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Ultramercial and Prometheus: How Transformation Analysis After Bilski Is Changing to Accommodate Modern Technologies

ULTRAMERCIAL AND PROMETHEUS:

HOW TRANSFORMATION ANALYSIS AFTER BILSKI IS CHANGING TO ACCOMMODATE MODERN TECHNOLOGIES

by Sarah Beth Smith¹

I. INTRODUCTION

In *Bilski v. Kappos*,² the Supreme Court held the Federal Circuit's "machine-or-transformation test" as a useful, but not exclusive, tool in determining patent eligibility under §101 of the Patent Act.³ Although the test has been criticized as being unclear and inappropriate in some situations,⁴ the machine-or-transformation test does provide some concrete and sensible framework for courts to determine the vague and ethereal issue of whether

an invention is an abstract idea, law of nature, or natural phenomenon.⁵ Moreover, the test seems to provide certainty and consistency in interpreting patent eligibility of processes under §101, with a few exceptions.⁶ This paper summarizes how federal courts and the Board of Patent Appeals and Interferences (BPAI) have interpreted the "transformation" prong of the machine-or-transformation test after *Bilski* and examines its limitations in *Ultramercial* and *Prometheus*.

II. PATENT ELIGIBILITY AND THE MACHINE-OR-TRANSFORMATION TEST

Section §101 of the Patent Act explains what constitutes eligible subject matter for patent protection. "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title."⁷ Courts have said that they will not read in limitations into this section that Congress did

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2. 130 S. Ct. 3218 (2010).

3. *Id.* at 3227 ("This Court's precedents establish that the machine-or-transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101. The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible 'process.'").

4. See, e.g., Mark A. Lemley et. al., *Life After Bilski*, 63 STAN. L. REV. 1315, 1324, 1338 (2011) ("Application of the transformation prong of the machine-or-transformation test produces even more bizarre results. What does it mean to transform something 'to another state or thing'? The problem is that the machine-or-transformation test simply asks the wrong question. For example, in *Comiskey*, the arbitration process was unpatentable not because it lacked a computer, but because the claim embraced countless arbitration arrangements untied to any practical application of their idea. The application claimed too much."); Matthew Moore, In Re *Bilski* and the "Machine-or-Transformation" Test: *Receding Boundaries for Patent-Eligible Subject Matter*, 2010 DUKE L. & TECH. REV. i, 7 (2010) ("While the purpose of the machine-or-transformation test is clear—the prevention of pre-emption of fundamental principles—the current doctrine leaves many important questions unanswered.") (citations omitted); Brian P. Murphy & Daniel P. Murphy, *Bilski's "Machine-or-Transformation" Test: Uncertain Prognosis for Diagnostic Methods and Personalized Medicine Patents*, 20 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 755, 774–75 (2010) ("In our view, the mandatory machine-or-transformation test caused the court to strain unnecessarily to try to fit a square peg into a round hole by arguing that the claims are methods of treatment. . . . It would have been simpler and more effective had the court applied the analysis required by the Fundamental Principles Exception.").

5. See, e.g., *Bilski*, 130 S. Ct. at 3218, 3230–31; *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317, 1319–20, 1323–24 (Fed. Cir. 2012) (finding that the patent failed the machine-or-transformation test and was an abstract idea ineligible for patentability).

6. Compare *Fort Props., Inc.*, 671 F.3d at 1319–20, 1323–24 (holding the patent failed the machine-or-transformation test and was an abstract idea), *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (holding the patent failed the machine-or-transformation test and was an abstract idea), and *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 768 F. Supp. 2d 221, 233–35 (D.D.C. 2011), *rev'd*, 685 F.3d 1341 (Fed. Cir. 2012), *reh'g en banc granted*, 2012 WL 4784336 (Fed. Cir. 2012) (holding the patent failed the machine-or-transformation test and was an abstract idea), *with Mayo Collaborative Servs. v. Prometheus Lab., Inc.*, 132 S. Ct. 1289, 1296, 1303, 1305 (2012) (holding the patent passed the machine-or-transformation test, but was merely a law of nature), and *Ultramercial, LLC v. Hulu, LLC*, CV 09-06918 R GK, 2010 WL 3360098, at *1 (C.D. Cal. Aug. 13, 2010) *appeal reinstated*, 413 F. App'x 276 (Fed. Cir. 2011), *rev'd*, 657 F.3d 1323, 1330 (Fed. Cir. 2011) (holding the patent failed the machine-or-transformation test, but was not an abstract idea).

