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

United States Court of Appeals

for the

Federal Circuit

IN RE RENARD L. BILSKI
and RAND A. WARSAW

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

BRIEF FOR *AMICUS CURIAE* LAW PROFESSOR KEVIN EMERSON COLLINS IN SUPPORT OF NEITHER PARTY

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CERTIFICATE OF INTEREST

Counsel for amicus curiae Patent Law Professor Kevin Emerson Collins certifies the following:

1. The full name of every party of amicus represented by me is:

   Kevin Emerson Collins

2. The name of the real party in interest represented by me is:

   Kevin Emerson Collins

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the party represented by me are:

   None

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

5. The names of all law firms and the partners or associates that appeared for the party of amicus now represented by me in the trial court or agency or are expected to appear in this court are:

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STATEMENT OF INTEREST OF AMICUS CURIAE

Kevin Emerson Collins is an Associate Professor of Law at the Indiana University School of Law – Bloomington. His recent scholarship addresses issues related to this Court's *en banc* order. *See, e.g.*, Kevin Emerson Collins, *Propertizing Thought*, 60 SMU L. Rev. 317 (2007); Kevin Emerson Collins, *Constructive Nonvolition in Patent Law and the Problem of Insufficient Thought Control*, 2007 Wisc. L. Rev. 759 (2007). He has no stake in any of the parties to this litigation or the result of this case, other than an interest in seeking correct and consistent development of the United States patent laws.

QUESTION PRESENTED

This Brief responds to question (3) of this Court's order for rehearing en banc: "Whether the claimed subject matter is not patent-eligible because it constitutes . . . a mental process; when does a claim that contains both mental and physical steps create patent-eligible subject matter?" *In re Bilski*, 2008 WL 417680, at *1 (Fed. Cir. Feb. 15, 2008).

SUMMARY OF THE ARGUMENT

Human cognition should not be patentable subject matter, and steps that read on acts of human cognition should not have "patentable weight" in process claims that also recite non-cognitive steps. Referred to in this Brief as the "human cognition doctrine," this rule and its close cousin, the printed matter doctrine, are both necessary to protect the public's interest under the quid pro quo of patent law. The quid pro quo grants inventors rights to exclude others from claimed embodiments of their inventions but requires them to disclose information about their inventions and add it to a public store of knowledge. To protect this store from overreaching claims, the printed matter doctrine already prevents inventors from relying on the informational content of human-readable symbols to prove the patentability of an article of manufacture. To serve the same end, the human cognition

doctrine must prevent inventors from relying on the informational content of human mental states to demonstrate the patentability of a process.

As written, claim 1 of the Bilski application may violate the human cognition doctrine. Its second step reads on human performance of an act of logical reasoning facilitated by the disclosure, namely "identifying" parties "having a counter-risk position to said consumers." This purely cognitive act is nothing more than the public's use of the disclosure as knowledge, and a privilege to engage in this act therefore belongs to the public under the quid pro quo. To protect the public's privilege to use of the disclosure as knowledge, an inventor should not be able to rely on an act of human cognition to demonstrate the patentability of a process claim. Claim 1 should not issue if it merely adds an act of human cognition (step two) as a limitation on a claim that otherwise recites prior-art conduct (steps one and three), regardless of the "inventiveness" of the cognitive act.

Although described with a new title, the human cognition doctrine finds strong support in 35 U.S.C. § 101 (2006) and its judicial interpretation. Statutory language must be construed in light of "the structure and purpose of the Act in which it occurs." *New York State Conf. of Blue Cross & Blue Shield Plans v. Travelers Ins. Co.*, 514 U.S. 645, 655 (1995). When the terms "article of manufacture" and "process" in Section 101 are interpreted

in light of the Patent Act as a whole, it is clear that Congress did not intend for them to be construed so broadly as to trump the patentee's disclosure obligation and encompass newly discovered information in symbolic or mental form, respectively. The rejection by the Court of Customs and Patent Appeals of the historical mental steps doctrine of Section 101 in *In re Musgrave*, 431 F.2d 882, 888–93 (CCPA 1970), should be either interpreted narrowly so as not to bar the human cognition doctrine or simply overruled.

Alternatively, this Court may elect not to ground the human cognition doctrine solely in Section 101. It may achieve the same end of protecting the public's interest in the quid pro quo by using the printed matter doctrine as a template and dividing the human cognition doctrine between Section 101 (for rare claims reciting only cognitive acts) and Sections 102 and 103 (for more common claims reciting a combination of cognitive acts and non-cognitive conduct).

This Brief takes no position on the Section 101 "physicality" test proposed by the PTO. This Court should endorse the human cognition doctrine regardless of how or even whether it rules on the PTO's proposed test. The human cognition doctrine is the most logical and administrable next step in the incremental process of identifying the limits of patentable subject matter.

