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## PREDICTABILITY AND PATENTABLE PROCESSES: THE FEDERAL CIRCUIT'S *IN RE BILSKI* DECISION AND ITS EFFECT ON THE INCENTIVE TO INVENT

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Throughout the past two centuries, the U.S. patent system has defined the scope of (potentially) patentable processes by proscribing patents on fundamental principles (including abstract ideas, laws of nature, and natural phenomena). Unfortunately, such a description of patentable subject matter led to ambiguity and unpredictability in the application of the patent laws. In 2008, the Federal Circuit addressed this uncertainty by promulgating a new standard to describe the ambit of patentable processes: a process may constitute patentable subject matter if (1) it utilizes a particular machine or apparatus, or (2) it transforms an object into a different state or thing.

This Article describes how the Federal Circuit's new standard furthers the underlying policy goal of all patent laws: the incentivization of innovation. Specifically, this paper argues that this new rule presents a simple and easy to apply standard that will increase the predictability of the patent laws. In the presence of such predictability, prospective inventors and investors are more likely to engage in research and development, thus leading to increased inventive activity.

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## I. INTRODUCTION

Since the inception of the United States patent system in 1790, the judiciary has grappled with a basic question of patent law: What is the proper scope of patentable subject matter? This issue has proven particularly difficult as it relates to patents on innovative processes. However, despite any associated difficulties, the resolution of this question is of primary importance to the proper functioning of the patent system and underlies its primary objective: promoting the progress of technology. Specifically, the inclusion or exclusion of certain inventions from the scope of patentable subject matter necessarily reflects judgments on what types of innovation should be incentivized through the offer of a patent and what types of innovation must be freely available to the inventing public to further their work.

Throughout the better part of the last two centuries, courts have defined the scope of patentable processes by proscribing patents on fundamental principles (abstract ideas, laws of nature, and natural phenomena).<sup>2</sup> These prohibitions represented a “negative rule” approach to the scope of patentable subject matter by defining what *is not* patentable. However, due in large part to difficulties in consistently enforcing these prohibitions, courts have begun to deviate from the negative rule approach in recent history.

In the early 1970s, the United States Supreme Court presented a semi-positive approach that described particular instances of what is patentable when it held that a process was patentable if it utilized a physical apparatus or brought about a physical transformation in the process’s subject matter. This holding did not expressly state that these indicia represented the full scope of patentable processes; it simply stated that these were “clues” to patentability. This decision was integral to the progression of process patent jurisprudence because it offered objective indicia by which a process’s patentability could be judged, as opposed to making difficult, and somewhat metaphysical, evaluations such as whether an invention constitutes an unpatentable abstract idea.

Over the past fifteen years, the judiciary has continued the trend toward the creation of a positive statement of the scope of patentable processes. Such a positive rule offers the benefit of defining the scope of patentable processes through reference to a single set of objective criteria. In the 1990s, the Federal Circuit promulgated the positive rule that a process was patentable if it brought about a useful, concrete, and tangible result. This standard was widely criticized and in 2008 the Federal Circuit decided to revisit it in *In re Bilski*.<sup>3</sup>

The disagreement in *Bilski* arose over the United States Patent and Trademark Office’s (the USPTO’s) holding that Bilski’s invention—a process for creating contractual relationships intended to hedge risks in a financial transaction—did not present patentable subject matter. In October 2008, the Federal Circuit issued its opinion

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<sup>2</sup> Hereinafter the term “fundamental principles” will be used to refer collectively to abstract ideas, laws of nature, and natural phenomena.

<sup>3</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

in *Bilski* and presented a new positive standard for the patentability of inventive processes: the Machine or Transformation test. This test reformulated the Supreme Court's semi-positive rule that the use of a physical apparatus or a physical transformation are indicia of patentability as a positive statement of the entire scope of patentable processes under 35 U.S.C. § 101, the statute controlling the scope of patentable subject matter.<sup>4</sup>

This Article evaluates two interrelated aspects of the *Bilski* opinion. Initially, it assesses *Bilski* and its Machine or Transformation test for consistency and congruence with pertinent precedent. Later parts describe *Bilski*'s effect on the primary goal of the patent system: the incentivization of innovation. Specifically, this goal is discussed with regard to its relationship with the predictable application of the patent laws and any effects that *Bilski* might have thereon.

This evaluation of *Bilski* begins with a review of the history of 35 U.S.C. § 101.<sup>5</sup> Specifically, Part II of the Article focuses on the statutory and precedential development of § 101, the development of negative rules prohibiting the patenting of fundamental principles, and § 101's evolution towards a positive rule of patentability. Part III describes the *Bilski* patent application (the Application) and its progression through the USPTO and the federal courts. Specifically, Part III describes the substance of the Application and its treatment within the USPTO, the Board of Patent Appeals and Interferences (the BPAI), and the Federal Circuit. Part IV describes the Machine or Transformation test as an amalgamation of judicial precedent pertaining to § 101 and patentable processes. In particular, the fourth part details the Machine or Transformation test's relationship with applicable precedent and addresses several related concerns set forth in *Bilski*'s dissenting opinions. The fifth and final substantive part evaluates the relationship of the predictability of the patent laws and incentivization to invent. Further, Part V describes the means by which *Bilski* will enhance both predictability and incentivization.

## II. THE HISTORY OF § 101

The scope of patentable processes is a question of the statutory interpretation of § 101 of the Patent Act. As such, essential insight into what constitutes a patentable process can be derived from an investigation into the historical development of § 101 and the case law interpreting its meaning.

### A. Statutory Development of § 101

Article I of the United States Constitution provides that Congress may enact statutes “[t]o promote the Progress of Science and useful Arts, by securing for limited

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<sup>4</sup> Note that the Machine or Transformation test sets forth the scope of *potentially* patentable subject matter for process inventions. Beyond this barrier, process inventions must also satisfy all other statutory requirements of patentability for a patent to issue.

<sup>5</sup> Hereinafter, this statute will be referred to as § 101.

Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”<sup>6</sup> Pursuant to this grant, the first patent statute was passed in 1790 during the second term of Congress.<sup>7</sup>

The genesis of the modern scope of statutory subject matter was the Patent Act of 1793, which provided that patentable subject matter consisted of “any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement [thereof].”<sup>8</sup> This standard went largely unchanged until its amendment by the Patent Act of 1952, which replaced the term “art” with “process.”<sup>9</sup> The 1952 enactment further provided an express definition of the newly included term (“[t]he term ‘process’ means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.”).<sup>10</sup> Statutory history indicates that the inclusion of this express definition was intended to clarify that the scope of § 101 that was previously embodied in the term “art” (and now is included in the term “process”) was intended to encompass both patentable processes and methods.<sup>11</sup> The definition of “process” in § 100 was intended to incorporate the common law definition and limitations of the term “process” as it developed under the prior statute.<sup>12</sup> Such a conclusion is further supported by the basic rule of statutory construction that “a common law term in a statute comes with a common law meaning, absent anything pointing

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<sup>6</sup> U.S. Const. art. I, § 8, cl. 8.

<sup>7</sup> The Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 109–10 (repealed 1793); *see also* W. Michael Schuster, Comment, *Subjective Intent in the Determination of Antitrust Violations by Patent Holders*, 49 S. Tex. L. Rev. 507, 511 (2007) (citing the Patent Act of 1790, ch. 7, § 1, 1 Stat. 109, 109-10 (repealed 1793); *SCM Corp. v. Xerox Corp.*, 645 F.2d 1195, 1203 (2d Cir. 1981).

<sup>8</sup> An Act to Promote the Progress of Useful Arts; and to Repeal the Act Heretofore Made for that Purpose, Ch. 11, 1 Stat. 318, 319 (1793) (amended 1952).

<sup>9</sup> Patent Act of 1952, 35 U.S.C. § 101 (1952).

<sup>10</sup> 35 U.S.C. § 100(b) (1952).

<sup>11</sup> *In re Nuijten*, 500 F.3d 1346, 1355 (Fed. Cir. 2007) (quoting S. Rep. No. 82-1979, 1952 U.S.C.C.A.N. 2394, 2398-99). Specifically, *Nuijten* quoted the legislative history to state:

[T]he word “art” which appears in the [prior] statute has been changed to the word “process”. “Art” in this place in the present statute has a different meaning than the words “useful art” in the Constitution, and a different meaning than the use of the word “art” in other places in the statutes, and it is interpreted by the courts to be practically synonymous with process or method. The word “process” has been used to avoid the necessity of explanation that the word “art” as used in this place means “process or method,” and that it does not mean the same thing as the word “art” in other places.

The definition of “process” has been added in section 100 to make it clear that “process or method” is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed.

*Id.* at 1355.

another way.”<sup>13</sup> The case law meaning of “process” found early definition through the imposition of “negative rules” that excluded certain inventions from § 101.

### 1. Negative Rules: Unpatentable Fundamental Principles

Early limitations on the scope of patentable processes took the form of negative prohibitions that held fundamental principles (abstract ideas, laws of nature, and natural phenomena) to be unpatentable.<sup>14</sup> The Supreme Court has stated that “a principle is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”<sup>15</sup>

The logic behind such negative rules of patent law was easily explained. Laws of nature and natural phenomena were excluded from § 101 because such manifestations occur within nature, and thus, are not subject to invention by man and therefore are not patentable “inventions.”<sup>16</sup> Further, “abstract ideas constitute disembodied concepts or truths which are not ‘useful’ from a practical standpoint standing alone, i.e., they are not ‘useful’ until reduced to some practical application.”<sup>17</sup>

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<sup>12</sup> *In re Schrader*, 22 F.3d 290, 295 (Fed. Cir. 1994). In support of this proposition, the Federal Circuit looked to three sources:

The first is 35 U.S.C. § 100(b), which defines “process” circularly to mean “process.” The second is the legislative history, which shows Congress approved the substitution of the term “process” for the term “art” used in all previous patent statutes because it had a more “readily grasped” meaning that had evolved in the courts. *See* S.Rep. No. 1979, 82nd Cong., 2d Sess. 5, 17 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2398-99 & 2409-10; H.Rep. No. 1923, 82nd Cong., 2d Sess. 6, 17 (1952). *See also* P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. § 1 *et seq.*, at 15-16 (1954 ed. West), *reprinted in* 75 [J. Pat. Off. Soc’y] 161, 176 (1993). The third is the presumption that when a statute uses a term of art, such as “process”, Congress intended it to have its established meaning. *See McDermott Int’l, Inc. v. Wilander*, 498 U.S. 337, 342, 111 S.Ct. 807, 810, 112 L.Ed.2d 866 (1991); *Barber v. Gonzales*, 347 U.S. 637, 641, 74 S.Ct. 822, 824, 98 L.Ed. 1009 (1954).

*Id.* at 295 n.11.

<sup>13</sup> *Safeco Ins. Co. of Am. v. Burr*, 551 U.S. 47, 57-58 (2007) (citing *Beck v. Prupis*, 529 U.S. 494, 500-01 (2000)).

<sup>14</sup> *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

<sup>15</sup> *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852).

<sup>16</sup> *Ex parte Lundgren*, 76 U.S.P.Q.2d 1385, 1403 (B.P.A.I. 2005); *Ex Parte Bilski*, No. 2002-2257, slip op. at 19 (B.P.A.I. Sept. 26, 2006), *aff’d on other grounds*, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>17</sup> *In re Alappat*, 33 F.3d 1526, 1542 n.18 (Fed. Cir. 1994).

Underlying these basic proscriptions on the patenting of fundamental principles is the constitutional mandate that patents should be issued “[t]o promote the Progress of Science and useful Arts . . . .”<sup>18</sup> Fundamental principles have been stated to be “part of the storehouse of knowledge of all men.”<sup>19</sup> The keeping of such a non-statutory “storehouse” was meant to establish a source of basic information that would promote new innovation by providing knowledge from which future inventors could create new inventions.<sup>20</sup> By contrast, a new and useful *implementation* of a fundamental principle—an advancement of technology, as opposed to the fundamental principle that might underlie that advancement—may constitute statutory subject matter.<sup>21</sup> An early example of the Court’s willingness to preserve this storehouse of ideas was set forth in *O’Reilly v. Morse*.<sup>22</sup>

In 1840, Samuel Morse received a patent on his invention of the electromagnetic telegraph, and in 1848 the patent was reissued.<sup>23</sup> This patent was evaluated by the Court to determine, among other things, the validity of its eighth claim, which stated:

Eighth. I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer.<sup>24</sup>

In evaluating this claim, the Court initially noted that the scope of the patent claimed “the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing of intelligible characters, signs, or letters at a distance.”<sup>25</sup> The claim was rejected because the grant of such a broad patent would likely hinder the “onward march of science,” in that any future invention

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<sup>18</sup> U.S. Const. art. I, § 8, cl. 8.