7. 35 U.S.C. § 101 (2006).

not express,⁸ but they have also found that there are three categories of subject matter excluded from patentability: abstract ideas, laws of nature, and natural phenomena.⁹ However, all inventions operate via natural laws and phenomena and emanate from abstract ideas, so courts have been forced to set a line somewhere.¹⁰ Moreover, the Court in *Diamond v. Chakrabarty*¹¹ stated that the meaning of the term “process” in §101 is narrower than its ordinary meaning because of the inability to patent fundamental principles¹² that are supposed to be “free to all men and reserved exclusively to none.”¹³

Three Supreme Court decisions in the 1970s and 1980s represent instrumental precedent on how courts view subject matter eligibility today.¹⁴ In *Gottschalk v. Benson*,¹⁵ the Court deemed a process that converted binary coded decimal numerals to pure binary code using a general-purpose digital computer patent ineligible because it would, in effect, patent an abstract idea and preempt all uses of the formula, even though it qualified as novel and nonobvious.¹⁶ The Court noted, “The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself.”¹⁷

In *Parker v. Flook*,¹⁸ the Court also deemed a method of updating an alarm limit in a catalytic converter using an algorithm patent ineligible.¹⁹ The Court admitted that the patent covered a “broad range of potential uses of the method . . .

[but not] every conceivable application of the formula.”²⁰ Although this method did not wholly preempt all uses of the algorithm like in *Benson*, the “post-solution” activity of adjusting the alarm limit after performing the formula was not sufficient to transform the process from unpatentable to patentable.²¹ The Court noted that the patent application in *Benson* did not explain how to select the variables used in the formula, disclose the chemical processes at work, or divulge the means of setting off or adjusting the alarm.²² The fact that the application only disclosed a method for updating an alarm limit was important in the Court’s decision.²³ When discussing respondent’s argument that the Court impermissibly intertwined §101 with other requirements for patentability, the Court stated that a process implementing a principle in a particular application does not automatically qualify as patent eligible.²⁴ The Court further noted that it did not dissect the components of the patent, but instead it assumed that the mathematical algorithm resided in the prior art so that the process as a whole included no patentable invention.²⁵

However, the Court found that the method for curing rubber using a mathematical formula was patent-eligible in *Diamond v. Diehr*.²⁶ The patent application disclosed the use of the well-known Arrhenius equation for use in the process of rubber curing, which the Court determined was not “preempt[ing] the use of that equation . . . rather, they seek only to foreclose from others the use of that equation in conjunction with all of the other steps in their claimed process.”²⁷ The Court noted the inappropriateness of dissecting the claims into old and new elements and then ignoring old elements in the §101 analysis. It also warned lower courts not to confuse the subject matter inquiry with novelty and non-obviousness, the requirements of patentability.²⁸

In 2008, the Court of Appeals for the Federal Circuit declared that the “machine-or-transformation test,” which had its origins in *Benson* and *Diehr*,²⁹

8. *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980).

9. *Diamond v. Diehr*, 450 U.S. 175, 185 (1981) (“This Court has undoubtedly recognized limits to § 101 and every discovery is not embraced within the statutory terms. Excluded from such patent protection are laws of nature, natural phenomena, and abstract ideas. ‘An idea of itself 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.’”) (citations omitted).

10. *See id.* (finding a principal unpatentable).

11. 447 U.S. 303 (1980).

12. *See Parker v. Flook*, 437 U.S. 584, 588–89 (1978).

13. *Chakrabarty*, 447 U.S. at 309 (quoting *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948)).

14. *See, e.g., Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1298–1302 (2012).

15. 409 U.S. 63 (1972).

16. *Id.* at 71–72.

17. *Id.*

18. *Parker v. Flook*, 437 U.S. 584, 588–89 (1978)

19. *Id.* at 584.

20. *Id.* at 586.

21. *Id.* at 590–91.

22. *Id.* at 586.

23. *Id.* at 594–95.

24. *Parker*, 437 U.S. at 593.

25. *Id.* at 584, 592.

26. 450 U.S. 175 (1981).

27. *Id.* at 187.

28. *Id.* at 188.

