earlier opinions, *i.e.*, "any" process that "either [1] was tied to a particular apparatus[3] or [2] operated to change materials to a 'different state or thing.'" *Flook*, 437 U.S. at 588 n.9 (quoting *Cochrane v. Deener*, 94 U.S. at 788).

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[3] The principal exception to this rule is when the machine-implemented method merely manipulates abstractions. *See Benson*, 409 U.S. at 71-72; *see also* A19 n.6. In addition, merely attaching a machine to an otherwise ineligible method may not be sufficient and would depend on how the machine actually implemented the recited steps. For example, if a nonstatutory claim were amended so that a recited step of registering a customer were performed by entering data into a computer rather than using a sign-up sheet, it is hard to imagine how that alone would satisfy the requirements of § 101 and convert an otherwise ineligible claim into an eligible one.

2. The Supreme Court Has Reserved the Possibility of Potentially Broadening the Scope of "Process," But Only for New, Unforeseeable *Technological Advances*

The Supreme Court has declined in the past to hold that the transformation principle will forever be the exclusive eligibility test for process claims: "It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a 'different state or thing.' We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents." *Benson*, 409 U.S. at 71. Rather than rule on this question in *Benson* and *Flook*, the Supreme Court decided those cases based on the abstract idea exception to patentability. *Benson*, 409 U.S. at 71-72; *Flook*, 437 U.S. at 594-95.

The Supreme Court's choice, however, to reserve the possibility of other eligibility tests for process claims was purely driven by concerns for future, unforeseen **technologies** that potentially would not fit within the existing transformation rubric, yet nevertheless may be worthy of patent protection. In particular, the Supreme Court was uncertain in *Benson* and *Flook* whether the patent system should encompass computer programming methods. Although the Court held the claimed method in *Benson* to be ineligible, the Court was careful to point out that its decision did not preclude patenting any and all computer

programming inventions. *Benson*, 409 U.S. at 71 ("It is said that the decision precludes a patent for any program servicing a computer. We do not so hold."). In fact, the Court emphatically underscored that it did not wish to "freeze process patents to old technologies, leaving no room for the revelations of **new, onrushing technology**." *Benson*, 409 U.S. at 71 (emphasis added). Again in *Flook*, although the Supreme Court found the computer programming claim in question to fall outside section 101, it stressed that its decision should not be "interpreted as reflecting a judgment that patent protection of certain novel and useful computer programs will not promote the progress of science and the useful arts." *Flook*, 437 U.S. at 595. Thus, the Court provided scant guidance as to how the physical transformation test might apply to software inventions, and left open the possibility that subsequent computer-related processes, and other new technologies that might not involve transformations, might yet qualify as patent-eligible subject matter.

Importantly, nothing in *Benson* or *Flook* remotely suggests that the Court's reluctance to articulate a definitive test for patent eligibility reflected a concern for "inventions" involving "processes" lacking both transformation and technological application. Such "processes" existed in abundance at the time of these decisions, but were generally not considered patent-eligible, and thus played no role in the

Supreme Court's consideration of cases involving the developing technology of computer software. Ultimately, in *Diehr*, the Supreme Court found a method claim involving a computer program using a mathematical formula to be eligible, because (1) as a whole, the claim was for an industrial process that physically transformed rubber into a different state, and (2) the claim was for a particular application of the formula in the claimed computer-controlled industrial process. *Diehr*, 450 U.S. at 184-85, 191-93.

3. The Federal Circuit's "Data Transformation by a Machine" Test

Since *Diehr*, the Federal Circuit has reviewed several computer technology cases, and in acknowledgment of the innovations occurring in this technological field, identified a third category of method claims that qualify as a "process." In doing so, this Court extrapolated from the Supreme Court's "transformation and reduction of an article" test, which had only been applied for industrial inventions. Looking to the principles underlying the transformation test, this Court has held that transformation of intangible subject matter (*i.e.*, data signals) may also qualify as a § 101 process. *See, e.g.*, *State Street*, 149 F.3d at 1373. Responding to the argument that process claims must involve a "physical transformation," this Court in *AT&T* ruled that "physical transformation" "is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a

useful application." *AT&T*, 172 F.3d at 1358; *see also In re Schrader*, 22 F.3d 290, 295 n.12 (Fed. Cir. 1994) (noting that the "subject matter" to be transformed does not need to be a physical, tangible object or substance, but also can be intangible, such as electrical signals or electromagnetic waves).

Accordingly, the Federal Circuit has consistently used a "data transformation" test in assessing the eligibility of various computer-implemented claims. In *Alappat*, the Court held that "data, transformed by a machine" "to produce a smooth waveform display" "constituted a practical application of an abstract idea." *State Street*, 149 F.3d at 1373. In *Arrhythmia*, the Court held "the transformation of electrocardiograph signals" "by a machine" "constituted a practical application of an abstract idea." *Id.* Likewise, in *State Street*, the Court held that "the transformation of data" "by a machine" "into a final share price, constitutes a practical application of a mathematical algorithm." *Id.* Thus, while *Diehr* involved the transformation of a tangible object – curing synthetic rubber – this Court also regards the transformation of intangible subject matter to similarly be eligible, so long as the data signals represent some real world activity. The PTO views this "data transformation" test as an appropriate way to evaluate subject matter eligibility.