<sup>19</sup> *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

<sup>20</sup> Robert A. Matthews, 3 Annotated Patent Digest § 20:10 (Sept. 2009 update) (“[The Supreme Court has made] a basic judgment that [patent] protection [of fundamental principles], despite its potentially positive incentive effects, would too often severely interfere with, or discourage, development and the further spread of useful knowledge itself.”) (quoting *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126 (2006) (Breyer, J., dissenting)).

<sup>21</sup> See *Parker v. Flook*, 437 U.S. 584, 594 (1978).

<sup>22</sup> 56 U.S. 62 (1853).

<sup>23</sup> *Id.* at 106.

<sup>24</sup> *Id.* at 112.

<sup>25</sup> *Id.*

that used electromagnetism to communicate characters or symbols would fall within the ambit of Morse's eighth claim. The patent could be infringed regardless of whether Morse's specification had described—or if Morse had even previously contemplated—the particular means of electromagnetic communication.<sup>26</sup> Had Morse's eighth claim been deemed valid, it would have stripped bare the storehouse of ideas with regard to electromagnetic communications to the hindrance of future inventors and the general public. In order to avoid this outcome, the Court deemed Morse's claims describing specific implementations of this technology to be valid, but rejected any claim that would allow Morse to preclude all further research within the field by patenting a fundamental principle—here, the idea of communication of characters via electromagnetic means.

A comparison of the Supreme Court cases of *Gottschalk v. Benson*<sup>27</sup> and *Diamond v. Diehr*<sup>28</sup> illustrates the modern implementation of the prohibition on patenting fundamental principles. In these cases, the Court attempted to clarify what constitutes an abstract idea as a legitimate element of a patentable invention versus an illegitimate attempt to patent a fundamental principle.

*Benson* involved a patent application claiming a mathematical algorithm embodied in a program embedded in a piece of hardware to convert binary-coded decimal numerals to pure binary numerals.<sup>29</sup> In rejecting Benson's application, the Court noted that “[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.”<sup>30</sup> In applying this rule to the claimed subject matter, the Court found that Benson's application sought protection of a fundamental principle and that to grant the requested patent would preclude *any* further use of the algorithm.<sup>31</sup> Accordingly, Benson's application for a patent was rejected. By rejecting Benson's claims, the Court prohibited the removal of the entire mathematical algorithm from the storehouse of tools available to inventors.

In contrast, the Court in *Diehr* found an inventive application of a fundamental principle statutory<sup>32</sup> because it was embodied in an otherwise patentable process. Specifically, Diehr claimed an improved process for curing raw rubber into usable products comprising the use of the Arrhenius equation.<sup>33</sup> Prior art taught the use of the equation to determine the proper amount of time necessary to cure rubber, but such a

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<sup>26</sup> *Id.* at 113.

<sup>27</sup> 409 U.S. 63 (1972).

<sup>28</sup> 450 U.S. 175 (1981).

<sup>29</sup> *Benson*, 409 U.S. at 64. Binary-coded decimal numerals represent each individual digit of a numeral with a string of ones and zeros, while pure binary numerals replace the numeral, as a whole, with a string of ones and zeros. *Id.* at 66-67.

<sup>30</sup> *Id.* at 67.

<sup>31</sup> *Id.* at 71-72.

<sup>32</sup> A statutory invention (or statutory subject matter) is an invention that falls within the scope of § 101.

calculation was impaired by the user's inability to measure the internal temperature of the processing vessel.<sup>34</sup> Diehr's process provided a means by which the internal temperature of the system was constantly monitored, the temperature fed into a computer, and the optimal cure time calculated by the computer utilizing the Arrhenius equation.<sup>35</sup> Thus, since the claimed invention was directed to an improved means of curing rubber, which used as a constituent element the Arrhenius equation, the Court concluded that the claimed invention was limited in scope (curing rubber) and would not completely preempt all future use of the Arrhenius equation.<sup>36</sup> This holding was distinguished from *Benson* in that Diehr sought a patent for an individual application of a fundamental principle, whereas to grant the application in *Benson* would have effectively prevented any further use of that particular "tool" of invention (the underlying mathematical algorithm).

These cases aptly describe the Supreme Court's unwillingness to find statutory subject matter if a party attempted to, in essence, gain protection over a fundamental principle. The underlying motivations of *Benson* and *Diehr* are clear: they preserve a stockpile of basic ideas from which future inventors can draw inspiration. However, in addition, these cases embodied difficulties that were common in applying the prohibition on the patenting of fundamental principles, e.g., what is the *exact standard* to be derived from *Benson's* finding that a mathematical algorithm implemented by means of a computer is unpatentable and *Diehr's* holding that use of the Arrhenius equation in rubber curing is a patentable application of a fundamental principle? While the law is clear that patents cannot be granted on a fundamental principle unless embodied in an otherwise patentable invention, deriving the exact line of demarcation between a fundamental principle and an implementation thereof presents difficult and interrelated problems that the USPTO and the courts are ill equipped to address. Specifically, inherently difficult metaphysical questions such as "What is an abstract idea?" or "What is the claimed invention?" are not the expertise of judges or patent examiners but rather philosophers.<sup>37</sup>

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<sup>33</sup> *Diamond v. Diehr*, 450 U.S. 175, 177 (1981).

<sup>34</sup> *Id.* at 177-78.

<sup>35</sup> *Id.* at 178-79.

<sup>36</sup> *Id.* at 191-93.

<sup>37</sup> See *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 134 (2006) (Breyer, J., dissenting) ("I concede that the category of non-patentable 'phenomena of nature,' like the categories of 'mental processes,' and 'abstract intellectual concepts,' is not easy to define."); see also 1 Donald S. Chisum, *Chisum on Patents* § 1.03 (2006) (discussing the early difficulties in defining what constituted a patentable process). The shortcoming of the USPTO in this area was aptly described by Dr. Roberta Morris, who stated:

Examiners must have a technical background to apply for their jobs. (See "Patent Examiner Positions," Part 3. Qualification Requirements, <http://www.uspto.gov/web/offices/pac/exam.htm> (last visited April 3, 2008).) Once hired, they learn at the Patent Academy and on the job how to find prior art which may anticipate or render

Further, the general difficulty in applying these negative prohibitions on patenting fundamental principles is displayed by the courts' constant attempts to restate or explain these prohibitions through secondary rules. Examples of such secondary rules include: the Mental Steps Doctrine ("processes involving mental operations [are] unpatentable"),<sup>38</sup> the Function of a Machine Doctrine (a process consisting of "a description of the function of a machine [is] unpatentable"),<sup>39</sup> and the Printed Matter Doctrine ("patentable novelty cannot be principally predicated on mere printed matter and arrangements thereof").<sup>40</sup>

a. Semi-Positive Rules: Clues to Patentability

In recognizing the difficulty in consistent enforcement of the general prohibition on patenting fundamental principles, the courts began to look for objective indicia of a patentable process that could easily be discerned. Such indicators of patentable processes would allow the USPTO and the courts to remain true to the principles behind the exclusion of fundamental principles from the scope of § 101, while avoiding the difficult questions associated with enforcing this exclusion. These initial forays into finding objective indicia of a patentable process sought to discern common indications of patentability from precedent, but did not attempt to explicitly define the entire scope of patentable processes.

In *Gottschalk v. Benson*, when attempting to determine whether the claimed method of converting binary-coded decimal numerals to pure binary numerals was patentable, the Supreme Court evaluated prior precedent and noted two continuing themes of patentable processes.<sup>41</sup> Specifically, the Court set forth two indicia that an application claimed a patentable implementation of a fundamental principle: (1) the use of a machine or apparatus, or (2) a physical transformation of the subject matter of the

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obvious an applicant's claims. (*Ibid.*, Part 4. Responsibilities, Training and Advancement.) By focusing on the questions of validity over the prior art and the adequacy of the inventor's disclosure to the public, the Patent Office employs its special expertise.

By contrast, what constitutes patentable subject matter under 101 is a philosophical and abstract inquiry, unrelated to the essential question "What did applicants invent?" (*see, e.g.*, Manual of Patent Examining Procedure § 2106 (8th ed., Rev. 6, Sept. 2007)), and to what the prior art teaches.

Brief for Roberta J. Morris, Esq., Ph.D. as Amicus Curiae Supporting Appellants at 5-6, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964), 2008 WL 1842256.

<sup>38</sup> *Diehr*, 450 U.S. at 195.

<sup>39</sup> *Id.* at 196.

<sup>40</sup> *In re Montgomery*, 214 F.2d 136, 139 (C.C.P.A. 1954).

<sup>41</sup> 409 U.S. 63, 71 (1972).

process.<sup>42</sup> The Court expressly noted that these indications of a patentable process were not exclusive.<sup>43</sup> Accordingly, while not recognizing a positive test describing the entire scope of patentable processes, the Court did expressly provide two positive statements of what constitutes statutory subject matter.

#### b. Early Positive Rules: A Confused State of Affairs

Beyond the initial semi-positive statements of indicia of patentable processes, the judiciary moved towards a specific, positive test that could be applied to objectively describe the scope of § 101 (as opposed to merely noting specific indications that a process was statutory). Unfortunately, the rush to set forth such a rule led to the promulgation of multiple rules. Accordingly, the exact breadth of a patentable process became muddier instead of clearer. In its attempts to set forth an objective test that would easily weed out unpatentable fundamental principles, the judiciary undercut itself by creating multiple tests. Several of these standards are described below.

The Federal Circuit has interpreted the IP Clause to require that the patent laws promote “technological innovation.”<sup>44</sup> Such an understanding of the Constitution has led some to suggest that the proper scope of patentability under § 101 should be defined under a “Technological Arts” test. This standard has been stated as such: “[a]ll that is necessary . . . to make a sequence of operational steps a statutory ‘process’ within 35 U.S.C.A. § 101 is that it be in the technological arts so as to be in consonance with the Constitutional purpose to promote the progress of the ‘useful arts.’”<sup>45</sup> Eventually, this standard was dismissed as a distinct test for patentability.<sup>46</sup> However, some still hold that satisfaction of the Technological Arts test is a threshold matter to patentability, in that only a technological invention can potentially fall within the stated ambit of § 101.<sup>47</sup>

Further, the Federal Circuit set forth the Freeman-Walter-Abele test to describe the patentability of a process comprising a mathematical algorithm.<sup>48</sup> This two-step standard requires the determination of whether a mathematical algorithm is claimed (directly or indirectly); if so, whether the invention is merely “a mathematical algorithm that is not applied to or limited by physical elements or process steps” must also be

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<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Paulik v. Rizkalla*, 760 F.2d 1270, 1276 (Fed. Cir. 1985) (en banc).

<sup>45</sup> *In re Musgrave*, 431 F.2d 882, 893 (C.C.P.A. 1970).

<sup>46</sup> *Ex Parte Bilski*, Appeal 2002-2257, slip op. at 41 (B.P.A.I. Sept. 26, 2006), *aff’d on other grounds*, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>47</sup> *Id.* at 30.

<sup>48</sup> *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1058 (Fed. Cir. 1992).

established.<sup>49</sup> Should a court or the USPTO find that a mathematical algorithm claimed is not associated with a physical element, it should reject that claim.

Moreover, courts attempted to define the ambit of § 101 through a “preemption” analysis derived from *Diamond v. Diehr*.<sup>50</sup> In *Diehr*, the Court granted certiorari to determine whether a process, in light of its use of a known mathematical equation, was statutory.<sup>51</sup> Initially, the Court restated the truism that “laws of nature, natural phenomena, and abstract ideas” are outside the ambit of the patent laws.<sup>52</sup> In contrast, an application of such a non-patentable element may obtain protection if it is part of an otherwise patentable invention.<sup>53</sup> However, to constitute such a statutory application, the Court noted that the claimed process must not attempt to cover a broad range of uses for the underlying fundamental principle, such as claiming all uses of an equation within a field of use.<sup>54</sup> Accordingly, the Court recognized that attempts to preempt all uses of a fundamental principle are not statutory, whereas a particularized use of such a principle could potentially be patented.<sup>55</sup>

In 1998, the Federal Circuit addressed this confused state of § 101 jurisprudence in *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*<sup>56</sup> *State Street* attempted to adopt a single unifying standard for patentability of processes: the Useful, Concrete, and Tangible test.