29. *Id.* at 184 (“Recently, in *Gottschalk v. Benson*, we repeated the above definition recited in *Cochrane v. Deener*,

was the sole test for determining patent eligibility under §101 in *In re Bilski*.³⁰ The two-pronged machine-or-transformation test determines that a patent can be eligible for patenting under §101 if (1) the claim is tied to a particular machine, or (2) the claim transforms an article into a different state or thing.³¹ The patent at issue in *In re Bilski* was a method for hedging risk in commodities trading, particularly in energy.³² The Federal Circuit held the patent ineligible because the claim did not transform an article and the applicants conceded that the process was not limited to a specific machine or apparatus.³³ In analyzing the first prong of the test, the Federal Circuit noted, “[t]he transformation must be central to the purpose of the claimed process.”³⁴ As to what sufficiently constitutes transformable “articles,” the court held that transformations of physical objects using chemical or physical processes sufficiently pass the test and qualify as patent-eligible subject matter.³⁵ However, when explaining how to deal with electronic transformations of data, the court cited its decision in *In re Abele*,³⁶ which explained that the claim for the transformation of data representing physical objects into a visual display was sufficiently narrow to qualify as patent eligible under §101, even though the physical object underlying the data was not transformed in the process.³⁷ Moreover, the Federal Circuit stated that adding a mere data gathering step to a claim dealing with electronic transformation of data could not make it patent eligible.³⁸

adding: ‘Transformation and reduction of an article ‘to a different state or thing’ is the clue to the patentability of a process claim that does not include particular machines.’”) (citations omitted).

30. *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008).

31. *Id.* at 961–62.

32. Claim 1 of the patent application reads: “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.” *Id.* at 949.

33. *Id.* at 962.

34. *Id.*

35. *Id.*

36. 684 F.2d 902 (C.C.P.A. 1982)

37. *Bilski*, 545 F.3d at 962–63.

38. *Id.* at 963.

The Federal Circuit also discarded two previous tests used in the §101 inquiry when it deemed the machine-or-transformation test the sole test for patent eligibility in *In re Bilski*.³⁹ Created and polished in three prior Federal Circuit decisions, the *Freeman-Walter-Abele* test examined patent eligibility through a two-step process.⁴⁰ First, a court would determine whether the claim listed an algorithm falling within the meaning of *Benson*.⁴¹ If so, the court would then move to the second step and consider whether the algorithm is “applied in any manner to physical elements or process steps.”⁴² The *State Street* test, first described in *Alappat*, inquired whether the process created a “useful, concrete, and tangible result.”⁴³ The Federal Circuit deemed both tests inadequate in the §101 subject matter inquiry.⁴⁴

The Supreme Court granted certiorari in *In re Bilski* in 2010 and affirmed the holding, but for different reasons.⁴⁵ The Court stated that the machine-or-transformation test did not represent the sole test for patent eligibility under §101, but rather a “useful and important clue.”⁴⁶ Although the Court refused to reject *Bilski*’s patent due to its failure under the machine-or-transformation test⁴⁷ or a categorical exclusion of all business methods under §101,⁴⁸ the Court did hold that the claims describe an abstract concept or algorithm, which does not qualify as patent eligible under *Benson*, *Flook*, and *Diehr*.⁴⁹

III. HOW COURTS AND THE BPAI HAVE USED AND INTERPRETED THE “TRANSFORMATION” PRONG, POST-*BILSKI*

After *Bilski*, federal courts and the BPAI have continued to use the machine-or-transformation test as a “useful and important clue” in determining patent eligibility of process patents. However, many commentators have criticized the test for its lack of

39. *Id.* at 959.

40. *Id.* (citing *In re Freeman*, 573 F.2d 1237 (C.C.P.A. 1978); *In re Walter*, 618 F.2d 758 (C.C.P.A. 1980); *In re Abele*, 684 F.2d 902 (C.C.P.A. 1982)).

41. *Id.*

42. *Id.* (quoting *In re Abele*, 684 F.2d at 905–07).

43. *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994).

44. *Bilski*, 545 F.3d at 959–60.

45. *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010).

46. *Id.*

47. *Id.*

48. *Id.* at 3229.

49. *Id.* at 3231.

clarity and questioned the properness of its inquiry.⁵⁰ Court and BPAI decisions since *Bilski* have created a patchwork of cases that do provide some clarity on what “transformation” for patent eligibility requires. This section summarizes the major themes of decisions using and analyzing the “transformation” prong to determine patent eligibility after *Bilski*.

A. WHAT IS AN “ARTICLE”?

First, courts and the BPAI have closely scrutinized the arguably transformed “article” while applying the machine-or-transformation test. This paper argues that the courts and BPAI have done so properly because, as the Federal Circuit stated in *In re Bilski*, “[p]urported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances, and they are not representative of physical objects or substances.”⁵¹ In *Accenture Global Services v. Guidewire Software*,⁵² the District Court of Delaware found that “file notes,” which include “damages incurred to vehicles and real property, and/or injuries sustained by people involved in an accident,” do not represent “physical and tangible objects” because these notes may also include information like “cost of automobile repair, hours worked, or the amount of medical expenses.”⁵³ Therefore, the court held that even if this type of data transformed into a tangible visual display, the visual image would not represent particular physical articles and, therefore, did not qualify as a “transformation” under the machine-or-transformation test.⁵⁴