This Court has never held or indicated that a *non-machine* implemented process involving *no transformation* can qualify as a "process" under § 101. In fact, confronted with such claims, this Court has repeatedly questioned their patent-eligibility. *See Schrader*, 22 F.3d at 294-95; *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989) (rejecting claims to method of evaluating a system that incorporated a mathematical algorithm, where the only physical step was a data gathering step that was not tied to the algorithm); *see also In re Alappat*, 33 F.3d 1526, 1543 (Fed. Cir. 1994) (en banc) ("*Maucorps* dealt with a business methodology for deciding how salesmen should best handle respective customers and *Meyer* involved a 'system' for aiding a neurologist in diagnosing patients. Clearly, neither of the alleged 'inventions' in those cases falls within any § 101 category."); *In re Maucorps*, 609 F.2d 481, 486 (CCPA 1979) ("As admitted by appellant at oral argument, method claims drawn to the Steps performed by appellant's 'means' would be non-statutory and an attempt to claim appellant's algorithms in their application to a model of a sales organization."); *In re Meyer*, 688 F.2d 789, 796 (CCPA 1982) ("[W]e conclude that appellants' independent claims are to a mathematical algorithm representing a mental process that has not been applied to physical elements or process steps and is, therefore, not limited to any otherwise statutory process, machine, manufacture, or composition of

matter."); *but see State Street*, 149 F.3d at 1376 n.14 (observing that "*Maucorp* and *Meyer* were subject to the *Benson* era *Freeman-Walter-Abele* test – in other words, analysis as it existed before *Diehr* and *Alappat*," without addressing the fact that it was the *Alappat* decision itself that made the observation that these inventions were "clearly" nonstatutory).

In *Schrader*, this Court affirmed the section 101 rejection of a method of competitively bidding on a plurality of related items, relying in part on the *Freeman-Walter-Abele* ("FWA") test. However, consistent with *Arrhythmia*, *Alappat*, *State Street*, and *AT&T*, the Court also inquired into whether Schrader's non-machine implemented method claim performed any kind of transformation. *Schrader*, 22 F.3d at 294 ("[W]e do not find in the claim any kind of data transformation."). The Court then distinguished Schrader's claim from the statutorily eligible claims in *Arrhythmia*, *In re Abele*, 684 F.2d 902 (CCPA 1982), and *In re Taner*, 681 F.2d 787 (CCPA 1982), pointing out that in those cases, the claims "all involved the transformation or conversion of subject matter representative of or constituting *physical activity or objects*. *Id.* (emphasis in original). *Schrader* expressly concludes that "a process claim [in] compliance with Section 101 requires some kind of transformation or reduction of subject matter." *Id.* at 295. In sum, the Federal Circuit has never ruled that methods

without any transformation or machine implementation are eligible, and appears in *Schrader* to have rejected that proposition.

Furthermore, although the FWA test is no longer considered particularly probative in the context of computer-implemented process inventions in view of *Diehr* (*see, e.g.*, *State Street*, 149 F.3d at 1374), the erosion of FWA provides no support for the position that a non-machine implemented process, not involving any transformation, might be patentable. The answer to that question is still provided by *Schrader*, and that answer, so far, is negative. While *AT&T* indicated that *Schrader* is "unhelpful" because it did not reach the question whether a "useful, concrete, and tangible result" occurred, the reason *Schrader* did not need to reach that question was because it found that the method claims at issue unpatentable for lack of any transformation. In addition, Schrader's claims did not require machine-implementation, unlike AT&T's claims. *See AT&T*, 172 F.3d at 1358 ("AT&T's claimed process" uses "switching and recording mechanisms to create a signal useful for billing purposes."). Moreover, *Schrader*'s treatment of non-machine implemented claims must be considered to have survived *AT&T* since it is axiomatic that dicta in one Federal Circuit panel decision cannot overrule the holding of an earlier panel decision. *George E. Warren Corp. v. United States*, 341 F.3d 1348, 1351 (Fed. Cir. 2003) ("We cannot simply overrule

[a prior panel] decision, even if we were persuaded . . . that it is appropriate; to overrule a precedent, the court must rule en banc" (citing *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed. Cir. 1988))). Thus, all of the Supreme Court's and this Court's cases upholding or rejecting method claims under § 101 are consistent with the transformation test.

4. The Federal Circuit Has Also Recognized That the Patent System Is Reserved for Technological Advances

Like the Supreme Court, this Court has also viewed the scope of statutory subject matter to be directed to technological innovations. In *AT&T*, for example, this Court focused on addressing patent eligibility for new technologies in an evolving modern world, specifically, computer technology:

> Since the process of manipulation of numbers is a fundamental part of **computer technology**, we have had to reexamine the rules that govern the patentability of such **technology**. The sea-changes in both law and **technology** stand as a testament to the ability of law to adapt to new and innovative concepts, while remaining true to basic principles. . . . [T]his court (and its predecessor) has struggled to make our understanding of the scope of § 101 responsive to the needs of the modern world.