### c. Pre-*Bilski*: the Useful, Concrete, and Tangible Test

*State Street*’s reevaluation of § 101 was sparked when the declaratory judgment plaintiff (State Street) asserted that Signature Financial’s patented system for maintaining a “partner fund financial services configuration” did not claim statutory subject matter.<sup>57</sup> The patent claimed the means to allocate (on a daily basis) the assets of multiple entities

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<sup>49</sup> *Id.*

<sup>50</sup> 450 U.S. 175, 177 (1980).

<sup>51</sup> *Id.* at 179-81.

<sup>52</sup> *Id.* at 185 (citing *Parker v. Flook*, 437 U.S. 584, 593 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972); *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)).

<sup>53</sup> *Diehr*, 450 U.S. at 187-88.

<sup>54</sup> *Id.* at 191-92.

<sup>55</sup> *Id.*; see also *In re Abele*, 684 F.2d 902, 906 (C.C.P.A. 1982) (overruled on other grounds).

<sup>56</sup> 149 F.3d 1368 (Fed. Cir. 1998).

<sup>57</sup> *Id.* at 1370-71.

investing in a singular “hub” investment.<sup>58</sup> The claims set forth a data processing system containing a generic means to perform each required step in the allocation process.<sup>59</sup>

At trial, the district court found the claims not patentable because they fell under two exceptions to the scope of § 101: the Mathematical Algorithm exception (as explained under the Freeman-Walter-Abele test) and the Business Method exception (a doctrine precluding the patenting of business methods).<sup>60</sup> After extensive discussion of both doctrines, the Federal Circuit expressly abolished both exceptions and adopted the Useful, Concrete, and Tangible test.<sup>61</sup> Under this standard, “the transformation of data . . . by a machine through a series of mathematical calculations . . . constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result.’”<sup>62</sup> As such, *State Street* stands for the proposition that “a process is patentable if it produces a ‘useful, concrete, and tangible result.’”<sup>63</sup>

Since its inception, the Useful, Concrete, and Tangible test has been the subject of widespread criticism.<sup>64</sup> The most notable critique came in 2006 in the Supreme Court’s dismissal of the writ of certiorari, as being improvidently granted, for *Laboratory Corporation of America Holdings v. Metabolite Laboratories, Inc.*<sup>65</sup> Justice Breyer, joined by Justices Stevens and Souter, wrote separately to address the relationship between unpatentable fundamental principles and process patents.<sup>66</sup> The dissent recognized that such unpatentable elements can comprise a legitimate process patent, but focused upon the standard to be applied in determining the patentability of such inventions.<sup>67</sup>

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<sup>58</sup> *Id.* at 1371.

<sup>59</sup> *Id.* at 1371-72.

<sup>60</sup> *Id.* at 1372-75.

<sup>61</sup> *Id.* at 1373.

<sup>62</sup> *Id.*

<sup>63</sup> *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 136 (2006) (Breyer, J., dissenting) (quoting *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998), *overruled by In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964). It is of note that *State Street* expressly dealt with a machine patent, but that the Useful, Concrete, and Tangible standard expressed therein was expressly extended to patented processes. *AT&T Corp. v. Excel Comm’ns, Inc.*, 172 F.3d 1352, 1357-58 (Fed. Cir. 1999), *overruled by Bilski*, 545 F.3d at 959-60.

<sup>64</sup> *See, e.g.*, discussion *infra* note 71.

<sup>65</sup> 548 U.S. at 124 (per curiam).

<sup>66</sup> *Id.* at 134-36 (Breyer, J., dissenting).

<sup>67</sup> *Id.*

Justice Breyer rebuffed assertions that the proper standard is whether a process produces a “useful, concrete, and tangible result.”<sup>68</sup> The dissent stated that the Court has never recognized such a test, and that if read literally, the *State Street* test for patentability of a process would conflict with Supreme Court precedent such as *Morse*, *Flook*,<sup>69</sup> and *Benson*. Specifically, Justice Breyer posited:

The Court, for example, has invalidated a claim to the use of electromagnetic current for transmitting messages over long distances even though it produces a result that seems “useful, concrete, and tangible.” [*O’Reilly v. Morse*, 56 U.S. 62 (1854).] Similarly the Court has invalidated a patent setting forth a system for triggering alarm limits in connection with catalytic conversion despite a similar utility, concreteness,

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<sup>68</sup> *Id.* at 136-37.

<sup>69</sup> *Flook* addressed the question of whether the addition of a conventional process to a novel mathematical formula yielded a patentable process. In pertinent part, the Supreme Court answered that a novel mathematical formula could not become a statutory invention through the addition of an otherwise non-novel process. *Parker v. Flook*, 437 U.S. 584, 591 (1978). However, in contrast, where an invention, considered as a whole, incorporates a novel mathematical formula into some inventive application of that formula, a patent may properly issue. *Id.* at 594.

*Flook* filed a patent application on a “Method for Updating Alarm Limits.” *Id.* at 585. The patent application described a three step process to adjust the point at which an alarm sounds during a catalytic conversion process because some process variable, such as temperature, pressure, or flow rate, is outside the normal range of values. *Id.* The process consisted of three primary steps: 1. measuring process variables for which an alarm limit is to be set, 2. calculating a new alarm limit to be implemented in the system through the use of a novel mathematical formula, and 3. implementing the new alarm limits. *Id.* at 585-86. The sole novel aspect of the process was the mathematical formula. *Id.* at 585.

The *Flook* Court expressly stated that the crux of the case was whether *Flook* could survive a § 101 analysis. *Id.* at 588. In starting its analysis, the Court recognized that “post-solution activity, no matter how conventional or obvious in itself, [cannot] transform an unpatentable principle into a patentable process . . . .” *Id.* at 590. However, an otherwise new, useful, and non-obvious invention that is created utilizing such an unpatentable principle may receive protection. *Id.* at 591 (citing *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939)). Further, a non-statutory principle cannot obtain patent protection simply by adding a limitation to the claim that the invention should be used within a single technology. *Id.* at 590. To apply such a rule, a court must view the patent as a whole, and determine whether a patentable invention is present; the presence or non-presence of an unpatentable phenomenon of nature or mathematical formula as an element of the invention should not be considered individually. *Id.* at 594.

In applying this standard, the Court noted that the application, in essence, claimed a novel mathematical formula “tied to a specific end use” (calculating alarm limits). *Id.* at 594-95. As such, pursuant to the previously elucidated rule, the Court found that *Flook* was attempting to claim an unpatentable mathematical formula dressed up with non-novel extra-solution activities (a data gathering step and a field restriction). *Id.* at 595. Accordingly, the invention was deemed outside the scope of § 101.

and tangibility. [*Parker v. Flook*, 437 U.S. 584 (1978).] And the Court has invalidated a patent setting forth a process that transforms, for computer-programming purposes, decimal figures into binary figures—even though the result would seem useful, concrete, and at least arguably (within the computer's wiring system) tangible. [*Gottschalk v. Benson*, 409 U.S. 63 (1972).]<sup>70</sup>

In addition to Justice Breyer's assessment of the Useful, Concrete, and Tangible test, a question exists as to what exactly this standard was meant to embody.<sup>71</sup> For example, the USPTO's interpretation of this rule seems inconsistent with basic maxims of statutory construction. "It is a long-held tenet of statutory interpretation that one section of a law should not be interpreted so as to render another section meaningless."<sup>72</sup> However, an exacting assessment of the Useful, Concrete, and Tangible test, as interpreted by the USPTO, renders it redundant of the utility inquiry under § 101, thus

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<sup>70</sup> *Lab. Corp. of Am. Holdings*, 548 U.S. at 136-37 (Breyer, J., dissenting).

<sup>71</sup> See, e.g., Christopher A. Harkins, *Throwing Judge Bryson's Curveball: A Pro Patent View of Process Claims as Patent-Eligible Subject Matter*, 17 J. Marshall Rev. Intell. Prop. L. 701, 728 (2008). Specifically, this article noted that:

[The Useful, Concrete, and Tangible test is] not the guidance needed right now to help the Patent Office, practitioners, or courts. And each of the individual adjectives introduces a further element of uncertainty.

"Concrete"—whatever that means—drew laughter when counsel and the bench conceded not to know what it meant [during the *Bilski* en banc hearing]. Perhaps it simply means necessary but not sufficient, in which case it is better addressed under § 112, ¶ 2.

"Tangible" seems to mean "real world." Most inventions are for an economic purpose—i.e., real world. In the final analysis, "real world" seems subjective, unconventional, and random.

"Useful" is already in § 101. As such, it is redundant.  
*Id.* (internal citations omitted). Another commenter, describing the effect of *State Street*, stated:

Although *State Street* only upheld the patentability of a data processing computer program, many applicants interpreted the decision as to make any and all types of business methods patent-eligible so long as the method produces a "useful, tangible, and concrete" result, a test left undefined by the [Federal Circuit]. Therefore, after *State Street* the demarcating line between patentable processes and unpatentable abstract ideas was blurred.

Lilly He, *In re Bilski En Banc Rehearing on Patentable Subject Matter: Farewell to Business Method Patents?*, 14 B.U. J. Sci. & Tech. L. 252, 255 (2008) (internal citations omitted).

<sup>72</sup> *Princess Cruises v. United States*, 201 F.3d 1352, 1362 (Fed. Cir. 2000).

leaving one section or the other meaningless.<sup>73</sup> An evaluation of the USPTO's working definitions of "useful," "concrete," and "tangible" will demonstrate this redundancy.

The USPTO's Manual of Patent Examining Procedure<sup>74</sup> states that "[f]or an invention to be 'useful' it must satisfy the utility requirement of section 101."<sup>75</sup> Moreover, "concrete" is defined as "hav[ing] a result that can be substantially repeatable or the process must substantially produce the same result again."<sup>76</sup> Repeatability, however, is cited as an element of the utility requirement.<sup>77</sup> Furthermore, the tangibility requirement has been defined as necessitating that an invention produce a "real-world result."<sup>78</sup> Such a result is defined as an element of substantial utility.<sup>79</sup> Accordingly, all three elements of the Useful, Concrete, and Tangible test are prerequisites to a finding of utility.

The Federal Circuit has recognized the utility and subject matter requirements as distinct inquiries under § 101.<sup>80</sup> As such, it is necessarily an improper statutory interpretation to define patentable subject matter in terms of a useful, concrete, and tangible result when the utility requirement of § 101 already requires such results.

The Federal Circuit must necessarily abide by Supreme Court precedent.<sup>81</sup> Further, the Federal Circuit's creation was intended to establish a predictable application

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<sup>73</sup> See Kenneth N. Nigon, *Advanced Specification Drafting Issues Electronic and Computer Inventions*, 909 PLI/Pat 209, 255-56 (2007); Charles A. Damschen, *Patentable Subject Matter: Do the 2005 USPTO Interim Guidelines Intersect State Street at a Roundabout?*, 93 Iowa L. Rev. 1889, 1916 (2008).

<sup>74</sup> The MPEP does not carry the weight of law. As such, the USPTO conundrum described above is merely given as an example of the confusion and uncertainty surrounding the Useful, Concrete, and Tangible test. *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 1180 n.10 (Fed. Cir. 1995) (noting that the MPEP does not carry the weight of law but is entitled to judicial notice).

<sup>75</sup> U.S. Patent and Trademark Office, U.S. Dept. of Commerce, Manual of Patent Examining Procedure § 2106(IV)(C)(2)(2)(a) (8th ed., 7th revision 2008) [hereinafter MPEP]; see also Nigon, *supra* note 73, at 255-56.

<sup>76</sup> MPEP § 2106(IV)(C)(2)(2)(c) (citing *In re Swartz*, 232 F.3d 862, 864 (Fed. Cir. 2000)); see also Nigon, *supra* note 73, at 255-56.