Similarly, the Federal Circuit held that deed-shares, i.e., legal ownership interests in property, could not be transformed through the claims disclosing an investment tool enabling tax-free exchanges of property in *Fort Properties v. American Master Lease*.⁵⁵ The Federal Circuit cited *Bilski* for the proposition that connections to the physical world—deeds, contracts, and real property—were insufficient to transform an abstract concept (a real estate investment tool)

into patentable subject matter.⁵⁶ In *CLS Bank*, the District Court of the District of Columbia also refused to find patent eligibility in claims that exchanged “obligations,” holding that obligations cannot be transformed because they are “mere abstraction[s].”⁵⁷ However, the Federal Circuit reversed on appeal, holding that the claims were sufficiently limited to a practical business concept and implemented with a computer so that the claims were patent eligible.⁵⁸ The Federal Circuit subsequently vacated the decision and granted a rehearing en banc.⁵⁹

The BPAI has likewise inquired into whether claimed articles are physical or tangible objects capable of satisfying the transformation prong of the machine-or-transformation test. For example, in *Ex Parte Weisbach*⁶⁰ appellants argued that the process of transforming a rental of a real venue seat for a game or a season into an ownership right in the real venue seat for the life of the venue constituted a valid transformation.⁶¹ The BPAI disagreed and held that the right to occupy a seat in the venue, like the deed-shares in *Fort Properties*, was an abstract concept representing legal ownership interests.⁶² Therefore, the ownership interest was incapable of being transformed, and the invention was not patentable subject matter.⁶³ The BPAI came to a similar decision in *Ex Parte Ward*,⁶⁴ where it found that a process for playing a certain card game, which claimed both “physical playing cards” and “images of cards,” was too abstract and general to be considered an article under the transformation prong.⁶⁵ Additionally, the BPAI has found that

56. *Id.*

57. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 768 F. Supp. 2d 221, 233–35 (D.D.C. 2011), *rev’d*, 685 F.3d 1341 (Fed. Cir. 2012), *reh’g en banc granted*, 2012 WL 4784336 (Fed. Cir. 2012).

58. *Id.* at 1356.

59. *Id.*

60. No. 2010-011353, 2012 WL 760142 (B.P.A.I. Feb. 29, 2012).

61. *Id.* at *3 (“[A]t the core of the right to occupy a seat in a stadium is an abstraction, namely, the concept of ownership.”).

62. *Id.*

63. *Id.*

64. No. 2010-005500, 2010 WL 4991412 (B.P.A.I. Dec. 6, 2010).

65. *Id.* at *5 (noting that the claimed method was so sweeping as to cover “both known and unknown uses of the concept and be performed through any existing or future-devised machinery”).

50. Moore, *supra* note 4; Murphy, *supra* note 4; Lemley, *supra* note 4.

51. *In re Bilski*, 545 F.3d 943, 963 (Fed. Cir. 2008).

52. 691 F. Supp. 2d 577, 596 (D. Del. 2010).

53. *Id.* at 596.

54. *Id.*

55. *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317, 1322 (Fed. Cir. 2012).

“patient information”⁶⁶ and an “archive”⁶⁷ have not satisfied the tangible or physical article requirement

and therefore the machine-or-transformation test.⁶⁸ Nevertheless, the BPAI decided a transformation of a virtual object did occur in *Ex Parte Ng-Thow-Hing*.⁶⁹ There, the claimed process included a step for determining a value for each parameter by optimizing an objective function, which, according to the BPAI, resulted in a valid physical transformation of a virtual skeleton.⁷⁰ The dissenting opinion, however, disagreed and pointed out that a computer model, not an actual physical skeleton, was being transformed, so the application should not have passed the machine-or-transformation test.⁷¹

B. WHAT IS A “TRANSFORMATION”?

After the courts and BPAI have determined that the claimed process affects a physical “article,” they next closely examine the claims and attempt to distinguish transformations from unpatentable algorithms. Courts have found the mere transfer or copying of data to be generally insufficient to satisfy this inquiry. For example, the Central District of California found Ultramercial’s method of downloading an advertisement on the memory of the personal computer of the consumer to be a mere transfer of data from one memory disk to another.⁷² The court found that the transfer did not change the data in any way and therefore did not constitute a transformation of an article.⁷³ Similarly,

68. *Id.*; *Ex Parte Starkey*, No. 2010-007809, 2011 WL 4434501, at *4.