AT&T, at 1356 (emphasis added); *see also Schrader*, 22 F.3d at 297 (Newman, J., dissenting) ("[A] statutory 'process' is limited only in that it must be technologically useful.") (describing methods in *Arrhythmia* and *Diehr* as processes that are "employed in the technologically useful arts").

This view comports with the basic purpose of the patent system, in which the statutory subject matter provisions are designed to "fulfill the constitutional and statutory goal of promoting 'the Progress of Science and the useful Arts.'" *Diamond v. Chakrabarty*, 447 U.S. 303, 315 (1980). As Professor Chisum notes, "The general purpose of the statutory classes of subject matter is to limit patent protection to the field of applied technology, what the United States constitution calls 'the useful arts' . . . . This focus on technology explains the preoccupation of patent law with *means*. A patent can issue only for a new means of achieving a useful end or result." 1 Chisum on Patents § 1.01 (emphasis in original) (footnotes omitted); *see also* A34-35 (recognizing that each statutory class, as properly defined, involves technology).

This Court's predecessor held that the question of whether an invention is in the "technological arts" does not by itself constitute the test for section 101 patent-eligibility. *See In re Toma*, 575 F.2d 872 (CCPA 1978). Nevertheless, this technological background for the Patent Act informs the outer limits of subject matter allowable under section 101. *See In re Bergy*, 596 F.2d 952, 959 (CCPA 1979) ("the present day equivalent of the term 'useful arts' employed by the Founding Fathers is 'technological arts.'"), citing *In re Musgrave*, 431 F.2d 882 (CCPA 1970)), *vacated*, 444 U.S. 1028, aff'd sub nom., *Diamond v. Chakrabarty*,

447 U.S. 303 (1980). AIPLA also acknowledges in its amicus brief that the Supreme Court constructed an eligibility test that can be adapted "to encompass new and evolving technologies." AIPLA Br. at 8.

The Supreme Court recently reaffirmed that patents may issue only for those innovations that promote "the progress of useful arts." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1746 (2007). In this regard, usages of the term "useful arts" contemporaneous with the framing of the Constitution uniformly tie "useful arts" to manufactures and manufacturing processes, thereby providing strong support for the notion that "process" must be interpreted in parity with the other statutory categories.[4] Against this background, it is unlikely that Congress intended the

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[4] *See generally* Daniel Defoe, *A General History of Discoveries and Improvements in Useful Arts* (1727) (providing a history of technological developments from biblical times); W. Kenrick, *An Address to the Artists and Manufacturers of Great Britain* (1774) (contrasting the "useful arts" with the "polite arts"); Tench Coxe, *An Address to an Assembly of the Friends of American Manufactures, in Calling for More Domestic Manufacturing* (1787), at 17 (tying "useful arts" to manufactures); *id.* at 18 (describing progress in the useful arts as having produced improvements in numerous kinds of manufactures, from ships to whips to watches); George Logan, M.D., *A Letter to the Citizens of Pennsylvania, on the Necessity of Promoting Agriculture, Manufactures, and the Useful Arts* (1800) 12-13 (tying "useful arts" to manufacturing processes, and observing the connection between a country's prosperity and the progress in the useful arts); Karl B. Lutz, *Patents and Science*, 18 Geo. Wash. L. Rev. 50, 54 (1949) ("The term 'useful arts,' as used in the Constitution . . . is best represented in modern language by the word 'technology.'").

boundaries of "process" to be so expansive as to accommodate all methods that have a use.

In addition, while the concepts of insurance contracts such as fire insurance and risk transfer were well-established in 1789, contemporaneous discussions of the "useful arts" lack any suggestion that hedging arrangements could be considered to be "useful arts." Nor can these types of transactions be characterized as "new, onrushing technologies," as contemplated in *Benson*. Accordingly, it is unlikely that Congress meant to encompass within the term "process" in section 101 activities whose ability to achieve their claimed goals depended solely on contract formation.

The PTO thus believes that "process" should not be broadened so as to include any method that may be deemed useful, as advocated by AIPLA. AIPLA Br. at 13-14. This Court's and the Supreme Court's articulated eligibility tests keep the interpretation of "process" *in pari materia* with the other three categories of inventions – manufacture, machine, and composition of matter. In other words, interpreting "process" as either transforming subject matter or implemented by one of the other three categories of inventions is rationally consistent with and proportional to the types of inventions patented under the other categories. *See Tilghman*, 102 U.S. at 722 ("where the result or effect is produced by chemical

action, by the operation or application of some element or power of nature, or of one substance to another, such modes, methods, or operations are called processes."); *see also AT&T*, 172 F.3d at 1356 ("any step-by-step process, be it electronic, chemical, or mechanical, involves an 'algorithm' in the broad sense of the term."). Furthermore, the transformation of some subject matter necessarily involves the application of science or mathematics, which is consistent with the other categories of invention that are all necessarily in the technologically useful arts.