<sup>77</sup> Damschen, *supra* note 73, at 1916 ("[A] claim that does not achieve a repeatable result will not be eligible for patent protection due to the claim's failure to meet the utility requirement in § 101 (according to the Federal Circuit's and the USPTO's interpretation of that requirement in conjunction with § 112)."); see also Nigon, *supra* note 73, at 255-56.

<sup>78</sup> MPEP § 2106(IV)(C)(2)(2)(b) (citing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)); Nigon, *supra* note 73, at 256.

<sup>79</sup> MPEP § 2107.01(I)(B).

<sup>80</sup> See *Aristocrat Techs. Austl. PTY Ltd. v. Int'l. Game Tech.*, 543 F.3d 657, 661 n.3 (Fed. Cir. 2008) ("Although the Supreme Court in *Graham* referred only to the utility requirement aspect of section 101, as we often do, it is beyond question that section 101's other requirement, that the invention be directed to patentable subject matter, is also a condition for patentability.").

of U.S. patent laws.<sup>82</sup> As discussed above, *State Street's* Useful, Concrete, and Tangible test does neither. Accordingly, a reevaluation of this standard was warranted. *Bilski* provided such an opportunity.

### III. THE HISTORY OF THE BILSKI PATENT APPLICATION

The Application and its associated judicial history embody the confused state of affairs regarding the scope of patentable processes prior to *Bilski*. Accordingly, an investigation into the history of the Application will demonstrate the need for a clear, positive standard of the scope of § 101 that led to *Bilski's* adoption of the Machine or Transformation test.

#### A. *The Application, the USPTO, and the BPAI*

*Bilski* sought to patent a method of hedging risks associated with purchasing and selling commodities subject to price fluctuations.<sup>83</sup> The claimed process consisted of: (1) initiating a series of sales between a provider of some commodity and consumers of that commodity, (2) identifying parties with a risk position opposite to the commodity consumers, and (3) initiating a series of transactions between the commodity provider and a third party with a risk interest opposite to the consumer at a price sufficient to

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<sup>81</sup> *Indep. Ink, Inc. v. Ill. Tool Works, Inc.*, 396 F.3d 1342, 1351 (Fed. Cir. 2005) (overruled on other grounds) (“[I]t is the duty of a court of appeals to follow the precedents of the Supreme Court until the Court itself chooses to expressly overrule them.”).

<sup>82</sup> Robert C. Morgan & Matthew A. Traupman, *Claim Construction Methodologies and Problems*, 837 PLI/Pat 147, 155 (2005).

<sup>83</sup> *Ex Parte Bilski*, Appeal 2002-2257, slip op. at 1 (B.P.A.I. Sept. 26, 2006), *aff'd on other grounds, In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964). Claim 1 of the Application (08/833, 892) reads:

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.

account for the variance in risk interests.<sup>84</sup> In essence, the Application claimed a method by which an intermediary party could hedge risks by agreeing to purchase a commodity at some set price from a selling party averse to either an increase or decrease in the selling price of the commodity, and by then entering into a second deal at a second set price with a buying party whose aversion to risk is opposite to that of the selling party. By entering into such a series of agreements, the intermediary allows each party to insulate itself from an increase or decrease in the price of the commodity (for the lifetime of the agreements).<sup>85</sup>

During examination, the patent examiner did not rely on prior art in rejecting the Application,<sup>86</sup> but rather found the claims to not embody statutory subject matter.<sup>87</sup> In noting that the claimed process did not require any physical apparatus (such as a computer), the examiner stated that “the invention is not implemented on a specific apparatus and merely manipulates [an] abstract idea and solves a purely mathematical problem without any limitation to a practical application, [and] therefore, the invention is not directed to the technological arts.”<sup>88</sup> From this, the examiner found: (1) the claimed subject matter to consist of a non-statutory fundamental principle (a mathematical algorithm); and (2) the claims to be unpatentable under the Technological Arts test because the claimed invention did not embody an “application of science and engineering to the development of machines and procedures in order to enhance or improve human

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<sup>84</sup> *Id.* at 2.

<sup>85</sup> In its opinion, the Federal Circuit gave the following example to clarify the claimed subject matter:

In essence, the claim is for a method of hedging risk in the field of commodities trading. For example, coal power plants (i.e., the “consumers”) purchase coal to produce electricity and are averse to the risk of a spike in demand for coal since such a spike would increase the price and their costs. Conversely, coal mining companies (i.e., the “market participants”) are averse to the risk of a sudden drop in demand for coal since such a drop would reduce their sales and depress prices. The claimed method envisions an intermediary, the “commodity provider,” that sells coal to the power plants at a fixed price, thus isolating the power plants from the possibility of a spike in demand increasing the price of coal above the fixed price. The same provider buys coal from mining companies at a second fixed price, thereby isolating the mining companies from the possibility that a drop in demand would lower prices below that fixed price. And the provider has thus hedged its risk; if demand and prices skyrocket, it has sold coal at a disadvantageous price but has bought coal at an advantageous price, and vice versa if demand and prices fall.

*In re Bilski*, 545 F.3d 943, 949-50 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>86</sup> *Ex Parte Bilski*, Appeal 2002-2257, slip op. at 1-2.

<sup>87</sup> *Bilski*, 545 F.3d at 950.

<sup>88</sup> *Ex Parte Bilski*, Appeal 2002-2257, slip op. at 2 (citation and quotation marks omitted) (insertion in original); *see also Bilski*, 545 F.3d at 950.

conditions, or at least improve human efficiency in some respect.”<sup>89</sup> Accordingly, the patent examiner rejected the application.<sup>90</sup> Bilski timely sought review of the rejection.

On appeal, in considering whether the Application claimed a fundamental principle, the BPAI rejected the Technological Arts test employed by the examiner as unsupported by case law.<sup>91</sup> Instead, based on the application of the Useful, Concrete, and Tangible test to the claims and the exclusion of abstract ideas from the scope of patentable subject matter principle, the BPAI affirmed the examiner’s rejection of the Application.<sup>92</sup> Bilski timely appealed to the Federal Circuit.

#### a. The *Bilski* Federal Circuit Panel Hearing

On October 1, 2007, *Bilski* was argued before a three judge Federal Circuit panel.<sup>93</sup> Prior to issuing an opinion in the case, the Federal Circuit decided to hold a re-hearing en banc.<sup>94</sup> The court requested supplemental briefing on five questions:

(1) Whether claim 1 of the 08/833,892 patent application claims patent-eligible subject matter under 35 U.S.C. § 101?

(2) What standard should govern in determining whether a process is patent-eligible subject matter under section 101?

(3) Whether the claimed subject matter is not patent-eligible because it constitutes an abstract idea or mental process; when does a claim that contains both mental and physical steps create patent-eligible subject matter?

(4) Whether a method or process must result in a physical transformation of an article or be tied to a machine to be patent-eligible subject matter under section 101?

(5) Whether it is appropriate to reconsider *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir.

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<sup>89</sup> *Ex Parte Bilski*, Appeal 2002-2257, slip op. at 3-4 (B.P.A.I. Sept. 26, 2006), *aff’d on other grounds*, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* at 12.

<sup>92</sup> *Id.* at 20-22.

<sup>93</sup> *In re Bilski*, 264 Fed. Appx. 896, 896 (Fed. Cir. 2008) (per curiam) (unreported opinion).

<sup>94</sup> *Id.* at 896-97.

1999), in this case and, if so, whether those cases should be overruled in any respect?<sup>95</sup>

The invitation to file briefs on these issues was extended to parties and amici curiae (without leave of the court).<sup>96</sup>

#### b. The *Bilski* Federal Circuit En Banc Opinion

Prior to the en banc rehearing on the patentability of the claims contained in the Application, the Federal Circuit received over 30 briefs from amici curiae.<sup>97</sup> On May 8, 2008, the Federal Circuit heard re-argument of the case, and on October 30, 2008 it issued its opinion.<sup>98</sup>

Initially, the court noted that the Application was drawn to an inventive “process” (as opposed to a machine, manufacture, or composition of matter) and as such, expressly limited its discussion to the definition of the term “process” under § 101.<sup>99</sup> The court further defined the issue by recognizing that a necessary difficulty in defining what constitutes a statutory process was establishing a test that would exclude claims drawn to a fundamental principle.<sup>100</sup>

*Bilski* then described the landscape of § 101 case law and specifically recognized two pertinent precedents from Supreme Court holdings: (1) a process does not claim or preempt the use of a fundamental principle if it is attached to a physical apparatus, and (2) the application of a fundamental principle within a process that brings about the transformation of an article to a different state or thing does not claim the fundamental principle.<sup>101</sup> From such precedent, the Federal Circuit derived the “Machine or Transformation” test to describe the scope of patentable processes. Specifically, the court stated that a process is patentable if: “(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing.”<sup>102</sup> In addition to the basic elements of the Machine or Transformation test, the Federal Circuit established two

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<sup>95</sup> *Id.* at 897.

<sup>96</sup> *Id.*

<sup>97</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>98</sup> *Id.* at 949.

<sup>99</sup> *Id.* at 951.

<sup>100</sup> *Id.* at 952.

<sup>101</sup> *Id.* at 954.

<sup>102</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964) (citing *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)).

additional requirements of a statutory process: (1) “the use of a specific machine or transformation of an article must impose meaningful limits on the claim’s scope to impart patent-eligibility” and (2) “the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity.”<sup>103</sup> *Bilski* expressly withheld any further discussion of the “machine” portion of the test, as the Application was conceded to not contain any physical limitations.<sup>104</sup>

In applying the transformation portion of the test to the Application, the court expressly stated that the “transformation” of legal obligations or relationships was not sufficient to pass muster under the Machine or Transformation test because these “transformations” did not effect a change in a physical object; nor did these obligations or relationships represent any physical objects.<sup>105</sup> Based upon this definition of “transformation,” the Federal Circuit held that *Bilski* sought to claim unpatentable subject matter and affirmed the rejection of the Application.<sup>106</sup>

#### IV. THE MACHINE OR TRANSFORMATION TEST AND STARE DECISIS

During its construction of § 101, the *Bilski* court was required to fashion a standard consistent with prior case law. Accordingly, the court derived the Machine or Transformation test from prior Supreme Court cases addressing the scope of § 101.

In *Gottschalk v. Benson*, the Supreme Court recognized two indicia of statutory subject matter established in prior case law: (1) a process is patentable if it is “tied to a particular machine or apparatus”<sup>107</sup> or (2) a process is patentable if it brings about a “[t]ransformation and reduction of an article ‘to a different state or thing.’”<sup>108</sup> Clearly, the indications of what may constitute patentable subject matter set forth in *Benson* are the direct antecedents of the *Bilski* standard that describes the entire scope of § 101 (the Machine or Transformation test).<sup>109</sup>

It is of note that immediately after recognizing the aforementioned indicia of statutory subject matter, *Benson* stated that it “[did] not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.”<sup>110</sup> Thus, while the Court in *Benson* recognized two specific examples of *what is patentable*, it did not

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<sup>103</sup> *Id.* at 961-62 (citations omitted).

<sup>104</sup> *Id.* at 962.

<sup>105</sup> *Id.* at 963-64.

<sup>106</sup> *Id.* at 965-66.

<sup>107</sup> *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

<sup>108</sup> *Id.* at 70 (quoting *Tilghman v. Proctor*, 102 U.S. 707, 721 (1880)).

<sup>109</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>110</sup> *Benson*, 409 U.S. at 71.

expressly state that these indicia defined the entire scope of patentable processes.<sup>111</sup> As such, *Benson*'s statement that the use of a machine or a physical transformation are indicative of a patentable process must be differentiated from *Bilski*'s statement that the Machine or Transformation test describes the complete scope of statutory processes under § 101. *Bilski* properly addressed this limitation.