69. No. 2009-009095, 2011 WL 341359, at *1–2 (B.P.A.I. Feb. 1, 2011) (“[Claim 1 states: a] method for producing a subject-specific skeleton from an external measurement data set and a generic skeleton, the generic skeleton comprising a plurality of parameters, the method comprising: determining a set of parameters, wherein the set includes a first parameter related to a size of a bone segment in a first dimension and a second parameter related to a size of the bone segment in a second dimension; applying, for the set of parameters, correspondence between the external measurement data set and the generic skeleton; and determining, for each parameter in the set, a value, by optimizing an objective function.”).

70. *Id.* at *2.

71. *Id.* at *3–4 (arguing that a computer model is not a particular “article” that is being transformed into a different state).

72. *Ultramercial, LLC v. Hulu, LLC*, CV 09-06918 RGK, 2010 WL 3360098 (C.D. Cal. Aug. 13, 2010) *appeal reinstated*, 413 F. App’x 276 (Fed. Cir. 2011) *and rev’d*, 657 F.3d 1323 (Fed. Cir. 2011) *and dismissed*, 457 F. App’x 920 (Fed. Cir. 2011), *order recalled and vacated*, 413 F. App’x 276 (Fed. Cir. 2011).

73. *Id.* at *5 (explaining that “[a] method . . . wherein media product assessed by the consumer is downloaded to a memory of a personal computer of the consumer” is simply a data transfer between two computers).

66. *Ex Parte Starkey*, No. 2010-007809, 2011 WL 4434501, at *4 (B.P.A.I. Sept. 20, 2011) (explaining that transferring patient information into an application is the “mere transfer” of information, not a true transformation).

67. *Ex Parte Subbu*, No. 2010-001444, 2011 WL 6739373, at *3 (B.P.A.I. Dec. 21, 2011) (holding that an “archive” is not even a physical “article” within the meaning of § 101).

the District Court of New Jersey held that a process of extracting information from a document or filing, formatting, and transmitting it to an application program was also a “mere transfer” of data in *Glory Licensing*.⁷⁴ Furthermore, changing the files’ formatting did not sufficiently qualify as a transformation.⁷⁵ However, in *VS Technologies v. Twitter*,⁷⁶ the Eastern District of Virginia refused to grant Twitter’s motion for summary judgment on the patent eligibility of a process that formatted raw data so that knowledgeable or skilled people in a particular area could interact with others and discuss relevant topics in their particular field in real time.⁷⁷ In *VS Technologies*, the court decided that a reasonable juror could find that the formatting process transformed an article into a different state or thing.⁷⁸

Courts have also deemed collecting, comparing, analyzing, and classifying data as non-transformations. In *CyberSource v. Retail Decisions*,⁷⁹ the Federal Circuit held that the patent application failed the transformation prong of the test because the claimed process consisted of a “mere collection and organization of data regarding credit card numbers and Internet addresses.”⁸⁰ In the biotechnology context, the BPAI decided that a process of comparing gene expression profiles, listing them in clusters, and providing an output of the listing did not transform any article under the machine-or-transformation test in *Ex Parte Kelkar*.⁸¹ The Federal Circuit similarly decided that a method comparing and analyzing DNA sequences constitutes an abstract mental process and thus was

not a transformation in *Association for Molecular Pathology*.⁸² This process did not include any steps of extracting or sequencing DNA,⁸³ unlike Myriad’s other valid method claims that involved growing cells and determining cell growth rates to screen potential cancer therapies.⁸⁴

Courts and the BPAI have also viewed processes that update, store, compute, convert, decode, evaluate, and select data as lacking a transformation because the underlying data or information is, again, left unchanged. For example, the process of using a claim “namespace” or “simplified scheme” to decode an XML-based document did not constitute a transformation in *Ex Parte Heuer*.⁸⁵ Nor did a process claim where content from one forum resource to another discussion forum resource qualify as a transformation in *Ex Parte Banatwala*.⁸⁶ The BPAI characterized this as merely copying data from one place to another.⁸⁷ Additionally, in *Ex Parte Ward*,⁸⁸ the BPAI held that changing the position or location of playing cards was an insufficient transformation for patent eligibility, if the change was a transformation at all.⁸⁹ Similarly, in *Ex Parte Caccavale*,⁹⁰ the patent application was aimed at “collect[ing] performance parameters from the Internet servers in order to determine a measure of system performance, and . . . trigger[ing] an alarm when the measure of system performance indicates a presence of system degradation.”⁹¹ The BPAI boiled this down to merely statistical analysis computations, which did not constitute

74. *Glory Licensing LLC v. Toys R Us, Inc.*, CIV. 09-4252 FSH, 2011 WL 1870591, at *4 (D.N.J. May 16, 2011) (explaining that the transfer of a file is not a “transformation” equivalent to turning “raw data into a particular visual depiction of a physical object on a display”).