ARGUMENT

I. Disclosure and the Patent Law Bargain

Patent protection is famously a "bargain" in which inventors and the public exchange valuable rights. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 63 (1998); *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150–51 (1989). The public grants an inventor limited rights to exclude from the claimed embodiments of an invention, and, as "*quid pro quo* of the right to exclude," the inventor discloses newly discovered information that she otherwise could have kept secret. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 484 (1974). Even during the term of the patent, the public is encouraged to use knowledge gained from the disclosed information to design around the patent and advance the art. *Id.* at 481 ("When a patent is granted and the information contained in it is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge . . . [are assumed to] stimulate ideas and the eventual development of further significant advances in the art."); Donald S. Chisum, 1 *Chisum on Patents* § 7.01 (2008) ("[O]n issuance [] the patent immediately increases the storehouse of public information available for further research and innovation."). The disclosure is therefore an obligation that runs against

the inventor's self interest. It is a "price" that "is *exacted from*" the patentee in return for patent protection. *Eldred v. Ashcroft*, 537 U.S. 186, 216 (2003).

In sum, the patent regime is not only about rights to exclude. At a deep structural level, it is premised on a duality of claiming and disclosing, and each side of the duality promotes the "Progress of . . . useful Arts" through a different mechanism. U.S. Const. art. I., § 8, cl. 8. Claims create an incentive for self-interested individuals to invest time and money in the inventive process. Disclosures create a public domain of newly discovered information and knowledge that greases the wheels of future technological progress because they are freely available to all.

II. Protecting the Bargain with the Human Cognition Doctrine[1]

As a corollary of the more firmly established printed matter doctrine, the human cognition doctrine is necessary to prevent impermissible encroachment by claims into the realm of the disclosure. If disclosures are to generate a public domain of knowledge, inventors' rights to exclude cannot encompass the processes that are tied up in the public's use of the disclosed information as knowledge. Patentable and inventive acts must be defined in part by their exclusion of mere acts of thinking facilitated by newly

[1] The argument in this section derives in part from Kevin Emerson Collins, *Propertizing Thought*, 60 SMU L. Rev. 317, 323–42, 357–60 (2007).

discovered information. To protect the public's side of the patent law bargain, a process cannot be patentable merely because it recites a human act of reasoning that incorporates information discovered and disclosed by a patentee.

To tailor the human cognition doctrine to its purpose of enforcing the inventor's disclosure obligation, a method claim should be barred from the patent regime only if the claim recites a cognitive step that is necessary for patentability, i.e., a purely mental step facilitated by the disclosure that is needed to "distinguish the invention from the prior art in terms of patentability." *See In re Ngai*, 367 F.3d 1336, 1339 (Fed. Cir. 2004) (*per curiam*) (quoting *In re Gulack*, 703 F.2d 1381, 1385 (Fed. Cir. 1983)) (articulating the printed matter doctrine).

A. A Cognitive Step

The historical mental steps doctrine was eventually rejected by the Court of Customs and Patent Appeals in large part because the doctrine never developed a workable or limited definition for a mental step. *In re Musgrave*, 431 F.2d at 889–93 (rejecting the mental steps doctrine after equating a mental step with any step that requires a human to use her brain);[2] *cf. Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126

[2] *See infra* Section IV.E (discussing *Musgrave* in greater detail).

S. Ct. 2921, 2926 (2006) (Breyer, J., dissenting from the dismissal of the writ of certiorari as improvidently granted) (implying that it is difficult to administer a "mental processes" limitation on patentable subject matter because "all conscious human action involves a mental process").

The human cognition doctrine avoids these problems of vagueness and over-inclusiveness because the doctrine's scope follows logically from its purpose. It protects a public domain of newly discovered information and knowledge while allowing the domain of inventive conduct to be privatized. Therefore, mental acts should not be allowed to contribute to the patentability of a claim when they constitute human understanding of the content of the patent specification and reasoning that uses the content as a premise.[3] This Brief refers to this subset of purely mental activities clustered around the activities of understanding and reasoning as "cognition."

Rather than labeling any step that triggers brain activity as a mental step, cognition focuses the exclusion from patentability on acts of

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[3] This definition reflects the definition of "thinking" that is often of interest to cognitive scientists. *See* Keith J. Holyoak & Robert G. Morrison, *Thinking and Reasoning: A Reader's Guide*, *in* The Cambridge Handbook of Thinking and Reasoning 1, 2 (Keith J. Holyoak et al. eds., 2005) (defining "thinking" as "the systematic transformation of mental representations of knowledge").

information processing that are entirely mental.[4] Most significantly, this definition excludes the brain activity necessary for human interaction with the world outside of the mind, such as perception (e.g., "hearing the timer ring") and bodily motion (e.g., "pulling said lever" or "mixing chemicals A and B"). *Cf. Ex parte McNabb*, 127 U.S.P.Q. 456, 457–58 (Pat. Off. Bd. App. 1959) (declining to treat the brain activity required for perception or motor control as a mental step). A focus on cognition places the brunt of the exclusionary effect of the human cognition doctrine on the type of logical or mathematical operations that may often be performed with the aid of a machine such as a programmed computer.[5] However, the bar is triggered only when human performance of those operations falls within the scope of the claim; it does not apply to claims that recite systematic operations but that are limited in scope to machine-implementation.[6] Inversely, the bar is

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[4] Cognition includes any act of reasoning that can in theory be performed mentally regardless of whether it is most commonly performed by a human mind in conjunction with pencil and paper. *Cf. In re Prater*, 415 F.2d 1393, 1402–04 (CCPA 1969).