Initially, in *Bilski* the Federal Circuit argued that the Supreme Court had, despite its express statement in *Benson* to the alternative, held that the patentability test for a process was the use of a machine or a transformation.<sup>112</sup> As noted in *Bilski*, the *Benson* court stated that the use of a machine or a transformation “is the clue to the patentability of a process claim.”<sup>113</sup> From the use of the exclusive term “the” (as opposed to the open term “a”), the Federal Circuit reasoned that *Benson* intended the Machine or Transformation test to be the sole standard for patentability of processes under § 101. Regardless of the strength of this argument, *Bilski* left sufficient breathing room to accommodate the statement in *Benson* that it “[did] not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.”<sup>114</sup>

Specifically, after its discussion of Supreme Court precedent and whether the Machine or Transformation test presented the exclusive bounds of patentable processes, *Bilski* expressly recognized “the possibility that this court may in the future refine or augment the test or how it is applied” in order to accommodate “future developments in technology and the sciences.”<sup>115</sup> This statement is consistent with *Benson*'s express purpose not to “freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology” by leaving open the possibility that a process could be patentable without reciting a machine or transformation.<sup>116</sup>

#### A. Judge Newman's Dissent: Adherence to Precedent

The flexibility inherent in the potential to revisit the Machine or Transformation test adequately addresses a repeated theme that Judge Newman set forth in her dissent to *Bilski*. Specifically, Judge Newman argued that the Machine or Transformation test deviates from precedent, which held that processes involving a machine or physical

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<sup>111</sup> Although *Benson* addressed process claims, the Federal Circuit has recognized that its logic applies equally to process claims and apparatus claims, including means-plus-function language because “the form of the claim is often an exercise in drafting.” *In re Alappat*, 33 F.3d 1526, 1542 (Fed. Cir. 1994) (quoting *In re Johnson*, 589 F.2d 1070, 1077 (C.C.P.A. 1978)).

<sup>112</sup> *Bilski*, 545 F.3d at 955-56.

<sup>113</sup> *Id.* (quoting *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)) (alteration in original).

<sup>114</sup> *Benson*, 409 U.S. at 71.

<sup>115</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>116</sup> *Benson*, 409 U.S. at 71.

transformation are not the only possible patentable processes.<sup>117</sup> Her dissent cites prior case law to note that the Supreme Court has intentionally construed § 101 to not exclude “new, onrushing technology.”<sup>118</sup> *Bilski* expressly stated that if new fields of technology arise that cannot properly be dealt with under the present standard, courts may revisit the Machine or Transformation test. Thus, even though *Bilski* presently limits patentable processes to those inventions which satisfy the Machine or Transformation test, it provides sufficient flexibility to allow § 101 jurisprudence to evolve to accommodate unforeseen future technologies. This understanding of *Bilski* is consistent with Judge Newman’s assertion that § 101 should be a “dynamic provision designed to encompass new and unforeseen inventions.”<sup>119</sup>

Beyond adherence to precedent, Judge Newman’s concerns with the rule set forth in *Bilski* may also relate to a potential undercutting of the primary purpose of the patent laws: encouraging innovation.<sup>120</sup> However, *Bilski* expressly provides the flexibility necessary to accommodate future technologies to which the Machine or Transformation test does not currently grant protection. Furthermore, innovation in a new and unforeseen area of technology would be incentivized outside of the patent system. A party that engages in research and development of a new technology will enjoy a head start in marketing its new invention or products created utilizing a new process.<sup>121</sup> This advantage allows the inventor to recoup the investment in research and development by acting for a time as the sole provider of the new product or process.<sup>122</sup>

This model, while providing the economic incentive to invent to the initial inventor, does not provide for public dissemination of the new technology. Some inefficiency arises due to the delay between the creation of a new technology and the adjustment of the Machine or Transformation test to accommodate it because, unless they seek patent protection, inventors are under no obligation to make their inventions public.

However, some suggest that, absent patent protection, parties will *immediately* release new technologies to the public in the hopes of utilizing their head start to reap higher profits.<sup>123</sup> Unfortunately, in some instances, the benefit of public dissemination of

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<sup>117</sup> *Bilski*, 545 F.3d at 978-86 (Newman, J., dissenting).

<sup>118</sup> *Id.* at 973 (quoting *Benson*, 409 U.S. at 71).

<sup>119</sup> *Id.* at 983 (quoting *J.E.M. Agric. Supply v. Pioneer Hi-Bred Int’l*, 534 U.S. 124, 135 (2001)).

<sup>120</sup> *Id.* at 977 (emphasis omitted); *see also* U.S. Const. art. I, § 8, cl. 8.

<sup>121</sup> David Encaoua et al., *Patent Systems for Encouraging Innovation: Lessons from Economic Analysis*, 35 Res. Pol’y 1423, 1426 (2006).

<sup>122</sup> *Id.* at 1426-28 (citing Michele Boldrin & David K. Levine, *The Case Against Intellectual Property*, 92 Am. Econ. Rev. (Papers and Proc.) 209, 209-12 (2002)).

<sup>123</sup> *See generally* Tuomas Takalo & Vesa Kannianen, *Do Patents Slow Down Technological Progress? Real Options in Research, Patenting, and Market Introduction*, 18 Int’l J. of Indus. Org. 1105 (arguing that, absent patent protection, a party must immediately bring its new technology to the public in order to avoid the possibility that another party could introduce

knowledge may not be realized for process inventions because some processes can be economically exploited without revealing the new process to the public (e.g., processes utilized in manufacturing of goods where the utilized process is not obvious from the manufactured good).

Under such considerations, to the extent that *Bilski* has deviated from the Supreme Court's statement in *Benson* that it "[did] not hold that no process patent could ever qualify if it did not [involve a machine or a physical transformation,]" there are two means by which the Machine or Transformation test will continue to incentivize "new, onrushing technology."<sup>124</sup> First, to the extent that presently unforeseen technologies fall outside the ambit of the Machine or Transformation test, *Bilski* expressly reserves the right to adapt it to future technologies. Second, market incentives exist to promote technological growth until the Machine or Transformation test can be appropriately altered to encompass them.

### *B. Judge Rader's Dissent: Plain Language Interpretation*

In his dissent, Judge Rader expressed concern that the Federal Circuit departed from Supreme Court precedent stating that § 101 should be construed pursuant to its plain language.<sup>125</sup> He emphasized that § 101 provides for the protection of "any new and useful process."<sup>126</sup> Shortly thereafter, he noted an exception to this rule: a fundamental principle cannot constitute a patentable process.<sup>127</sup> Accordingly, Judge Rader would have simply denied the patentability of the Application by stating that the claims constituted a fundamental principle and therefore, were not patentable.

It is in order to further this prohibition (on the patenting of fundamental principles) that *Bilski* adopted the Machine or Transformation test. The *Bilski* majority sought to describe a standard by which courts and the USPTO could readily discern "whether a claim to a process is patentable under § 101 or, conversely, is drawn to unpatentable subject matter because it claims only a fundamental principle."<sup>128</sup> As such, pursuant to the very language of the majority, both parties (the majority and the dissent) seek the same thing: the exclusion of fundamental principles from § 101. They simply differ on their approaches to the goal.

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equivalent technology before it does because the initial inventor cannot rely on the patent system to protect its innovation).

<sup>124</sup> *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

<sup>125</sup> *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964) (Rader, J., dissenting) (citing *Diamond v. Diehr*, 450 U.S. 175, 182 (1981)).

<sup>126</sup> *Id.* (alteration in original).

<sup>127</sup> *See id.* at 1012-13.

<sup>128</sup> *Id.* at 952 (emphasis added).

Judge Rader's approach enjoys the benefit of simplicity; any process is patentable if it is not a fundamental principle and complies with all other statutory mandates. However, such an approach would necessarily burden the USPTO and the courts with questions they are not readily equipped to handle because this approach requires answering metaphysical questions such as "What is an abstract idea?"<sup>129</sup>

In contrast, the *Bilski* majority adopted a prophylactic rule of patentability for processes. This prophylactic rule seeks to protect the interest in the proscription on patenting fundamental principles by imposing a positive rule that may narrow the realm of patentable subject matter more than is required by § 101. The correlation between *all* patentable processes and the scope of the Machine or Transformation test might not be exact—this shortcoming was recognized by *Bilski*'s concession that its rule may need be revised at some point in the future to permit the patenting of new technologies. However, this potential shortcoming is made up for by a single fact: the USPTO and the courts are fully prepared for, and capable of, delineating what is a process that utilizes a machine or achieves a physical transformation. Accordingly, deviation from the explicit wording of the Patent Act is warranted by the expectation of a consistent and reliable application of § 101 by the courts and the USPTO.

Furthermore, the Federal Circuit's use of a prophylactic rule to preclude violation of an underlying principle is consistent with similar approaches taken by the Supreme Court. In *Bilski*, the court recognized the inherent difficulty in applying the general prohibitions on patenting fundamental principles. Thus, the Machine or Transformation test was implemented to create a manner by which these prohibitions could be protected though the application of an easier-to-apply standard. This is analogous to the Supreme Court's use of prophylactic rules in criminal procedure cases.<sup>130</sup> For example, in its approach to protecting the Fifth Amendment's right against self-incrimination, the Court adopted *Miranda* warnings as a means of preventing violations of this right. Despite the fact that these warnings do not recite the rule that they were created to protect, these rules promote avoidance of Fifth Amendment violations during police custody.<sup>131</sup> Similarly, in *Bilski*, the Federal Circuit has adopted a standard (the Machine or Transformation test) that will allow the USPTO and the courts to avoid encroaching on a fundamental rule of patent law (the proscription of patenting fundamental principles) during prosecution and litigation without actually reciting the underlying proscriptions.

These considerations establish *Bilski*'s consistency with pertinent case law and its underlying policies. Moreover, *Bilski* is consistent with the primary goal of the patent system: incentivizing invention.

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<sup>129</sup> See discussion *supra* Part II.b.

<sup>130</sup> See generally Joseph D. Grano, *Prophylactic Rules in Criminal Procedure: A Question of Article III Legitimacy*, 80 Nw. U. L. Rev. 100, 105-15 (1985) (providing examples of the Supreme Court's adoption of prophylactic rules in the context of criminal procedure).

<sup>131</sup> *Id.* at 106-11.

V. *BILSKI* AND THE PREDICTABILITY OF U.S. PATENT LAWS

A basic concern for any branch of law is “whether it provides a mechanism whereby the participants can reasonably predict the outcome of [a proceeding] prior to the actual decision.”<sup>132</sup> Such a statement is consistent with a basic value inherent in the rule of law, namely that law should be predictable.<sup>133</sup> This value is no less applicable to the patent laws than to any other area of jurisprudence.

In 1982, Congress created the Federal Circuit when it passed the Federal Court Improvements Act.<sup>134</sup> This statute was an attempt to standardize and strengthen patent law.<sup>135</sup> Specifically, the Federal Circuit was intended to, among other things, curb tremendous variances in the application of patent laws across the U.S.<sup>136</sup> In turn, Congress expected this judicial stability to create a level of predictability which would allow for confident commercial investment in innovation.<sup>137</sup> Such investment is only available in the presence of uniform expectations regarding the validity of patents and the expected outcome of contemplated litigation.<sup>138</sup> An investigation into the nature of investment in research and development and a discussion of the expected application of *Bilski* lead to the conclusion that the implementation of the Machine or Transformation test is likely to bring about the aforementioned “uniform expectations” necessary to encourage innovation.

*A. Investments in Research and Development*

Firms generally invest to maximize profits.<sup>139</sup> However, firms’ investment decisions are tempered by their risk aversion.<sup>140</sup> Uncertainty about the profitability of potential investments, such as the patentability of products and processes developed

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<sup>132</sup> Gerald P. Moran, *A Radical Theory of Jurisprudence: The “Decisionmaker” as the Source of Law—The Ohio Supreme Court’s Adoption of the Spendthrift Trust Doctrine as a Model*, 30 Akron L. Rev. 393, 440 (1997).

<sup>133</sup> Richard A. Primus, *When Should Original Meanings Matter?*, 107 Mich. L. Rev. 165, 194 (2008).

<sup>134</sup> Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25 (1982).

<sup>135</sup> Donald S. Chisum et al., *Principles of Patent Law* 23 (3d ed. 2004).

<sup>136</sup> *Id.*

<sup>137</sup> *Pfizer, Inc. v. Apotex, Inc.*, 488 F.3d 1377, 1380 (Fed. Cir. 2007) (Newman, J., dissenting) (“It was recognized [when the Federal Circuit was created] that a nationally uniform, consistent, and correct patent law is an essential foundation of technological innovation, which is today the dominant contributor to the nation’s economy.”), *cert. denied*, 128 S.Ct. 110 (2007).

<sup>138</sup> *Hunter Douglas, Inc. v. Harmonic Design, Inc.*, 153 F.3d 1318, 1330-31 (Fed. Cir. 1998) (internal citations omitted).