75. *Id.*

76. 2:11CV43, 2011 WL 4744911 (E.D. Va. Oct. 5, 2011).

77. *Id.* at *46 (E.D. Va. Oct. 5, 2011) (suggesting that when the transfer of data allows a user to *do* something new with the data, i.e. “[create] the ability for people to interact in real time,” data is likely transformed for the purposes of § 101).

78. *Id.* at *5–6.

79. 654 F.3d 1366 (Fed. Cir. 2011).

80. *Id.* at 1370 (“The district court found that claim 3 fails to meet either prong of the machine-or-transformation test. . . . We agree. As the district court correctly held, the method of claim 3 simply requires one to “obtain and compare intangible data pertinent to business risks. . . . The mere collection and organization of data regarding credit card numbers and Internet addresses is insufficient to meet the transformation prong of the test.”) (citations omitted).

81. *Ex Parte Kelkar*, No. 2009-004635, 2010 WL 3768175, at *2 (B.P.A.I. Sept. 24, 2010).

82. *Ass’n for Molecular Pathology v. U.S. Patent & Trademark Office*, 653 F.3d 1329, 1355–56 (Fed. Cir. 2011), *reh’g denied* (Sept. 13, 2011), *reh’g denied* (Sept. 16, 2011), *cert. granted, judgment vacated sub nom Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 132 S. Ct. 1794 (2012) *opinion vacated, appeal reinstated*, 2010-1406, 2012 WL 1500104, at *1 (Fed. Cir. Apr. 30, 2012) *aff’d* 386 F.3d 1303, 1334–35 (Fed. Cir. 2012).

83. *Id.* at 1356.

84. *Id.* at 1357–58 (explaining that the additional step of “growing” cells, and “determining” growth rates were physical manipulations central to the claimed process).

85. *Ex Parte Heuer*, No. 2009–004590, 2010 WL 3072973, at *8 (B.P.A.I. Aug. 4, 2010).

86. No. 2009–006785, 2010 WL 4250887 (B.P.A.I. Oct. 18, 2010).

87. *Id.* at *3.

88. No. 2010–005500, 2010 WL 4991412 (B.P.A.I. Dec. 6, 2010).

89. *Id.* at *3.

90. No. 2009–006026, 2010 WL 2901727 (B.P.A.I. July 23, 2010).

91. *Id.* at *1.

a transformation for patent eligibility purposes.⁹² A process of updating a “statistical indicator” after “calculating a particular ratio” also failed to constitute a transformation in *Ex Parte Foulger*.⁹³

C. WHEN IS A TRANSFORMATION CENTRAL TO THE CLAIMS?

The machine-or-transformation test requires that the transformation be “central” to the claimed process.⁹⁴ Hence, courts have found that some transformations that occur during a claimed process are merely incidental to the claims and do not satisfy the transformation prong of the test.⁹⁵ The electronic transformation of data on a hard drive has been generally viewed as merely incidental to the claimed process and failing the transformation prong in software patent applications.⁹⁶ However, physiological and biological transformations are rarely, if ever, incidental to claims.⁹⁷ This divergence could be based on a difference in how courts approach the analysis of a software patent versus a biotechnology patent, or perhaps the difference in the nature of the patented inventions themselves—i.e., biological transformations are

seemingly more intertwined with the patented processes.

In *Ultramercial v. Hulu*, the Central District of California noted that the storing of content on the consumer’s computer memory could qualify as a transformation, although the Court was skeptical that what was stored in a computer memory changed its nature.⁹⁸ However, even if this storage qualifies as a transformation, the court found it as “merely incidental” to the claimed process of exchanging watching advertisements with no-cost media access.⁹⁹ Likewise, in *CLS Bank*, the District Court of D.C. decided that the electronic transformation of data, on a microscopic level, constituted an incidental transformation and represented an “insignificant extra-solution activity” to the claimed method of electronically adjusting bank accounts.¹⁰⁰ The court explained that the purpose of the method was to exchange obligations, not to electronically transform a hard drive or computer memory.¹⁰¹ Furthermore, if the electronic transformation was indeed sufficient to pass the machine-or-transformation test, the court worried that almost any method using a general-purpose computer or electronic device with memory could receive patent protection.¹⁰²

In the biotechnology field, courts have more readily found the biological transformation as “central” to the claim scope and, therefore, that the claimed method qualifies as patent eligible—at least before the Supreme Court decided *Prometheus*.¹⁰³ For example, in *Acorda Therapeutics v. Apotex*,¹⁰⁴ Acorda attempted to patent a method for treating patients using a specific drug.¹⁰⁵ The defendant, Apotex, argued that performing the method only required prescribing and dispensing the drug, which meant the process was merely mental.¹⁰⁶ Nevertheless, the District Court of New Jersey held that the patent required the administration of the drug, as well as “the giving, dosing, self-dosing, or taking of the composition resulting in ‘a peak plasma

92. *Id.* at *3.