[5] In contrast, one undertone of the historical mental steps doctrine was that the exclusionary effect should be focused on those non-systematic mental steps that today *only* humans can perform. *Cf. Musgrave*, 431 F.2d at 889 n.4.

[6] This Court need not reconsider its holding in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.* because *State Street Bank* expressly limited its "useful, concrete and tangible" results test to methods reciting "transformation of data . . . by a machine." 149 F.3d 1368, 1373 (Fed. Cir. 1998). *Cf. Lab. Corp.*, 126 S. Ct. at 2928 (questioning validity of the *State*

triggered whenever the step is broad enough to read on a purely cognitive act; a claim is not permissible merely because it reads broadly on both human cognition and a machine-implemented process.

B. Necessary for Patentability

The categorical invalidation of any claim that recites an act of human cognition goes too far, as it would needlessly invalidate many claims that merit patent protection. What is critical is whether the cognitive step is called upon to establish patentability. The non-cognitive conduct alone may be sufficient to satisfy the novelty and nonobviousness requirements. Only when a cognitive step is *necessary* for patentability is a patent applicant impermissibly attempting to dress up an act of thinking about information—information that is supposed to be freely disclosed and contributed to the public store of knowledge—as a patentable invention. In contrast, when a patent applicant appends a limitation reciting a cognitive act onto an otherwise patentable method claim, the act of thinking merely restricts the scope of a claim in an infringement analysis and is harmless to the public's interest.

The restriction of the exclusionary impact of the human cognition doctrine to methods in which cognitive steps are necessary for patentability

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Street Bank test as applied to a claim in which a cognitive step is necessary for patentability).

highlights the close family resemblance between this doctrine and the printed matter doctrine.[7] In *In re Ngai*, this Court agreed with the PTO in a *per curiam* opinion that "the *content* of the instructions" on how to use chemicals in a kit could not make the kit novel in relation to the prior art. 367 F.3d at 1338–39. It reaffirmed the rule that "the printed matter will not distinguish the invention from the prior art in terms of patentability." *Id.* at 1339 (quoting *Gulack*, 703 F.2d at 1385).[8] In other words, the semantic content of printed matter gets no "patentable weight" in the validity analysis. *In re Miller*, 418 F.2d 1392, 1395–96 (CCPA 1969). Patentees can recite printed matter as a limitation on a claim to an article of manufacture, but they cannot justify the patentability of the claim with reference to its informational content. Otherwise, they would effectively be able to patent

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[7] Only the contemporary printed matter doctrine as applied to human-readable symbols is put forward as a model for the human cognition doctrine. This Brief therefore has no need to address the application of the printed matter doctrine to machine-readable printed matter such as computer software.

[8] The rule that the content of the printed matter cannot be used to demonstrate the patentability of the claim applies only "[w]here the printed matter is not functionally related to the substrate." *Gulack*, 703 F.2d at 1385; *see Cincinnati Traction Co. v. Pope*, 210 F. 443, 446–47 (6th Cir. 1913) (holding that a transfer ticket with a detachable coupon is a patentable article of manufacture because the printed matter is functionally related to the substrate). The functional-relation exception to the printed matter doctrine has no role to play in the human cognition doctrine. Although mental states are unquestionably functionally related to their tangible brain-state substrates, this functional relation should not categorically sanction the patentability of mental processes.

their disclosures.

The same rules that today apply to the content of printed matter should also apply to the content of the mental states of the human mind. The core function of the printed matter doctrine is to limit the patentability of "claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." *In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (quoting *In re Bernhart*, 417 F.2d 1395, 1399 (CCPA 1969)). It makes no sense to disregard the inventiveness of printed matter that is intelligible to the human mind but not the mental states that comprise human comprehension of and thought about that very printed matter.

Interestingly, the mutual reliance of the printed matter and human cognition doctrines on a patentable-weight analysis has a historical dimension, but the influence originally flowed in the opposite direction. Over a half-century ago in *In re Abrams*, the Court of Customs and Patent Appeals announced a variant of its mental steps doctrine that invalidated claims reciting mental steps if the novelty or nonobviousness of the claim resided in the mental steps. 188 F.2d 165, 166 (CCPA 1951) (reasoning that a claim reciting mental steps should be patentable if "the novelty or advance over the art resides in one or more of the positive and physical [i.e. non-

mental] steps"). Although the mental steps doctrine of *Abrams* is not in active use today,[9] the patentable-weight analysis in the printed matter doctrine that does persist today was initially created by analogy to *Abrams*. *See Ex parte Jenny*, 130 U.S.P.Q. 318, 320 (Pat. Off. Bd. App. 1960).