<sup>139</sup> Elizabeth Webster, *The Economics of Intangible Investment* 22 (1999).

through research and development, can promote risk-adverse behavior; conversely, certainty of reward can promote investment.<sup>141</sup>

External factors, i.e. factors beyond or outside a firm's control, may contribute to the uncertainty attendant to a particular investment, and, accordingly, may influence the ability of a firm to reap rewards from its investment.<sup>142</sup> Therefore, firms must carefully scrutinize the information upon which they base their predictions regarding the effect of external factors.<sup>143</sup> The higher the information variability (the extent to which such information is considered to be of lesser reliability),<sup>144</sup> the less likely the firm believes itself able to control the uncertainty of an investment. Therefore, the higher the information variability, the less likely a firm is to invest in innovation.

Accordingly, in order to successfully incentivize innovation, the U.S. patent laws must minimize the variability of information available to firms that may invest in research and development. Although the federal government has limited control over external factors regarding the information that a firm may rely upon in deciding whether to invest, it has control over one important piece of information: the predictability of patent laws. Consequently, by allowing firms to easily recognize which inventions may warrant a patent, the government is able to remove uncertainty and encourage investment.

In the past, the United States' intellectual property laws incentivized research and development by creating an atmosphere in which researchers, and their financial backers, could undergo their work with a certain degree of predictability regarding the scope of their potential patent rights.<sup>145</sup> In such an atmosphere, technological innovation thrived.<sup>146</sup> Prior to *Bilski*, however, uncertainty crept into the scope of patentable subject matter, particularly with regard to process patents.<sup>147</sup>

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<sup>140</sup> *Id.* at 23.

<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

<sup>143</sup> Richard Butler et al., *Strategic Investment Decisions: Theory, Practice and Process* 22 (1993).

<sup>144</sup> *Id.*

<sup>145</sup> Brit T. Brown & Benjamin A. Escobar, *Wind Power: Generating Electricity and Lawsuits*, 28 *Energy L.J.* 489, 497 (2007).

<sup>146</sup> *Id.*

<sup>147</sup> *See, e.g., Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 136 (2006) (Breyer, J., dissenting) (noting that the Federal Circuit's pre-*Bilski* test for patentability of a process would, if applied to past Supreme Court cases, come to divergent results); *see also* discussion *supra* note 71 (explaining that the Useful, Concrete, and Tangible test is of limited practical value and that each of the individual adjectives introduces a further element of uncertainty).

### *B. Predictability and the Application of Bilski*

The implementation of the Machine or Transformation test will serve the U.S. patent regime by setting forth a single positive rule that establishes a predictable means by which practitioners and inventors can determine, to a reasonable degree, if an invented process is patentable. The proscription against patenting fundamental principles, on which the Machine or Transformation test is based, has historically been enforced as a series of negative prohibitions, such as “mathematical algorithms . . . are not patentable subject matter.”<sup>148</sup> Such negative rules were difficult to consistently implement, and accordingly, in hopes of clarifying the scope of § 101, the judiciary began to implement a vast array of standards to determine what constitutes a patentable process.<sup>149</sup> Unfortunately, the implementation of these various rules only led to a further confused state of affairs, and therefore, prior to *Bilski*, the Federal Circuit attempted to clarify the scope of § 101 when it announced a singular standard: the Useful, Concrete, and Tangible test. This standard has been fraught with questions over its interpretation,<sup>150</sup> and, recently, over its consistency with Supreme Court mandates.<sup>151</sup>

In contrast, the Machine or Transformation test sets forth a basic positive rule by which fundamental principles can be excluded from the scope of patentable processes: a process is patentable if it involves a physical transformation or a physical apparatus.<sup>152</sup> While *Bilski* does not define the full scope of the Machine or Transformation test, it instructs that “a careful analysis of [Supreme Court precedent] and the subsequent jurisprudence of [the Federal Circuit] applying those decisions . . . [should inform] our understanding of the Court's machine-or-transformation test.”<sup>153</sup> The implementation of such a simple and succinct rule, in conjunction with reference to prior case law, should enable businesses and inventors to conduct research with a preliminary understanding of the potential scope of their patent rights. The resultant predictability should allow invention to flourish.

Moreover, this predictability will be furthered by a secondary, but important, pronouncement in *Bilski*: § 101 need not be addressed prior to any other investigation into the patentability of an application.<sup>154</sup> Under this rule, one can expect that any future developments of § 101 jurisprudence (with respect to process inventions) will be

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<sup>148</sup> *In re Iwahashi*, 888 F.2d 1370, 1374 (Fed. Cir. 1989).

<sup>149</sup> See discussion *supra* Part II.d.

<sup>150</sup> See discussion *supra* note 71.

<sup>151</sup> *Lab. Corp. of Am. Holdings*, 548 U.S. at 136-37.

<sup>152</sup> *In re Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964). Moreover, *Bilski*'s declaration that a § 101 analysis can occur before or after any other evaluation (such as §§ 102, 103, or 112) will allow a further simplified prosecution process.

<sup>153</sup> *Id.* at 954 n.7.

<sup>154</sup> *Id.* at 951 n.1.

established only in cases in which § 101 presents the single outcome determinative question, as opposed to adjudicating artificial questions of patentable subject matter in cases where §§ 102, 103, or 112 would be easily applied to reject a claim. Such artificial adjudication undercuts the judiciary's ability to create a strong collection of case law that can be expected to be predictably applied.<sup>155</sup>

### 1. Section 101 as a Threshold Requirement

As an issue of statutory interpretation, the scope of § 101 necessarily relies upon judicial interpretation to delineate the bounds of patentable processes. Accordingly, the predictability of § 101 jurisprudence is dependent upon the quality of case law on the subject.

The determination of whether a claimed invention presents patentable subject matter has frequently been described as an inquiry that must be addressed prior to all other evaluations.<sup>156</sup> This interpretation commonly presents the USPTO and the court system with difficult, and patently unnecessary, determinations over the scope of statutory subject matter.<sup>157</sup> Such a regime would require the resolution of § 101 issues for claims that would be rejected under §§ 102, 103, or 112.<sup>158</sup> This situation would necessitate the evolution of § 101 jurisprudence through the evaluation of artificial questions arising from patent applications that are unlikely to issue regardless of the § 101 determination because they would subsequently be rejected on other grounds.<sup>159</sup> Such is the breeding ground of bad law.<sup>160</sup>

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<sup>155</sup> See Morris, *supra* note 37, at 6.

<sup>156</sup> See, e.g., *Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc.*, 564 F. Supp. 1358, 1366 (D. Del. 1983).

<sup>157</sup> See Robert P. Merges & John F. Duffy, *Patent Law & Policy* 22 (4th ed. Supp. 2008-09), available at [http://www.lexisnexis.com/lawschool/study/texts/pdf/Patent%20Book%20Update%202008-2009\\_FINAL.pdf](http://www.lexisnexis.com/lawschool/study/texts/pdf/Patent%20Book%20Update%202008-2009_FINAL.pdf).

<sup>158</sup> See *id.* (“Under this issue *hierarchy* (with section 101 *first*), important and difficult section 101 issues may have to be decided under the worst possible sets of facts, for example, where the inventions are not properly enabled, wildly broad, not operative, obvious, or indeed just a bit loony.”) (emphasis in original).

<sup>159</sup> The author does not advocate resolving § 101 issues only after resolving all other issues. Rather, simple § 101 issues that are unlikely to create new precedent can, and should, be addressed when a simple rejection is available. To hold otherwise would potentially require the unnecessary adjudication of artificial §§ 102, 103, or 112 issues.

<sup>160</sup> See Morris, *supra* note 37, at 6. Specifically, Dr. Morris posited:

If the Patent Office must consider 101, then from the point of view of both reason and efficiency, it should do so only after the claims are in condition for allowance under 102, 103 and 112. This would greatly reduce the number of cases where patentable subject matter is an issue. It would also improve the quality of the debate: just as bad cases make bad law, bad patent claims

This perception of the sequence of evaluating patent applications stems from dicta in *Diamond v. Diehr*, which stated that “Arrhenius' equation is not patentable in isolation, but when a process [implementing a fundamental principle is devised,] that process is at the very least not barred *at the threshold by § 101.*”<sup>161</sup> The court in *Bilski* apparently recognized this unnecessary handicap and clarified the proper meaning of “threshold” as used in *Diehr*. Although *Bilski* held that “[w]hether a claim is drawn to patent-eligible subject matter under § 101 is a threshold inquiry,”<sup>162</sup> it also recognized that “if the examiner deems it appropriate, she may reject the claim on any other ground(s) without addressing § 101.”<sup>163</sup> As understood by such a use, the term “threshold” is properly construed to mean a barrier that must be cleared, but not necessarily the primary or initial barrier that must be hurdled.<sup>164</sup> This understanding of patent law is supported by multiple observations.

Initially, it appears that proponents of the “§ 101 inquiry first” view have stumbled into the common logical flaw that the order of an enumerated list necessarily connotes a hierarchical valuation. This logical fallacy is reminiscent of the first year law student who argues that the rights granted under the First Amendment must necessarily bear particular significance (due to their placement at the front of the line), only to later find out that what eventually became the First Amendment was originally proposed as the third amendment.<sup>165</sup> Just as there is no reason to give the First Amendment precedence over the others on account of its placement, there is no reason to give special precedence to § 101 simply because it is numbered “first” in the Patent Act.

Further evidence for this proposition is found through an investigation into cases cited as supporting the “§ 101 inquiry first” view. For example, courts commonly rely upon *Parker v. Flook* for the proposition that a § 101 evaluation necessarily must precede any investigation under §§ 102, 103, or 112.<sup>166</sup> However, this reliance on *Flook* is misplaced. Initially, the parties in *Flook* did not brief the question of what order a

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make bad rules about what should, in the abstract, be patentable.

<sup>161</sup> *Diamond v. Diehr*, 450 U.S. 175, 188 (1981) (emphasis added).

<sup>162</sup> *In re Bilski*, 545 F.3d 943, 950 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>163</sup> *Id.* at 950 n.1.

<sup>164</sup> Merriam-Webster's Collegiate Dictionary 1302 (11th ed. 2003) (defining “threshold” as “[a] level, point, or value above which something is true or will take place and below which it is not or will not”).

<sup>165</sup> Anthony L. Fargo, *The Concerto Without the Sheet Music: Revisiting the Debate Over First Amendment Protection for Information Gathering*, 29 U. Ark. Little Rock L. Rev. 43, 47 n.39 (2006) (“What we know as the First Amendment was originally the third, but the first two proposed amendments, dealing with congressional pay and representation, were defeated.”).

<sup>166</sup> See, e.g., *In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2009) (panel decision). *Comiskey* provided:

patentability inquiry must follow.<sup>167</sup> Further, *Flook* cited no authority to support its conclusion that the § 101 inquiry must come first.<sup>168</sup>

In contrast to *Flook* (where the order of sections discussion was unnecessary to the resolution of the case), the Supreme Court has held that a § 101 evaluation need not necessarily occur prior to other patentability inquiries.<sup>169</sup> In *Dann v. Johnston*, the Supreme Court was presented with arguments pertaining to both the general question of the scope of patentable subject matter and the obviousness of the invention before it.<sup>170</sup> In determining on what grounds it would rule, the *Dann* Court stated that there was “no need to treat [the question pertaining to the scope of statutory subject matter] in this case . . . because we conclude that in any event respondent's system is unpatentable on grounds of obviousness.”<sup>171</sup> Accordingly, it would necessarily appear that the Supreme Court has recognized the propriety of conducting an obviousness or other type of patentability inquiry prior to considering § 101.

Under the flexible ordering of patent evaluation expressly authorized by *Bilski*, the USPTO and courts may first address the simplest grounds upon which to reject a patent application. Accordingly, § 101 issues are likely to be addressed only when such issues are outcome determinative or where § 101 presents the simplest grounds upon which to reject a claim. This regime is likely to avoid difficult yet artificial adjudications of patentable subject matter and to create a base of case law from which the outcome of patent prosecution and litigation can be reasonably predicted.