To date, the courts have been able to evaluate the eligibility of process claims in our modern, digital age (*Diehr*, *Arrhythmia*, *AT&T*) without having to depart from the transformation principle to create a new, additional test. As suggested by the Supreme Court, there may come a day when faced with "new, onrushing technologies," the courts may be compelled to move beyond the existing transformation test. But it would be inconsistent with the current understanding of the patent system as reserved for technological advances to expand patent eligibility to encompass non-technological inventions, such as contract schemes, dating strategies, teaching methods, and other methods, which while perhaps providing some form of benefit, do not appear to fall within the technologically useful arts.

5. Bilski and AIPLA Misread the Supreme Court's and This Court's Precedents

AIPLA contends that *Diehr* changed the landscape for process claims and necessarily contemplated other, unspoken eligibility tests beyond transformation in the following passage:

> [W]hen a claim containing a mathematical formula implements or applies that formula in a *structure or process* which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e.g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.

Diehr, 450 U.S. at 192 (emphasis added). In AIPLA's view, *Diehr* suggested by the "e.g." signal that a process claim does not necessarily have to comply with the transformation test. *See* AIPLA Br. at 11. The flaw in AIPLA's reading is that the "e.g." modifies "function" performed by a "structure or process" and not just "process" by itself. Therefore, the more logical reading is that one example of the inventions the patent laws are designed to protect ("structure or process") is a method that transforms an article ("process"), but of course other invention categories ("structure") are also protected by the patent laws, namely, machines, manufactures, and compositions of matter. Moreover, AIPLA's reading of *Diehr* cannot be correct since it contravenes all the earlier statements in *Diehr* which

quoted from several previous cases flatly defining process as requiring transformation of an article to a different state or thing. *See supra* pp. 13-14.

This Court's *AT&T* decision is not to the contrary since that opinion explained that the transformation test is best understood as not only physically transforming an "article," as quoted in *Diehr*, but also includes transforming intangible data signals[5], specifically citing the heart activity signals transformed in the *Arrhythmia* process as an example. *AT&T*, 172 F.3d at 1359. As already explained above and contrary to Bilski's reading, the holdings of *State Street* and *AT&T* are tied to transforming data signals by a machine, and thus did not deviate from the Supreme Court's transformation test.

Bilski and AIPLA also argue that transformation is no longer required because all that matters is that the process claim provide "a practical application with a useful result." *See, e.g.*, AIPLA Br. at 3. In other words, they read the precedents as now reducing the section 101 eligibility inquiry to be nothing more than a utility question, relying on the following from *Diehr*: "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Diehr*, 450 U.S. at 187. AIPLA Br. at 3. That

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[5] *See Schrader*, 22 F.3d at 295 n. 12 (describing electrical signals as "*intangible* subject matter") (emphasis in original).

argument misreads *Diehr* because it conflates the judicial exception inquiry with the separate issue of whether a claim properly falls within a statutory category. It is well established that laws of nature, natural phenomenon, and abstract ideas are excluded from patentability. *See Diehr*, 450 U.S. at 185. Thus, a patent eligible invention must be for an *application* of the law of nature, etc., and not for the law of nature itself. *Id.* at 187. That analysis, however, is distinct from the question of whether a given method claim qualifies as a process by transforming subject matter into a different state or thing.

Indeed, *State Street* correctly followed the two-step approach to analyzing the section 101 question. First, the Federal Circuit determined that the claimed invention, properly construed, fell into the "machine" statutory category. *State Street*, 149 F.3d at 1372. Second, this Court noted that "[t]his does not end our analysis," because it had to inquire as to whether the claim sought to patent one of the judicially-created exceptions to statutory subject matter. *Id.* Because the data transformation by the claimed machine "constitute[d] a practical application of a mathematical algorithm," the claim was found to pass muster under section 101. *Id.* at 1373. Accordingly, *State Street* correctly noted that the claimed "subject matter must fall into at least one category of statutory subject matter" *and* "the judicially created exceptions, i.e., abstract ideas, law of nature, etc., should be

applicable to all categories of statutory subject matter, as our own precedent suggests." *Id.* at 1375 n.9, and 1372 n.1; *see also* A47.[6]

AIPLA's argument also ignores the point that *Diehr*'s requirement for an "application of a law of nature or mathematical formula" must be to a "known structure or process." In other words, *Diehr* underscores that the claim must qualify as a "process" regardless of the law of nature versus application of law of nature dividing line. And, similar to the analytical framework of *State Street*, the *Diehr* Court *first* found that the claim in question was for an industrial "process," and then went on to determine that the inclusion of a formula in the claim did not render the process nonstatutory since the claim was limited to a particular application of the formula.[7] *See Diehr*, 450 U.S. at 184-93; *see also Alappat*, 33

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[6] The same two-step analysis applies for the other categories of invention, which have their own judicial interpretations that must be satisfied for a claim to qualify for patent protection. "A machine is a concrete thing, consisting of parts, or of certain devices and combination of devices." *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 570 (1863). The term "manufacture" refers to "'the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery.'" *Chakrabarty*, 447 U.S. at 308 (quoting *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11 (1931)). A "composition of matter" means "all compositions of two or more substances and . . . all composite articles, whether they be the results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." *Chakrabarty*, 447 U.S. at 308.