93. *Ex Parte Foulger*, No. 2009-007619, 2010 WL 5244744, at *3 (B.P.A.I. Dec. 22, 2010); *see also Ex Parte Vishnubhotla*, No. 2009-008510, 2011 WL 126897, at *4 (B.P.A.I. Jan. 13, 2011) (“[U]pdating the database with data from the file of interest upon receipt of the database trigger’ [does not] qualify as a transformation of an article of manufacture in accordance with the transformation prong of the machine-or-transformation test.”); *Ex Parte Subbu*, No. 2010-001444, 2011 WL 6739373, at *4 (B.P.A.I. Dec. 21, 2011) (“[S]tep (c) does no more than ‘commit’ allocations to the archive and step (i) ‘updates’ the archive with new allocations. We are unable to discern and the Appellants do not explain in what way an ‘archive’ is transformed into a different state or thing as a result of these operations.”).

94. *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (“A claimed process is patent-eligible if it transforms an article into a different state or thing. This transformation must be central to the purpose of the claimed process.”); *In re Bilski*, 545 F.3d 943, 962 (Fed. Cir. 2008).

95. *See, e.g., Ultramercial, LLC v. Hulu, LLC*, CV 09-06918 RGK, 2010 WL 3360098, at *1 (C.D. Cal. Aug. 13, 2010), *appeal reinstated*, 413 F. App’x 276 (Fed. Cir. 2011) and *rev’d*, 657 F.3d 1323 (Fed. Cir. 2011), and *dismissed*, 457 F. App’x 920, *order recalled and vacated*, 413 F. App’x 276 (Fed. Cir. 2011) (holding that electronic transformation of data was merely incidental to the claims and therefore did not satisfy the machine-or-transformation test).

96. *Id.*

97. *See, e.g., Prometheus Labs., Inc. v. Mayo Collaborative Servs.*, 628 F.3d 1347, 1355–56 (Fed. Cir. 2010) *cert. granted*, 131 S. Ct. 3027 (U.S. 2011); *Classen Immunotherapies, Inc. v. Biogen IDEC*, 659 F.3d 1057, 1068 (Fed. Cir. 2011).

98. *Ultramercial*, 2010 WL 3360098, at *1.

99. *Id.*

100. *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 768 F. Supp. 2d 221, 235 (D.D.C. 2011).

101. *Id.* at 234–35.

102. *Id.*

103. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

104. *CIV.A. No. 07–4937 GEB-M*, 2011 WL 4074116 (D.N.J. Sept. 6, 2011).

105. *Id.* at *1.

106. *Id.*

tizanidine concentration earlier than about [four] hours from administration' or similar limitation."¹⁰⁷ Therefore, the patent required a transformation in the form of a physiological effect on the human body and satisfied the machine-or-transformation test.¹⁰⁸

The patent in *Prometheus* claimed a method comprised of: administering a particular drug to a patient, determining the metabolite level in the patient's blood, and then warning the treating physician if the drug dosage was too high or too low.¹⁰⁹ The Federal Circuit decided that this method qualified as patent eligible because the administration of the drug created a physiological transformation within the patient's body, and the determining step transformed the patient's blood sample in the process.¹¹⁰ These transformations were central to the process because without the body metabolizing the drug or the blood being analyzed, the physician could not know if the dosage was too high or too low.¹¹¹ Moreover, the Federal Circuit stated that this patent was not claiming a law of nature, i.e., a correlation between metabolite levels and toxicity, but rather a particular application of naturally occurring correlations.¹¹² However, the Supreme Court reversed this decision, as discussed below.¹¹³

In *Association for Molecular Pathology v. U.S. Patent & Trademark Office*,¹¹⁴ Myriad Genetics, Inc. claimed a process for identifying cancer therapeutics which involved growing cells with an altered cancer gene, with or without a potential cancer therapeutic, followed by determining and comparing the cells' growth rate.¹¹⁵ The Federal Circuit found that this process physically manipulated the cells. Moreover, this manipulation was necessary to identify different substances potential use as therapeutic agents, making the

physical transformation central to the claim scope.¹¹⁶ The court added that the patent was not claiming a scientific principle because it was tied to specific types of cells, cancer genes, and therapeutics.¹¹⁷