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Only if the requirements of § 101 are satisfied is the inventor “allowed to pass through to” the other requirements for patentability, such as novelty under § 102 and, of pertinence to this case, non-obviousness under § 103. See [*State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1372 n.2 (Fed. Cir. 1998)]. As the Supreme Court stated in *Parker v. Flook*, “[t]he obligation to determine what type of discovery is sought to be patented [so as to determine whether it is “the kind of ‘discoveries’ that the statute was enacted to protect”] must precede the determination of whether that discovery is, in fact, new or obvious.” 437 U.S. 584, 593 (1978) (emphases added).

*Id.* at 973; see also *Merges & Duffy, supra* note 157, at 22.

It is of note that *Comiskey* (Jan. 26, 2009) was decided after *Bilski* (Oct. 30, 2008). However, to the extent that *Comiskey* and *Bilski* are not consistent with regard to whether a § 101 inquiry must be conducted prior to other evaluations, *Bilski* is binding precedent because Federal Circuit rules provide that “only the court en banc may overrule a binding precedent” (and *Comiskey* was a panel decision, while *Bilski* was an en banc decision). Fed. Cir. R. 35(a)(1).

<sup>167</sup> *Merges & Duffy, supra* note 157, at 22.

<sup>168</sup> See *Parker v. Flook*, 437 U.S. 584, 593 (1978).

<sup>169</sup> *Dann v. Johnston*, 425 U.S. 219, 220 (1976); see also Robert Patrick Merges & John Fitzgerald Duffy, *Patent Law & Policy: Cases & Materials* 165 (3d ed. 2002).

<sup>170</sup> *Dann*, 425 U.S. at 220.

<sup>171</sup> *Id.*

### a. Application of the Machine or Transformation Test

Beyond undercutting the § 101 inquiry first rule, if *Bilski* is to encourage innovation by enhancing the predictability of patent law, its Machine or Transformation test must be applied with reference to objective standards. These necessary standards are provided through the text of the *Bilski* opinion and related federal case law.

#### 1. The Scope of the Machine or Transformation Test

While *Bilski* does not elaborate on the exact scope of the Machine or Transformation test, the Federal Circuit instructs that “a careful analysis of [Supreme Court precedent] and the subsequent jurisprudence of this court applying those decisions . . . informs our understanding of the Court's machine-or-transformation test.”<sup>172</sup> As such, an evaluation of prior precedent is informative as to the scope and application of the Machine or Transformation test. Accordingly, such an evaluation should allow both inventors and practitioners to predictably define what constitutes a machine or transformation for the purposes of demarcating the ambit of § 101 with regard to patentable processes.

#### a. Transformative Processes

The federal judiciary has previously elaborated on the scope of transformative processes pertinent to the Machine or Transformation test. In *Benson*, the U.S. Supreme Court proffered multiple examples of what constitutes a transformative process for a § 101 inquiry: the manufacturing of an end product via chemical processing,<sup>173</sup> the mechanical processing of metals,<sup>174</sup> and the mechanical heating of incubating eggs (where the transformation was the development and eventual hatching of the eggs).<sup>175</sup> Subsequently, the Federal Circuit has developed the definition of a transformative process to include the physical transformation of electronic signals, seismic waves, and any other physical transformation not apparent to the naked eye.<sup>176</sup>

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<sup>172</sup> *In re Bilski*, 545 F.3d 943, 954 n.7 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>173</sup> *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972) (citing *Tilghman v. Proctor*, 102 U.S. 707, 721 (1880)).

<sup>174</sup> *Id.* (citing *Expanded Metal Co. v. Bradford*, 214 U.S. 366 (1909)).

<sup>175</sup> *Id.* at 70-71 (citing *Smith v. Snow*, 294 U.S. 1 (1935); *Waxham v. Smith*, 294 U.S. 20 (1935)).

<sup>176</sup> See Brief of Intellectual Property Owners Ass'n as Amicus Curiae in Support of Neither Party at 9, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964), 2008 WL 1842279 (“[T]he transformation need not be mechanical or chemical; the production or modification of electronic signals has long been recognized as a form of transformation of matter for the purposes of determining whether a

An example of the Court's willingness to find physical transformations present despite the fact that they are not apparent to the naked eye, in *Arrhythmia Research* the Federal Circuit found a process to be transformative because it embodied a method by which the heart's electrical signals could be transformed into a digital format that could be used to determine the current level of risk associated with the patient's heart.<sup>177</sup> The court emphasized that "[t]he view that 'there is nothing necessarily physical about 'signals'' is incorrect."<sup>178</sup> The theme that a transformation of a signal invisible to the naked eye constituted a physical change was further developed in *In re Taner*, which held that the conversion of seismic signals into a different form constituted a physical transformation within the scope of § 101.<sup>179</sup> Lastly, in *In re Abele*, the modification of X-ray data to produce a better CAT-scan display was sufficient to warrant patentability.<sup>180</sup> This theme of physical transformations that are not apparent to the naked eye was further developed during the court's discussion in *Bilski*.

In its initial evaluation of whether the Application presented patentable subject matter, *Bilski* established a dichotomy between "public or private legal obligations or relationships, business risks, or other such abstractions" (which cannot satisfy the Machine or Transformation test) and "physical objects or substances [or objects which are] representative of physical objects or substances" (which will satisfy the Machine or Transformation test).<sup>181</sup> Thereafter, the court noted that *Bilski* asserted that "the process as claimed encompasses the exchange of only options, *which are simply legal rights*" and therefore, cannot satisfy the Machine or Transformation test.<sup>182</sup> Thus, *Bilski* established that any change in a legal obligation was insufficient to constitute a transformation for the purposes of § 101.<sup>183</sup>

claimed process is patent-eligible subject matter.").

<sup>177</sup> *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059 (Fed. Cir. 1992) (In applying the Freeman-Walter-Abele standard, the Court stated that "[the] claimed steps of 'converting', 'applying', 'determining', and 'comparing' are physical process steps that transform one physical, electrical signal into another.").

<sup>178</sup> *Id.* (citing *In re Taner*, 681 F.2d 787, 790 (C.C.P.A. 1982)).

<sup>179</sup> 681 F.2d at 790-91 ("[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.") (quoting *Diamond v. Diehr*, 450 U.S. 175, 192 (1981)).

<sup>180</sup> 684 F.2d 902, 908-09 (C.C.P.A. 1982) (overruled on other grounds).

<sup>181</sup> *In re Bilski*, 545 F.3d 943, 963 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>182</sup> *Id.* at 964 (emphasis added).

<sup>183</sup> *Bilski* raised one notable question within the bounds of this discussion. Early in the opinion, the Federal Circuit stated, "[i]mportantly, however, the claim [at issue] is not limited to transactions involving actual commodities, and the application discloses that the recited

As such, it becomes apparent that one can expect the Machine or Transformation test to be satisfied by processes that include a *physical* transformation, even if the transformation is invisible to the naked eye (e.g., the transformation of an electrical signal). In contrast, pursuant to *Bilski*, it is equally apparent that a transformation that does not include a physical change (e.g., a change in legal standing) is not sufficient to satisfy the Machine or Transformation standard.

### b. Machine Implemented Processes

The machine requirement from *Bilski* is derived from the Supreme Court's statement in *Benson* that a process that is "tied to a particular machine or apparatus" represents patentable subject matter.<sup>184</sup> The machine requirement has been described as necessitating that an applicant "recite structure in the claims."<sup>185</sup> This standard has been restricted, as discussed *infra* in Part V.b.ii.2 in three important ways to prevent patentability by the mere: (1) recitation of machine, (2) use of a machine as a system for data gathering, and (3) recitation of extra-solution activity.

One particular limitation on *Bilski*'s machine requirement is of note. A patent applicant will not be allowed to artfully draft an application such that it technically claims a machine invention (for the purpose of § 101) where the invention, in reality, is a process.<sup>186</sup> To this end, claims reciting means-plus language should be construed "as process claims if there is no supporting structure in the written description that corresponds to the claimed 'means' elements."<sup>187</sup>

## 2. Meaningful Limits on a Claim's Scope

Aside from the basic statement of the Machine or Transformation test, *Bilski* held that a transformation or apparatus that satisfies the § 101 test must also "impose meaningful limits on the claim's scope to impart patent-eligibility."<sup>188</sup> The requirement was later invoked in *Bilski* to necessitate that a transformation be "central to the purpose

transactions may simply involve options . . . ." *Id.* at 950. Thus, one is left to question whether a trading scheme that required the trading of physical goods would be patentable. Such a distinction would seem to be somewhat artificial. Moreover, even if the Application did require the trading of physical wares, would not the application then merely recite the changing of (non-physical) ownership rights in physical wares? It would still appear that no *physical* change is present in that transaction either.

<sup>184</sup> *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

<sup>185</sup> Michael Melton, *Patents as Public Notice, or How to Read a Patent Part II—Prosecution History*, 479 PLI/Pat 453, 459 (1997).

<sup>186</sup> *Arshal v. United States*, 621 F.2d 421, 428 (Ct. Cl. 1980).

<sup>187</sup> *State St. Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1371 (Fed. Cir. 1998), *abrogated on other grounds by In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008) (en banc), *cert. granted sub nom. Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

of the claimed process” to satisfy the Machine or Transformation test.<sup>189</sup> This language was included in *Bilski* to preclude artful drafting of patent claims to allow a particular claim to fall within the scope of § 101.<sup>190</sup>

By way of example, if the Application’s claims had been written to specifically require that the hedging transactions be performed on a computer, it would appear that, at first blush, the claims would fall within § 101 by requiring the use of a physical apparatus (the computer) during the performance of the hedging operation.<sup>191</sup> It would seem illogical to deem *Bilski*’s hedging scheme unpatentable as originally written, but find it satisfies § 101 if it were to recite the (potentially superfluous) requirement that a computer be utilized. To allow a claim to fall within the scope of § 101 through such artifice would “exalt form over substance.”<sup>192</sup>

Three basic premises of patent law have been recognized to avoid such artful drafting: (1) a restriction on the field of an invention’s use cannot be utilized to avoid a § 101 rejection,<sup>193</sup> (2) data gathering is insufficient to bring non-patentable subject matter into the ambit of § 101,<sup>194</sup> and (3) insignificant extra-solution activity is insufficient, by itself, to bring an invention into the scope of statutory subject matter.<sup>195</sup> Beyond these three restrictions, the *Bilski* court expressly left open the question of “whether or when recitation of a computer suffices to tie a process claim to a particular machine.”<sup>196</sup> Based upon the logic set forth in the aforementioned rules to avoid artful drafting, it can reasonably be expected that the judiciary will hold that “meaningful limits on [a] claim’s scope” are not, per se, imparted by a simple recitation that the invention can be (or is) carried out on a computer or machine.<sup>197</sup>

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<sup>188</sup> *Bilski*, 545 F.3d at 961.

<sup>189</sup> *Id.* at 962.

<sup>190</sup> See *Diamond v. Diehr*, 450 U.S. 175, 192 (1981) (warning that a “competent draftsman” could draft claims that would evade exclusions from § 101). It is of note that *Bilski* also required that “the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity.” *Bilski*, 545 F.3d at 962. This requirement was stated as being distinct from the “meaningful limits” inquiry. *Id.* However, since both requirements seek to avoid artful drafting of patent claims to avoid § 101 rejections, this Article will address the elements as a single inquiry.

<sup>191</sup> See *Bilski*, 545 F.3d at 962 (noting that the Application’s claims *do not* include a physical apparatus-type limitation).

<sup>192</sup> *In re Schrader*, 22 F.3d 290, 294 (Fed. Cir. 1994).

<sup>193</sup> See *Diehr*, 450 U.S. at 191.

<sup>194</sup> *In re Meyer*, 688 F.2d 789, 794 (C.C.P.A. 1982).

<sup>195</sup> *Schrader*, 22 F.3d at 294.