III. The Human Cognition Doctrine May Invalidate Bilski's Claim 1

Bilski's claim 1 recites three steps: (a) "initiating" a first series of transactions with the consumers of a commodity, (b) "identifying" entities "having a counter-risk position to said consumers," and (c) "initiating" a second series of transactions with the entities identified in step (b) to balance the risk of the first series of transactions. *Ex parte Bilski*, 2006 WL 4080055, at *2 (Bd. Pat. App. & Int. 2006).

Claim 1 is a paradigmatic example of a claim that is suspect under the human cognition doctrine. The "identifying" step (b) reads on an act of human cognition. It involves understanding the variables that quantify the risk entailed by the first series of transactions and the values that those variables assume to constitute a counter-risk position. It may also be necessary for the patentability of the claim as a whole. As written, claim 1 could be novel and nonobvious solely because the prior art does not teach

[9] *See infra* Section IV.D.

the informational content of the "identifying" step, i.e., how to quantify the risk positions of the commodity consumers or how to reason to identify counter-risk positions. To see that the "identifying" step (b) could be necessary for patentability, consider the possibility that the prior art contains a transaction in which a party performs steps (a) and (c) without realizing that the transaction as a whole involves the hedging of consumption risk.[10] Bilski's claim 1 might be inventive in relation to the prior art only because it recites the cognitive act of "identifying" in step (b) as a limitation. If this is true, the contribution of claim 1 to progress belongs in the public store of knowledge, not under the private control of an inventor.

Bilski's claim 1 also illustrates how cognitive steps that are necessary for patentability raise unique problems for invalidity and infringement determinations. If cognitive steps are necessary for patentability, then cognitive steps also define the prior art. Without the human cognition doctrine, the PTO or an alleged infringer must somehow look into the minds of the practitioners of the prior art to prove that a claim reciting a cognitive operation is anticipated. Because of the difficulty of documentation, claim validity should not hinge on the subjective mindset of the person performing

[10] When the parameters of "a counter-risk position" are construed as broadly as is reasonably possible, such accidental or unplanned prior art that lacks only step (b) is far from inconceivable.

a prior art method. The problems that cognitive acts relevant to patentability create for identifying prior art are compounded in the infringement analysis. Assume that someone performs steps (a) and (c), but not the thinking step (b), before Bilksi invents his method. Once this practitioner of the prior art becomes aware of Bilski's patent, she cannot help but perform the "identifying" step as well when she performs steps (a) and (c) because the mental performance of an act of cognition can be reflexive and beyond our willful control. *Cf. Lab. Corp.*, 126 S. Ct. at 2924 (noting that doctors "automatically" performed the act of "correlating" recited in a method claim). The reading of a patent specification is supposed to help avoid infringement, but for this practitioner it causes infringement. The fairness of patent protection is premised on the fact that a patentable invention is a technological option above and beyond the options present in the prior art, but, if this Court does not recognize the human cognition doctrine, patents claiming novel cognitive acts may take away the public's ability to practice the prior art.[11]

Although Bilski should not be able to rely on a cognitive step to prove the patentability of the claim, he nonetheless may be able to receive patent

[11] For an extended discussion of the problem of reflexive patent infringement, see Kevin Emerson Collins, *Constructive Nonvolition in Patent Law and the Problem of Insufficient Thought Control*, 2007 Wisc. L. Rev. 759 (2007).

protection in some form for his invention. The step of "initiating" the first (or second) series of transactions in step (a) (or the second series in step (c)) is not a cognitive step. Contractual obligations cannot be created merely by thinking; they come into existence only through the performance of extroverted, non-cognitive conduct. Thus, even if this court were to adopt the human cognition doctrine, on remand Bilski may choose to amend claim 1 to eliminate the "identifying" step, narrow the "identifying" step to "identifying by computer," or simply disclaim that the "identifying" step is necessary for patentability. If Bilski can prove that the web of interpersonal legal obligations made by the steps (a) and (c) makes the method novel and nonobvious or that the two-step method of contracting is nonobvious in and of itself, then Bilski may obtain patent protection for his invention even under the human cognition doctrine.[12]

Importantly, however, the need for remand in this case does not imply that the human cognition doctrine lacks substantive bite. Bilski's arguments on remand about patentability would be more tightly constrained. Furthermore, the human cognition doctrine will lead to the outright rejection of other claims that have raised the specter of an overly expansive doctrine

[12] The fact that the amended claim *might* survive on remand highlights the difference between the human cognition doctrine and the PTO's physicality test. *See infra* Section VI.

of subject-matter eligibility. For example, the claim at issue in *Laboratory Corp.*, 126 S. Ct. at 2924, clearly violates the human cognition doctrine. The claim recited a two-step method of detecting a B vitamin deficiency: "assaying" a sample for the level of total homocysteine and "correlating" an elevated level with a B vitamin deficiency.[13] The assaying step was broad enough to read on prior art methods of assaying for total homocysteine, *id.* at 2924–25, so the cognitive step of "correlating" was necessary for patentability. The claim violates the human cognition doctrine because it recites nothing more than performing prior art actions and then understanding and reasoning with the newly discovered information disclosed in the patent specification.