[7] The question presented, which the Court answered in the affirmative, was the following: "whether a process for curing synthetic rubber which includes in

F.3d at 1541-44 (following same two-step approach). Accordingly, the proposal that section 101 is nothing more than a matter of "usefulness" is not supported in the law.

6. Bilski's Hedging Method Is Not a Section 101 Process

Bilski's claimed invention is totally unlike any other claim the Supreme Court or this Court has found eligible. Claim 1 calls for a commodity provider to enter into two sets of commodity transactions in which the second set of transactions hedges the risk position taken by the commodity provider in the first set of transactions. Bilski acknowledges that his claims do not require any machine to carry out the invention. Appellant Br. at 11. Furthermore, the claim does not recite any underlying subject matter being acted upon or manipulated. Claim 1 thus does not transform any matter to a different state or thing. Nor does the claim transform data signals or other form of energy. In other words, the claim does not recite any inputs or output. Moreover, claim 1 does not recite any steps to calculate the "fixed rate" of the two transactions. A198. Rather, the claim simply declares that the commodity will be purchased at "a fixed rate." In

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several of its steps the use of a mathematical formula and a programmed digital computer is patentable subject matter under 35 U.S.C. § 101." *Diehr*, 450 U.S. at 177.

comparison, for example, claim 4 at least recites a formula for determining the fixed rate. A198-99.

The resulting set of two transactions called for by claim 1, while perhaps beneficial in one sense (as all contracts are), is simply not the product of any transformation as understood in the case law. The claims are thus similar to those rejected in *Schrader* (method of bidding on items) while distinguishable from those at issue in *Arrhythmia* (transforming electrocardiograph signals), *Alappat* (transforming digitized waveforms), *State Street* (transforming data signals), and *AT&T* (transforming data signals "to create a signal useful for billing purposes"). Accordingly, the claims fail to meet any of the conditions set forth in the case law of either the Supreme Court or this Court, and the Board correctly ruled that representative claim 1 is unpatentable under section 101. A46-47.

7. Bilski's and AIPLA's Arguments for Patent Eligibility of Claim 1 Are Unpersuasive

Bilski argues that his claimed method "transforms the relationships" between the parties entering into the recited transactions, and is therefore directed to statutory subject matter. Appellant Br. at 11. The creation of legal obligations, however, is not the sort of transformation required by the courts in previous cases, i.e., matter or energy. Bilski also contends that any test that requires a machine to

implement a process claim would convert every process into a machine, making "process" *in section 101 meaningless.* Appellant Br. at 12. Contrary to Bilski's assertion, the judicially-created test for "process" requires *either* transformation of subject matter *or* machine implementation. *Flook*, 437 U.S. at 588 n.9. As the Board correctly pointed out, "a method performed by a human may be statutory subject matter if there is a transformation of physical subject matter from one state to another; e.g, 'mixing' two elements or compounds to produce a chemical substance or mixture." A46. And AIPLA's claims that the Board's decision will harm "technological innovations" in computers, software, and business methods (AIPLA Br. at 12) is overstated, since the Board held that a computer implemented process that employs a mathematical algorithm to transform data to produce a useful, concrete, and tangible result is eligible for patent protection. A27-28. Accordingly, all "technological innovations" in these data processing fields will continue to be eligible for patent protection.[8]

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[8] An affirmance of the Board's decision in this case may not squarely resolve the matter of so-called legal methods, at least those that are machine-implemented. An answer to that question, however, could be provided in *In re Comiskey*, Appeal No. 2006-1286 (method of requiring resolution of any dispute arising from a will by arbitration rather than probate), which is currently pending before this Court.

C. Bilski's Claim 1 Runs Afoul of the "Abstract Idea" Exception

The Supreme Court has held that "[e]xcluded from . . . patent protection are laws of nature, natural phenomena, and abstract ideas." *Diehr*, 450 U.S. at 185. "'An idea of itself is not patentable.'" *Diehr*, 450 U.S. at 185 (quoting *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. (1 Wall.) 498, 507 (1874)); *Benson*, 409 U.S. at 67 ("[M]ental processes, and abstract intellectual concepts are not patentable."); *see also id.* at 71 ("It is conceded that one may not patent an idea."). In the case where a claim is for a process, as opposed to a product, "[t]he line between a patentable 'process' and an unpatentable 'principle' is not always clear. Both are 'conception[s] of the mind, seen only by [their] effects when being executed or performed." *Flook*, 437 U.S. at 589 (quoting *Tilghman*, 102 U.S. at 728). In contrast, "[i]t is now commonplace that an *application* of a law of nature or mathematical formula to a known **structure or process** may well be deserving of patent protection." *Diehr*, 450 U.S. at 187 (italics in original, bold added). Thus, this judicial exception doctrine highlights that patentable inventions should harness a law of nature or mathematical formula for a particular application rather than seeking to patent the law of nature or formula itself.