<sup>196</sup> *In re Bilski*, 545 F.3d 943, 962 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

### a. Field Restrictions

The Supreme Court in *Diehr* found that the inclusion of a field-of-use limitation<sup>198</sup> was insufficient, standing alone, to bring unpatentable fundamental principles—such as a law of nature or an abstract idea—within the ambit of § 101.<sup>199</sup> This basic rule was further expounded upon in *Parker v. Flook*, where the Court recognized that the Pythagorean Theorem could not be brought into the scope of § 101 though artful drafting.<sup>200</sup> Specifically, including a claim limitation that this mathematical equation could be used within a specific field of technology would not suffice to bring the Pythagorean Theorem out of the realm of fundamental principles and into the realm of a patentable process.<sup>201</sup>

### b. Data Gathering

The act of data collection is an insufficient physical limitation to establish a statutory application of an unpatentable fundamental principle.<sup>202</sup> The Federal Circuit, in *In re Grams*, explained this rule as it applies to a non-statutory mathematical algorithm.<sup>203</sup> The court reasoned that if the mere input of data were sufficient to establish a mathematical algorithm as statutory subject matter, then all mathematical algorithms would be within the ambit of § 101, as all algorithms require inputting data.<sup>204</sup> Such could not be the case because if it were, the exclusion of mathematical algorithms from the scope of § 101 would be completely defeated. Further, the court stated that if the input of

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<sup>197</sup> See generally Brief for Consumers Union, Electric Frontier Foundation, and Public Knowledge as Amici Curiae Supporting Appellants at 16-17, *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964), 2008 WL 1842260 (arguing that, in determining whether an invention falls within § 101, courts should consider: “Is the technology claimed merely that the process is capable of being carried out on a machine?” and “Is the technology claimed merely that the process is actually carried out by a machine?”) (citing *Gottschalk v. Benson*, 409 U.S. 63 (1972)).

<sup>198</sup> A field-of-use limitation is a claim limitation stating that an invention is to be used within a particular field of technology.

<sup>199</sup> *Diamond v. Diehr*, 450 U.S. 175, 191 (1981) (Mathematical algorithms cannot be patented and this “principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.”) (citing *Parker v. Flook*, 437 U.S. 584 (1978)).

<sup>200</sup> 437 U.S. at 590.

<sup>201</sup> *Id.*

<sup>202</sup> *In re Meyer*, 668 F.2d 789, 794 (C.C.P.A. 1982).

<sup>203</sup> 888 F.2d 835, 839-40 (Fed. Cir. 1989). Note that a mathematical algorithm is an abstract idea (a fundamental principle).

<sup>204</sup> *Id.*

data is not sufficient to establish patentability, then the “old and necessary antecedent steps of establishing values for the variables in the equation cannot convert the unpatentable method to patentable subject matter [either].”<sup>205</sup>

A second example of the exclusion of data gathering steps from the category of meaningful limitations that may render a process patentable is found in the 2004 Federal Circuit case of *Metabolite Laboratories v. Laboratory Corp. of America Holdings*.<sup>206</sup> Claim 13 of the challenged patent in *Metabolite* sought protection of a method to detect cobalamin or folate deficiencies by correlating these shortages with an elevated homocysteine level.<sup>207</sup> The challenged claim sought protection of:

A method for detecting a deficiency of cobalamin or folate in warm-blooded animals comprising the steps of:

assaying a body fluid for an elevated level of total homocysteine; and  
correlating an elevated level of total homocysteine in said body fluid with  
a deficiency of cobalamin or folate.<sup>208</sup>

Accordingly, the application attempted to claim a method that consisted of two steps: (1) taking a sample of body fluid and testing it for elevated homocysteine; and (2) correlating an elevated level with a vitamin deficiency. Such an invention would not be patentable under the Machine or Transformation test.

*Bilski* provides that the transformation or apparatus must also “impose meaningful limits on the claim’s scope to impart patent-eligibility.”<sup>209</sup> Accordingly, a proper manner of approaching the *Metabolite* claim is to initially determine which claimed step involved a machine or transformation. Claim 13’s first step could satisfy the Machine or Transformation test through the use of the device necessary to initially test the sample. However, the mere correlation required by the second step is unlikely to satisfy this standard. Accordingly, the next question is whether the assaying step would provide a meaningful limit on the claim. It would not.

As described above, data gathering is implicit in the application of any correlation (e.g., a mathematical algorithm or a natural law). Such is the nature of the sampling and testing of the bodily fluid in this claim. The sole purpose of the testing is to provide raw data (the homocysteine level) such that it can be applied to a correlation (the connection of elevated homocysteine levels and vitamin deficiencies). Thus, since the sole process step that provides for a machine or transformation is merely a data-gathering step that

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<sup>205</sup> *Id.*

<sup>206</sup> 370 F.3d 1354.

<sup>207</sup> *Id.* at 1358-59.

<sup>208</sup> *Id.*

<sup>209</sup> *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

imparts no substantial limitations on the claim, this claim would fail under the Machine or Transformation standard.<sup>210</sup>

### c. Insignificant Extra-Solution Activity

The Supreme Court has said that “insignificant post-solution activity will not transform an unpatentable principle into a patentable process.”<sup>211</sup> This prohibition has most commonly been applied as a proscription on granting patents where the application comprises a mathematical algorithm with some secondary physical limitation or activity attached to the claim in hopes of entering the realm of statutory subject matter.<sup>212</sup> For example, the recording of data resulting from the application of a mathematical algorithm has been deemed insufficient to bring an unpatentable invention into the ambit of § 101, despite the fact that such a recording requires a physical apparatus.<sup>213</sup> Such secondary physical activity is “implicit in any application of a mathematical algorithm” and thus is insufficient to make an invention patentable.<sup>214</sup>

### d. The Computer as the Sole Machine or Transformation

The court in *Bilski* expressly left open the question of “whether or when recitation of a computer suffices to tie a process claim to a particular machine.”<sup>215</sup> As is common with the above-described case law limitations on § 101, this question drives at the basic tenet that a patent applicant should not be able to deny the use of a fundamental principle to the public by the mere artful drafting of a claim to technically fall into a § 101 category.<sup>216</sup>

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<sup>210</sup> Unfortunately, this result cannot be compared to a ruling on the patentability of this claim because the Supreme Court dismissed the petition for certiorari in this case prior to ruling on the § 101 issue and no underlying court ruled on this issue either. *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 124 (2006) (per curiam).

<sup>211</sup> *Diamond v. Diehr*, 450 U.S. 175, 191-92 (1981) (citing *Parker v. Flook*, 437 U.S. 584 (1978)).

<sup>212</sup> See, e.g., *In re Schrader*, 22 F.3d 290, 294 (Fed. Cir. 1994) (noting that most insignificant activity is implicit in the claimed invention).

<sup>213</sup> *In re Walter*, 618 F.2d 758, 770 (C.C.P.A. 1980) (overruled on other grounds).

<sup>214</sup> *Schrader*, 22 F.3d at 294.

<sup>215</sup> *In re Bilski*, 545 F.3d 943, 962 (Fed. Cir. 2008) (en banc), cert. granted sub nom. *Bilski v. Doll*, 129 S.Ct. 2735 (June 1, 2009) (No. 08-964).

<sup>216</sup> *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) (“[A] principle is not patentable. A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”).

This concern is apparent in the Supreme Court's *Benson* decision. Benson's eighth claim specifically required the use of a reentrant shift register<sup>217</sup>—a piece of computer hardware used at the time of Benson's invention.<sup>218</sup> Despite this recitation of hardware, the Court still rejected Benson's eighth claim.<sup>219</sup> In finding the invention outside of the scope of § 101, *Benson* deemed that a patent on this computer-implemented mathematical algorithm would, in essence, "be a patent on the algorithm itself" and would "wholly pre-empt the mathematical formula . . . ."<sup>220</sup>

Accordingly, the necessary conclusion from *Benson* is that the recitation of use of a computer is not sufficient to create a patentable process. This conclusion is consistent with the judicially-imposed limitation that a process does not become statutory by reciting some insignificant step or apparatus outside the newly created invention (i.e., post-solution activity, data gathering steps, or field restrictions). It would be logically inconsistent to say that a process does not become statutory through the inclusion of some insignificant post-solution activity, but to find that a process is patentable simply because it is recited that the process is (or may be) conducted on a computer (a limitation that could be completely insignificant).

Thus, in determining whether a process is statutory, a court is likely to address whether the sole transformation or apparatus found in the invention involves the tangential use of a computer. If the computer use were merely tangential, then, pursuant to *Benson*, the Court or the USPTO would be expected to reject the claim, rather than allowing a patent to issue on a fundamental principle through artful drafting.<sup>221</sup>

The distinction between the tangential use of a computer and the use of a computer that would impart substantial limitations on a claim, such that it would satisfy the Machine or Implementation test, began to take shape shortly after the issuance of the *Bilski* opinion. In *Ex Parte Halligan*, the BPAI considered the patentability of a "programmed computer method" employed to identify trade secrets within a pool of data containing trade secrets and other information.<sup>222</sup> In determining if claim 119 contained

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<sup>217</sup> *Gottschalk v. Benson*, 409 U.S. 63, 73 (1972).

<sup>218</sup> Gregory A. Stobbs, *Business Method Patents* 47 (2001).

<sup>219</sup> *Benson*, 409 U.S. at 71.

<sup>220</sup> *Id.* at 71-72.

<sup>221</sup> *See id.*

<sup>222</sup> 89 U.S.P.Q.2d 1355, 1356-57 (B.P.A.I. 2008). Claim 119, the claim at issue, sought protection for:

A programmed computer method based upon the six factors of a trade secret from the First Restatement of Torts for identifying trade secrets within a plurality of potential trade secrets of a business, where each of the plurality of potential trade secrets comprise information, said method implemented by the programmed computer to effect the following steps:

a) the programmed computer providing a predetermined criteria for evaluating a potential trade secret of the plurality of potential trade secrets under each of the six factors of a trade secret

patentable information, the BPAI evaluated whether the singular use of hardware within the method (a recitation that the process utilized a programmed computer) imposed a substantial limitation on the claim such that it would constitute patentable subject matter.<sup>223</sup> In determining that the claim was not patentable, the BPAI noted that the recitation of the computer “adds nothing more than a general purpose computer that has been programmed in an unspecific manner to implement the functional steps recited in the claims.”<sup>224</sup> It would appear that the BPAI drew a line between computers that are “programmed in an unspecific manner” and specifically programmed computers, such as those utilizing specific software. Therefore, it seems that the use of a computer will be deemed merely tangential when no specifics of its manner of use are described or necessary. In contrast, a method that exploits specific programming to bring about a specific result would presumably constitute a substantial limitation that would satisfy the Machine or Transformation test.

As described above, *Bilski*'s Machine or Transformation test rests upon a significant body of precedent. Accordingly, *Bilski*'s future application should be reasonably predictable. This predictability can be expected to further research and development, thus promoting innovation.

## VI. CONCLUSION

The scope of patentable processes under § 101 has undergone various iterations throughout the history of the U.S. patent system. Initial limitations were presented by the judicial creation of negative rules proscribing the patenting of fundamental principles, such as abstract ideas and laws of nature. However, due to difficulties in consistent application of these proscriptions, § 101 jurisprudence continued to evolve into positive statements of what constitute patentable processes. This constant evolution has reached

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from the First Restatement of Torts, said six factors including (1) the extent to which the information is known outside of the business; (2) the extent to which it is known by employees and others involved in the business; (3) the extent of measures taken by the business to guard the secrecy of the information; (4) the value of the information to the business and its competitors; (5) the amount of time, effort or money expended by the business in developing the information and (6) the ease or difficulty with which the information could be properly acquired or duplicated by others;

b) the programmed computer receiving a numerical score value for the potential trade secret under the predetermined criteria for each of the six factors;

c) the programmed computer calculating a metric from the received numerical score values under the six factors; and

d) the programmed computer determining that the potential trade secret is a trade secret when the calculated metric exceeds a predetermined threshold value.

<sup>223</sup> *Id.* at 1364-65. Note that the claim was not argued to involve a physical transformation.

<sup>224</sup> *Id.* at 1365.

its current state with the creation of *Bilski's* Machine or Transformation test. This test presents a positive statement of what is patentable *and* describes the full ambit of statutory processes under § 101: a patentable process is either tied to a particular machine or apparatus or transforms a particular article into a different state or thing.

*Bilski's* Machine or Transformation test is a proper synthesis of case law addressing the scope of § 101. First, *Bilski's* test is a necessary alternative to the highly criticized test set forth in *State Street* (the Useful, Concrete, and Tangible test). Second, the Machine or Transformation test is consistent with Supreme Court precedent pertaining to the scope of § 101. Finally, *Bilski* furthers the basic goal of patent law, incentivizing innovation, by enhancing the predictability of the application of § 101, which encourages investment in research and development. In light of these considerations, *Bilski's* Machine or Transformation test is a proper standard for the scope of patentable processes under § 101.