IV. The Statutory and Judicial Bases of the Human Cognition Doctrine

The human cognition doctrine is not a policy proposal made of whole cloth. It is rooted in both the text of Section 101 and its judicial interpretation. Alternatively, it may be modeled on the printed matter doctrine and rooted in both the patentable subject matter doctrine and the validity analyses of Sections 102 and 103.

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[13] This description is a simplified variant of the actual claim, but it accurately captures why the actual claim violates the human cognition doctrine.

A. The "Process" Category in Section 101

In relevant part, Section 101 states that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter . . . may obtain a patent therefor. . . ." 35 U.S.C. § 101 (2008). The legislative history of the 1952 Patent Act suggests that these four categories should be liberally construed because "Congress intended statutory subject matter to 'include anything under the sun that is made by man.'" *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952); H. R. Rep. No. 82-1923, 82d Cong., at 6 (1952)). This understanding of congressional intent has understandably led the Supreme Court to conclude that technologies that have developed after 1952, like biotechnology and computer software, are not categorically excluded from patentable subject matter.

However, there are two reasons why even a liberal construction of the four categories of Section 101 can be reconciled with the exclusion of human cognition from the "process." First, acts of human thinking are not a new technology, and courts had addressed them prior to the passage of the Patent Act. Indeed, a formulation of the mental steps doctrine that resembles the proposed human cognition doctrine had been clearly articulated by the

Court of Customs and Patent Appeals in *Abrams* only one year earlier.[14] 188 F.2d at 165–66. Although silence in the 1952 Patent Act is certainly not dispositive of a congressional intent to adopt the mental steps doctrine of *Abrams* wholesale, it is at least "consistent with a desire to leave the problem fluid." *See Girouard v. United States*, 328 U.S. 61, 69–70 (1946). Second, the stated congressional intent has no bearing on the human cognition doctrine because acts of thinking are not things "made by man" as much as they are phenomena that are constitutive of man himself.

B. Interpreting "Process" in Light of the Disclosure Provisions

Statutes must be interpreted in light of the structure of the statutory regime as a whole. *See New York State Conf. of Blue Cross & Blue Shield Plans*, 514 U.S. at 655 ("[W]e begin . . . any exercise of statutory construction with the text of the provision in question, and move on, as need be, to the structure and purpose of the Act in which it occurs."). When Section 101 is interpreted in light of the duality of claiming and disclosing that structures the Patent Act as a whole and the statutory disclosure provisions in particular, *see* 35 U.S.C. § 112 ¶ 1 (2006), it is clear that there is one thing that Congress did not intend to be a patentable process: an act of

[14] *But cf. supra* Section II.A (offering a definition of a "cognitive step" that is much narrower than the definition a "mental step" that the Court of Customs and Patent Appeals eventually offered in *Musgrave*).

understanding or reasoning about the information that the patentee discloses in the specification.[15] If the information disclosed in the specification is to be "*exacted from*" the patent applicant, *Eldred*, 537 U.S. at 216, and disclosures are to be "additions to the general store of knowledge" that "stimulate ideas and the eventual development of further significant advances in the art," *Kewanee Oil*, 416 U.S. at 481, the "process" category cannot encompass a method that relies on a purely mental process facilitated by the patent disclosure to demonstrate its patentability.[16]

C. Supreme Court: "Mental Processes . . . Are Not Patentable"

In *Gottschalk v. Benson*, the Supreme Court stated that "mental processes . . . are not patentable" under Section 101. 409 U.S. 63, 67 (1972). This statement remains good law today. In *Diamond v. Chakrabarty*, the Court articulated three exclusions from patentable subject matter—"laws of nature, natural phenomenon and abstract ideas," 447 U.S. at 309—but it did not negate its statement in *Benson* that mental processes form an

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[15] The Supreme Court has used a yet more inclusive variant of this canon of structural statutory construction to interpret the Lanham Act. *See Dastar Corp. v. Twentieth Century Fox Film Corp.*, 539 U.S. 23, 37 (2003) ("reading the phrase 'origin of goods' . . . in light of the copyright and patent laws").

[16] A similar interpretation of Section 101 in light of the structure of the Patent Act and disclosure provisions explains why the printed matter doctrine is a statutorily grounded exception to otherwise patentable "articles of manufacture."

independent category of unpatentable subject matter. *See Laboratory Corp.*, 126 S. Ct. at 2926 (Breyer, J., dissenting); *but cf. In re Comiskey*, 499 F.3d 1365, 1376–79 (Fed. Cir. 2007) (identifying the mental processes exclusion as a subset of the abstract ideas exclusion).