Clever claim drafting cannot circumvent these principles. That is, even when a claim appears to apply an idea or concept as part of a seemingly patentable

process, one must ensure that it does not in reality seek patent protection for that idea in the abstract. *Diehr*, 450 U.S. at 191. Similarly, one cannot patent a process that comprises "every substantial practical application" of an abstract idea, because such a patent "in practical effect would be a patent on the [abstract idea] itself." *Benson*, 409 U.S. at 71-72. Such limitations on process patents are important because without them, "a competent draftsman [could] evade the recognized limitations on the type of subject matter eligible for patent protection." *Diehr*, 450 U.S. at 192. Moreover, the observation in *State Street* that "[w]hether the patent's claims are too broad to be patentable is not to be judged under § 101, but rather under §§ 102, 103, and 112" did not, nor could it, overrule the Supreme Court's pre-emption doctrine. *See State Street*, 149 F.3d at 1377. Rather, pre-emption was not at issue in *State Street* since the claim in that case was particularly confined to a machine implementation, and did not suffer from the same defect as Bilski's claim.

Because Bilski's claim 1 is completely untethered from any sort of structure or tangible or intangible subject matter, it is directed to a disembodied concept. In other words, the claim is nothing but a disembodied abstract idea until it is instantiated in some physical way so as to be limited to a particular, practical application of the idea. *See, e.g.*, *In re Patton*, 127 F.2d 324, 327-28 (CCPA

1942) ("[I]t is sufficient to say that a system of transacting business, apart from the means for carrying out such system, is not within the purview of [the predecessor to section 101], nor is an abstract idea or theory, regardless of its importance or the ingenuity with which it was conceived, apart from the means for carrying such idea or theory into effect, patentable subject matter."); *Hotel Security Checking Co. v. Lorraine Co.*, 160 F. 467, 469 (2d Cir. 1908) ("In the sense of patent law, an art [process] is not a mere abstraction. A system of transacting business disconnected from the means for carrying out the system is not, within the most liberal interpretation of the term, an art [process]."); *State Street*, 149 F.3d at 1376 n.15 (recognizing the patent eligibility principle in the above-quoted language from *Patton* and *Hotel Security*, while characterizing it as not creating a "business method exception"); *Schrader*, 22 F.3d at 298 (Newman, J., dissenting) (same).

For example, not only does the claim lack any structure for carrying out the steps, it also fails to recite any underlying subject matter that is being manipulated by the steps. In other words, there is no physical element in the claim. Moreover, the claim does not specify how the fixed rates for the transactions will be calculated. The claim covers *any* means of setting the rates, whether it is calculated by a complex, heavily researched statistical model, or by simply referring to the previous energy bill. Thus, claim 1 appears to claim a series of

results, rather than a series of acts, since the claim merely describes the results (*i.e., initiating transactions at a fixed price*) *without reciting the details of how to* achieve those results, whether it is with the aid of a mathematical formula or something else.

At bottom, claim 1 is directed to the concept of hedging the consumption risk costs of a commodity, and the body of the claim is nothing more than the recitation of the definition of that concept – hedging one's bet taken with a series of commodity contracts by entering into another series of commodity contracts taking the opposite position. The claim thus attempts to cover any possible means of "balancing" the risk in one of these situations (i.e. hedging), where from the specification it is quite clear that doing so will often be very complex, and the true "invention" may well lie in designing the mathematical algorithms that will make it all work. The claim thus would pre-empt any and all methods and mathematical models for hedging against weather-related risk in the energy market. Furthermore, the claim would also pre-empt all other inventors who produce complicated hedge models of consumption risk for other commodities such as steel or plastics.

In short, the claim is so broad that it is directed to the abstract idea itself, rather than a practical implementation of the concept; in addition, claim 1 is "so

abstract and sweeping" that it would "wholly pre-empt" all applications of hedging the consumption risk costs of a commodity. *See Benson*, 409 U.S. at 68-72; *see also Alappat*, 33 F.3d at 1544 (quoting *Benson*).

It is true that process claims are not necessarily required to recite the means or structure for performing the claimed steps. *See, e.g., AT&T*, 172 F.3d at 1359. But process claims that do not require any machine implementation, and are thus intrinsically more abstract than product claims or method claims reciting structure, will nevertheless need some underlying subject matter that is being operated on, manipulated, or generated to clearly show that the method claim is for some specific application of the idea and represents something more than just a concept. *See, e.g., id.* at 1358 (noting that "AT&T's claimed process" uses "switching and recording mechanisms to create a signal useful for billing purposes"). Here, Bilski's claim lacks the "particularly claimed combination of elements" recited in Alappat's claim, the transformation of data by a machine recited in State Street's claim, the transformation of electrical signals in Arrhythmia's method claim, or the transformation of data useful for billing purposes in AT&T's method claim, and therefore lacks those characteristics that separate a practical application of an idea from just the idea itself.

Put differently, State Street's claim was not just a concept of accounting for the daily changes in each mutual fund held in a portfolio. Instead, the claim was for a machine comprising several different arithmetic logic circuits which calculated the daily gains and losses of each fund in the portfolio. *State Street*, 149 F.3d at 1371-72 (describing several of the means-plus-function elements as arithmetic logic circuits). If Bilski claimed a computer-implemented algorithm for performing the hedge, then that hypothetical claim would be much closer to State Street's claim.[9] In addition, AT&T's claim was not just reciting the concept of differential billing treatment for long distance phone calls – rather, the claim was for a particular application of that concept by having a telecommunications system generate a message record of the call which included a data field indicating whether the caller and the recipient shared the same long distance carrier. Thus, AT&T's claim was not just for the principle or concept or abstract idea. Bilski's claim is more akin to the rejected eighth claim in *Morse*, which claimed writing letters at a distance using electromagnetism "however developed." *O'Reilly v.*

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[9] Although Bilski did not argue claim 4 (A198-99) separately from representative claim 1, we note that claim 4's additional recitation of a mathematical formula for determining the fixed rate does not render it a "process" since it does not transform either matter or energy into a different state or thing. And since the formula itself is an abstraction, its addition would not necessarily convert the claim into an application of an abstract idea, and would likely pre-empt the formula.

Morse, 56 U.S. (15 How.) 62, 112 (1853). While Morse invented a particular process for achieving that result, the Supreme Court disallowed the eighth claim since it sought to patent the whole concept of using electromagnetism to write letters at a distance. *Id.* at 113; *see also Benson*, 409 U.S. at 68 (discussing *Morse* in support of its finding that Benson's claim is ineligible under section 101).

While there will be close cases where the line between a patentable process and unpatentable principle is not clear, here Bilski's claim falls clearly within the category of unpatentable principle. To avoid the judicial exceptions to eligibility, a claim must harness, i.e., apply, a law of nature or a mathematical formula or abstract idea in a patent claim, and not just patent the law of nature or formula or idea in the abstract.

D. This Court's "Useful, Concrete, and Tangible Result" Test Has Never Been Applied to This Type of Claim; Nor Would Bilski's Claim Satisfy That Test if Applied

1. *State Street*'s "Useful, Concrete, and Tangible Result" Test Is Limited to Machines and Machine-Implemented Methods That Transform Data

As discussed above, the development of this Court's data transformation test was in response to a series of cases concerning the eligibility of machines and machine-implemented methods employing a mathematical algorithm. In assessing the eligibility of these specific types of claims, the Court adopted a rule requiring

such claims to produce a "useful, concrete, and tangible result." *State Street*, 149 F.3d at 1373. Based on inferences drawn from the apparent sweep of the useful, concrete, and tangible result test in combination with *State Street*'s repudiation of any business method exception to patentability, applicants have been filing claims for "processes" that are not traditional industrial processes, which contain no physical limitations and do not recite any subject matter, let alone any transformation of subject matter. But this new brand of claims is beyond the purview of this Court's holdings. The cases applying the useful, concrete, and tangible result test have all been confined to machine implementation of mathematical algorithms. Thus, this Court has never stated that this is the general test for patent eligibility. In other words, any claim that might arguably yield a "useful, concrete, and tangible result" is not necessarily statutory subject matter.

Specifically, the "useful, concrete, and tangible result" test first appeared in *Alappat*, which states: "This [claimed invention] is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine to produce a useful, concrete, and tangible result." *Id.*, 33 F.3d at 1544. The Court in *Alappat* thus devised a standard to partition patentable inventions using mathematical algorithms from claims for disembodied mathematical concepts. *State Street* also involved claims to a machine employing

a mathematical algorithm, but in this instance for managing a mutual fund investment portfolio. Finding the claim to be valid under § 101, *State Street* held the following: "Today, we hold that the transformation of data . . . by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete and tangible result.'" *Id.* at 1373. Likewise, *AT&T* also ties this test to applications of mathematical algorithms: "Because the claimed process applies the Boolean principle to produce a useful, concrete, and tangible result without pre-empting other uses of the mathematical principle, on its face the claimed process comfortably falls within the scope of § 101." *AT&T*, 172 F.3d at 1358; *see also id.* at 1361 (concluding that "the focus is understood to be not on whether there is a mathematical algorithm at work, but on whether the algorithm-containing invention, as a whole, produces a tangible, useful result").

However, this Court has *never* suggested that its "useful, concrete, and tangible result" test was applicable outside the context of computer-controlled data transformation using a mathematical algorithm. Rather, this Court has consistently and specifically linked this test to inventions that perform "a series of mathematical calculations" to transform data. Indeed, this Court recently noted that the test was specifically devised to handle eligibility issues for claims

encompassing mathematical algorithms, thereby suggesting that it is *not* a general test for eligibility. *See NTP, Inc. v. Research In Motion, Ltd.*, 418 F.3d 1282, 1324 (Fed. Cir. 2005) ("The requirement that a process transform data and produce a 'tangible result' was a standard devised to prevent patenting of mathematical abstractions" (citing *AT&T*, 172 F.3d at 1359)).