Because mental processes form an independent exclusion from patentable subject matter, *Diamond v. Diehr*, does not foreclose the patentable-weight analysis used in the human cognition doctrine. In *Diehr*, the Supreme Court held that the examination of subject-matter eligibility must focus on the claim "as a whole." 450 U.S. 175, 188 (1981). It is impermissible to identify a mathematical algorithm as a "law of nature," extract it from a method claiming the use of a programmed computer and allow the question of patentable subject matter to hinge solely on the novelty or nonobviousness of what remains. *Id.* at 189 n.12. The human cognition doctrine unquestionably entails a variant of this impermissible analysis (albeit a more administrable one): it requires a court to extract the cognitive steps from a method and hinge the claim's fate on the steps that remain. However, the human cognition doctrine is a permissible interpretation of Section 101 because the Court expressly limited the question it addressed on certiorari in *Diehr* to claims involving computers programmed with mathematical formulas. *Id.* at 177. *Diehr* and its focus on "laws of nature"

should not govern the analysis of the subject-matter eligibility of human cognition or printed matter. The Section 101 doctrine that controls the patentability of human cognition and printed matter is simply an animal of a different stripe. Unlike the "laws of nature" doctrine, it protects the public store of knowledge generated by the disclosure from impermissible encroachment by overreaching claims, and a patentable-weight analysis is required to achieve this protection.[17]

D. Federal Circuit: Mental Steps and Section 101

By the early 1950s in *Abrams*, the historical mental steps doctrine of the Court of Customs and Patent Appeals had taken on a patentable-weight analysis that strongly resembles the human cognition doctrine.[18] 188 F.2d at 166. However, *Musgrave* discredited *Abrams* only two decades later. 431 F.2d at 888–93. Grappling with a patent application that disclosed a programmed computer but claimed broadly enough to encompass both machine-implementation and mental performance of the method, *Musgrave* stated that the claims were not "directed to non-statutory processes merely

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[17] Alternatively, if this Court concludes that *Diehr* does control the application of the Section 101 in isolation to mental processes, then the human cognition doctrine can follow the lead of the printed matter doctrine, and its statutory basis can be divided between Sections 101 and 102/103. *See infra* Section IV.E.

[18] *But see supra* Section II.A (defining a cognitive step more narrowly than a mental step).

because some or all the steps therein can also be carried out in or with the aid of the human mind or because it may be necessary for one performing the processes to think." *Id.* at 893. The PTO has interpreted *Musgrave* to render the presence of mental steps in a method claim irrelevant to the analysis of patentable subject matter. Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility, 1300 OG 142 (Nov. 22, 2005) (listing the "Mental Step Test" as one of several "Improper Tests For Subject Matter Eligibility").

However, this Court does not appear to have embraced this interpretation of *Musgrave*. Without invoking the mental steps doctrine by name, it has routinely affirmed the PTO's rejections of claims reciting purely mental operations. *See In re Schrader*, 22 F.3d 290 (Fed. Cir. 1994); *In re Warmerdam*, 33 F.3d 1354 (Fed. Cir. 1994); *In re Grams*, 888 F.2d 835 (Fed. Cir. 1989). Addressing a claim reciting a combination of mental and non-mental steps, this Court stated that "[t]he inclusion in a patent of a process that may be performed by a person, but that also is capable of being performed by a machine, is not fatal to patentability," *Alco Standard Corp. v. Tennessee Valley Auth.*, 808 F.2d 1490, 1496 (Fed. Cir. 1986), but this statement is in perfect accord with the mental steps doctrine as articulated in *Abrams*. Only six months ago, *In re Comiskey* held that two claims recited

ineligible subject matter because "the application of human intelligence to the solution of practical problems is not in and of itself patentable." 499 F.3d at 1378–79. *Comiskey* expressly cast doubt on the continuing validity of *Musgrave* after the Supreme Court's ruling in *Benson*. *Id.* at 1376 n.11, 1378 n.15.

Even if *Musgrave* remains good law today, its holding does not conflict with the human cognition doctrine. One of the principal concerns in *Musgrave* was that the definition of a mental step was so broad that it included any step that required brain activity. *See Musgrave*, 431 F.2d at 893. Under such a broad definition, the mental step doctrine would undermine many methods at the heart of traditionally patentable subject matter, perhaps even including a method to "mixing chemicals A and B." The exclusion from patentability affected by the human cognition doctrine is far, far narrower. It is limited to steps reading on the human acts of understanding and reasoning that are necessary for purely mental use of the store of knowledge to which patent disclosures are supposed to contribute.[19]

Furthermore, even if this Court interprets *Musgrave* so as to conflict with the human cognition doctrine, it should use this opportunity to act en banc and overrule *Musgrave*. *Musgrave* was a case fundamentally about the

[19] *See supra* Section II.A.

patentability of claims to programmed computers and computer-executed methods. The decision in *Musgrave* not to apply the *Abrams* mental steps doctrine to determine the patentability of such claims was wise because the mental steps doctrine was the wrong tool for the job then at hand. The argument that software is unpatentable merely because it is based on machine-implemented logical and arithmetic operations that can also be performed using the human brain is untenable. However, faced with an onslaught of patents seeking protection for computer-related technologies, the *Musgrave* court had a poor vantage point from which to grasp the enormous breadth of its holding as applied to method claims reciting logical operations that are most likely in practice to be performed by humans. The human cognition doctrine—i.e., a clarified and narrowed variant of the mental steps doctrine of *Abrams*—is the proper tool to use for the job currently at hand, namely protecting the public domain of the disclosure from impermissible encroachment by claims that propertize human reasoning.

E. Federal Circuit: Printed Matter and Sections 102 and 103

The contemporary printed matter doctrine offers not only a template for the substantive effect of human cognition doctrine, but also a template for its statutory locus. Historically, the printed matter doctrine was lodged

exclusively in Section 101. *See, e.g.*, *In re Russell*, 48 F.2d 668 (CCPA 1931). Today, a claim to printed matter in isolation is still likely to be rejected as unpatentable subject matter. *See In re Beauregard*, 53 F.3d 1583, 1583 (Fed. Cir. 1995) (noting the withdrawal of the PTO's rejection of a claim to a computer program embodied in a tangible medium as unpatentable under Section 101). However, a claim describing printed matter in conjunction with other tangible things is treated as reciting patentable subject matter, but the content of the printed matter remains unpatentable in the sense that it cannot be used to demonstrate the validity of the claim over the prior art under Section 102 or 103. *See, e.g.*, *Ngai*, 367 F.3d at 1338-39 (anticipation); *Gulack*, 703 F.2d at 1384-87 (obviousness).[20]

Like the printed matter doctrine, the human cognition doctrine is a hybrid of the patentable subject matter doctrine and the analysis of a claim's validity over the prior art, so it too may be grounded in a structural interpretation of both statutory provisions. If claims recite only steps that are capable of being performed through an act of human cognition, then the claim clearly recites an unpatentable mental process under Section 101. However, when cognitive steps are recited along with non-cognitive steps,

[20] This Court recently outlined an approach to nonobviousness similarly infused with concerns about subject-matter patentability in *Comiskey*. *See* 499 F.3d at 1379–81.

the resulting claim recites patentable subject matter but the cognitive steps still confer no patentable weight. The claim is valid over the prior art only when the non-cognitive steps recited are patentable.

The printed matter and human cognition doctrines both protect the duality of claiming and disclosing on which patent protection is premised. Together, they create a category of unpatentable subject matter that has reverberations in Sections 102 and 103. Because of their special role, the mechanics of these doctrines need not be modeled on the mechanics of the exclusion of "laws of nature, natural phenomenon and abstract ideas," *Chakrabarty*, 447 U.S. at 309, from Section 101.

The printed matter doctrine, and a human cognition doctrine modeled on it, result from reading the text of Section 102 and 103 in light of the structure of the Patent Act as a whole and the disclosure provisions in particular.[21] Given that the Patent Act imposes a disclosure obligation on the patent applicant, Section 102 and 103 cannot be reasonably construed to allow the content of the information disclosed to the public in the patent specification, whether present in symbolic or mental form, to distinguish a claim from the prior art.

[21] *See supra* Section IV.B (explaining this theory of structural interpretation and applying it to Section 101).

V. The Human Cognition Doctrine Is Administrable

To apply the human cognition doctrine, the PTO must presume that the contents of the cognitive steps are irrelevant to patentability, and patent applicants must defend the patentability of their claims with reference only to non-cognitive steps. Although identifying which steps encompass cognitive acts and which steps make a claim patentable does require additional scrutiny by the PTO during examination, there is no reason to believe that the application of the human cognition doctrine will be significantly more difficult than application of the printed matter doctrine.[22]

Retrospective application of the human cognition doctrine raises an additional wrinkle, but it can easily be ironed out. In many instances, a patentee may establish the validity of an already issued claim reciting cognitive steps simply by disclaiming mental performance of the steps and limiting claim scope to machine-implemented performance. To the same end, an alleged infringer whose technology does not involve an act of human cognition should not be able to raise the human cognition doctrine as a defense. In other instances, however, restricting a claim to machine-

[22] The human cognition doctrine does face one challenge not commonly raised by the printed matter doctrine: some rare claims may not recite acts of thinking but may implicitly rely on an act of thinking for patentability. For example, a patentee may invent a new act of correlating but she may claim a new act of communicating the knowledge generated through the act of correlating.

implemented performance of the logical or mathematical operation may sap the claim of its economic value. Here, a patentee should be able to enforce the claim as written in an infringement proceeding in district court, and the alleged infringer/thinker should be able to raise the human cognition doctrine as an invalidity defense. If a patent owner has no interest in litigating a claim reciting an act of human thinking and yet is concerned about a shadow on the validity of the claim, she may (but is not required to) request reexamination of the claim.