In the Interim Guidelines that the PTO published for comment in 2005, the Agency attempted to apply the "useful, concrete, and tangible result" test as a general test for patent eligibility. *See Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, 1300 Off. Gaz. Pat. Office 142 (Nov. 22, 2005). In doing so, it attempted to follow the guidance in *AT&T* and *State Street*. However, in seeking to develop the final guidelines, the PTO is concerned that those rubrics do not give adequate guidance as a general test. The test fails to resolve the tension between *State Street* and *Schrader*. This Court has suggested in *NTP* that the test was adopted to address the specific problem of computer-implemented inventions. Three Justices of the Supreme Court have opined that, if applied as a general criterion, the test would conflict with prior Supreme Court decisions. *See Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S. Ct. 2921, 2928 (2006) (Breyer, J., dissent from

dismissal as improvidently granted) (observing that the Federal Circuit's statement that "a process is patentable if it produces a 'useful, concrete, and tangible result' . . . , if taken literally, . . . would cover instances where this Court has held the contrary"). Accordingly, the best reading of the precedent limits that test to machines and machine-implemented methods using mathematical algorithms to transform data, rather than embracing it as a general test for eligibility.

In sum, the PTO's understanding of the precedents at present is: Any computer program claimed as a machine implementing the program (*Alappat*, *State Street*) or as a method of a machine implementing the program (*AT&T*), is patentable if it transforms data and achieves a useful, concrete and tangible result (*State Street, AT&T*). Exceptions occur when the invention in actuality pre-empts an abstract idea, like a mathematical algorithm (*Benson*, 409 U.S. at 71-72). Because claim 1 does not entail a machine implementing a mathematical formula to transform data, the "useful, concrete, and tangible result" test is irrelevant to considering its eligibility.

While *State Street* put the "ill-conceived" business method exception to patentability "to rest," 149 F.3d at 1375, it did not suggest that any and all types of "useful" methods for doing business are statutory subject matter. In accordance with this Court's and the Supreme Court's precedent, business method claims, like

any method claim, must either be machine-implemented or transform subject matter into a different state or thing. Thus, while a process for transforming data to assist in differential billing for telephone users is eligible (*AT&T*), a method for promoting sales using a "buy one, get one free" scheme does not qualify as a "process," regardless of any useful or tangible result it produces.

2. Claim 1 Does Not Produce a Useful, Concrete, and Tangible Result

Claim 1 does not produce a "useful, concrete, and tangible result" because the invention does not produce a predictable output based on given inputs. Here, the claim calls for the creation of two sets of transactions, in which one set "balances" the risk position of the first set. Moreover, claim 1 does not produce a "useful, concrete, and tangible result" – no "concrete and tangible" result is actually produced or generated, since the creation of two sets of contracts by itself does not "produce" any kind of actual output that is concrete or tangible. The only thing it could be said to produce is a series of legal obligations between parties.

Thus, Bilski's claim is unlike those of *State Street* or *AT&T* in which a series of inputs are converted by a computer-implemented algorithm into an output corresponding to a tangible, real world thing. If Bilski's invention were for a process in which a computer received a series of factors and considerations and

using a mathematical algorithm produced an optimal fixed energy bill, then that invention might be considered to produce a tangible, concrete result. Moreover, any data transformation must be done by a machine. *State Street*, 149 F.3d at 1373; *AT&T*, 172 F.3d at 1358 ("switching and recording mechanisms").

Because claim 1 does not recite any data transformation let alone any data transformation by a machine, Bilski's proposed analogy to State Street's final share price fails. Bilski's claim does not calculate output values based on specific inputs, like State Street's claimed means (arithmetic logic circuits). Nor does Bilski claim a software program used with computer circuits to calculate outputs with real world value, such as "price, profit, percentage, cost, or loss." *See State Street*, 149 F.3d at 1375.

The PTO believes that a "useful, concrete, and tangible result" must at the very least be tied the creation of a reliable, repeatable result (*see* Interim Guidelines (citing *In re Swartz*, 232 F.3d 862, 864 (Fed. Cir. 2000))). While the result recited by the claims – hedging a position taken with one set of transactions by entering into a second set of transactions – could be considered useful, it is not concrete or tangible. The PTO recognizes, however, that this Court has never interpreted the meaning of the words in the "useful, concrete, and tangible result" test, and stated whether each term has a separate and distinct meaning. The PTO

would greatly appreciate clear guidance in how to apply this Court's terms in examining present and future applications. As several comments made to the PTO's Interim Guidelines for Patent Subject Matter Eligibility noted, the PTO's proposed interpretation of those terms is not based on any precedent specifically defining them.

CONCLUSION

The Board properly determined that Bilski's claims 1-11 are not directed to patentable subject matter. Since Bilski has failed to show any reversible error by the Board, this Court should affirm the Board's decision.

Respectfully submitted,

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RULE 32(a)(7)(c) CERTIFICATE OF COMPLIANCE

I certify pursuant to FRAP 32(a)(7) that the foregoing brief complies with the type-volume limitation. The total number of words in the foregoing brief, excluding the table of contents and table of authorities, is 11,229, as calculated by the WordPerfect 9 program.

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CERTIFICATE OF SERVICE

I hereby certify that on June 13, 2007, I caused two copies of the foregoing BRIEF FOR APPELLEE DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE to be transmitted via overnight delivery to the addresses below:

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