VI. No Position on the Physicality Test

The PTO proposes that Section 101 imposes a "physicality" test, arguing that a method is not patentable subject matter if it "does not transform any kind of subject matter and does not require a machine to carry out the recited steps." PTO Br. at 10. With respect to claim 1 of the Bilski patent, a rejection based on the human cognition doctrine is narrower than a rejection based on the physicality test. An amended variant of claim 1 without step (b) would recite unpatentable subject matter under the physicality test, yet it might be patentable under the human cognition

doctrine.[23] Under the physicality test, this two-step method of creating a pair of risk-balancing legal obligations is no different from the actual claim 1 in that it may neither require machine-implementation nor affects a physical transformation (depending, of course, on how liberally one defines "physical," "transformation" and even "machine"). Yet, it recites a method of generating a web of inter-personal relations whose patentability *might* be justifiable without reliance on the novelty or nonobviousness of a cognitive step.[24]

This Brief takes no position on the physicality test. It only urges this Court to announce that a human act of understanding or reasoning using information discovered by an inventor and disclosed in the patent specification cannot support the patentability of a method claim. This human cognition doctrine may enable the PTO to reject many of the same claims that it would have rejected under the physicality test, but it is clearly not a silver bullet for all of the PTO's problems. It is, however, the most logical,

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[23] *Cf. supra* Section III (discussing such an amended claim as a hypothetical).

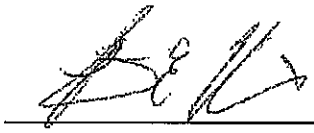
[24] In other cases, the exclusion from patentability created by the human cognition doctrine will be broader than the exclusion created by the physicality test. If its cognitive steps are necessary for patentability, a method is unpatentable regardless of the physical transformation created by or the tangible machines recited in the non-cognitive steps. *Cf. Lab. Corp.*, 126 S. Ct. at 2928 (questioning the relevance of physicality in a Section 101 analysis of a claim reciting a cognitive step that is necessary for patentability).

doctrinally rooted, and administrable next step in the incremental articulation of meaningful limits on patentable subject matter. Unless distinct problems are addressed distinctly, a reinvigorated doctrine of subject matter eligibility is likely to grow amorphous and unworkable.

CONCLUSION

Regardless of whether this Court sanctions, rejects, or decides not to rule on the physicality test, it should seize this opportunity to act en banc, bar the patenting of human cognition, and safeguard the public's privilege to use the disclosure as knowledge under the quid pro quo of patent law.

Dated: April 4, 2008 Respectfully Submitted,



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United States Court of Appeals
for the Federal Circuit
2007-1130 (Serial No. 08/833,892)

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IN RE RENARD L. BILSKI
and RAND A. WARSAW

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DECLARATION OF AUTHORITY PURSUANT TO 28 U.S.C. § 1746 AND FEDERAL CIRCUIT RULE 47.3(d)

I, John C. Kruesi, Jr., being duly sworn according to law and being over the age of 18, upon my oath depose and say that:

I am an employee of Counsel Press's Washington DC Office. Counsel Press was retained by Attorneys for Amicus Curiae, Kevin Emerson Collins, to print the enclosed documents.

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April 4, 2008

John C. Kruesi, Jr.

CERTIFICATE OF SERVICE

United States Court of Appeals
for the Federal Circuit
2007-1130 (Serial No. 08/833,892)

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IN RE RENARD L. BILSKI
and RAND A. WARSAW
----------)

I, John C. Kruesi, Jr., being duly sworn according to law and being over the age of 18, upon my oath depose and say that:

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On the **4th Day of April** 2008 I served the within **BRIEF FOR AMICUS CURIAE LAW PROFESSOR KEVIN EMERSON COLLINS IN SUPPORT OF NEITHER PARTY** upon:

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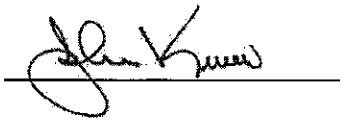
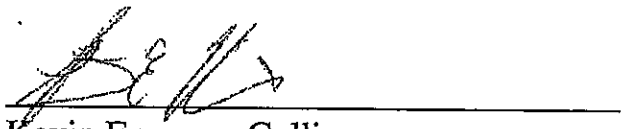
April 4, 2008



CERTIFICATE OF COMPLIANCE

I certify that the foregoing Brief for Amicus Curiae Law Professor Kevin Emerson Collins contains 6,991 words, excluding the parts of the brief exempted by FRAP 32(a)(7)(B)(iii), as measured by the word processing software used to prepare this brief.

Dated: April 4, 2008 Respectfully Submitted,



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