Finally, in *Classen Immunotherapies, Inc. v. Biogen Idec*,¹¹⁸ the District Court of Maryland held that a patent claiming a process of immunizing patients according to published schedules to prevent chronic immune mediated disorders did not qualify as patent eligible.¹¹⁹ The district court applied the machine-or-transformation test and found that the physiological transformation of the patient's body after immunization was "insignificant post-solution activity."¹²⁰ Therefore, the transformation was not sufficient to pass this prong of the test, and the patentee was trying to patent a natural phenomenon.¹²¹ The Federal Circuit affirmed this holding on appeal,¹²² but the Supreme Court remanded the case in light of its decision in *Bilski*.¹²³ On remand, the Federal Circuit reversed its previous ruling and found the patent valid under § 101.¹²⁴ The Federal Circuit cited *Prometheus* as supporting the patent eligibility of method claims that included a transformative immunization.¹²⁵

107. *Id.*

108. *Id.*

109. *Prometheus Labs., Inc. v. Mayo Collaborative Servs.*, 628 F.3d 1347, 1350 (Fed. Cir. 2010), *cert. granted*, 131 S. Ct. 3027 (2011).

110. *Id.* at 1355–56.

111. *Id.* at 1357.

112. *Id.* at 1355.

113. *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289 (2012).

114. 653 F.3d 1329 (Fed. Cir. 2011), *reh'g denied*, (Sept. 13, 2011), *reh'g denied*, (Sept. 16, 2011), *cert. granted*, *judgment vacated sub nom*, *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 132 S. Ct. 1794 (2012), *and opinion vacated and appeal reinstated*, 467 F. App'x 890 (Fed. Cir. 2012).

115. *Id.* 1357–58.

116. *Id.*

117. *Ass'n for Molecular Pathology*, 653 F.3d at 1358.

118. CIVIL No. WDQ-04-2607, 2006 WL 6161856 (D. Md. Aug. 16, 2006), *aff'd*, 304 F. App'x 866 (Fed. Cir. 2008), *cert. granted*, *judgment vacated*, 130 S. Ct. 3541 (U.S. 2010), *and aff'd in part, vacated in part, rev'd in part*, 659 F.3d 1057 (Fed. Cir. 2011).

119. *Id.* at *1.

120. *Id.*

121. *Id.*

122. *Classen Immunotherapies, Inc. v. Biogen IDEC*, 304 F. App'x 866 (Fed. Cir. 2008), *cert. granted*, *judgment vacated*, 130 S. Ct. 3541 (2010).

123. *Classen Immunotherapies, Inc. v. Biogen IDEC*, 130 S. Ct. 3541 (2010).

124. *Classen Immunotherapies, Inc. v. Biogen IDEC*, 659 F.3d 1057, 1059 (Fed. Cir. 2011).

125. *Id.* at 1068 ("Classen also argues that the claims of all three patents meet the machine-or-transformation test of this court's vacated *In re Bilski* opinion, citing *Prometheus Laboratories, supra*, where this court held that 'claims to methods of treatment are always transformative when one of a defined group of drugs is administered to the body to ameliorate the effects of an undesired condition.' On the materially different facts in *Prometheus* and in the Classen specifications, the analogy is inapt, for the claims in *Prometheus* are for a method of controlling individualized dosages of a specific drug by measuring its metabolic products in the blood of individual patients, while the Classen patents operate on published information to determine general immunization schedules. The principles applied in *Prometheus* support the patent eligibility of the Classen claims that include such transformative steps, but are not relevant to claims that require no more than referring to known information but do not include immunization in light of that information. Viewing

IV. “FAILURE” OF THE MACHINE-OR-TRANSFORMATION TEST: ABSTRACT IDEAS VERSUS LAWS OF NATURE

As the Supreme Court noted in *Bilski*, the machine-or-transformation test, despite being non-dispositive, still provides helpful guidance in determining patent eligibility.¹²⁶ Courts have continued to perform the machine-or-transformation test since *Bilski* but have had to further determine whether the process as a whole is directed to an abstract idea.¹²⁷ However, some processes may fail the test but still be patent eligible¹²⁸ or vice versa,¹²⁹ signifying that the test is both over- and under-inclusive. Patents involving abstract ideas and laws of nature seem to diverge at this point. Although neither the Supreme Court nor any other court has explicitly distinguished separate analyses for patent eligibility based on whether the process involved an abstract idea or law of nature, recent cases suggest that the characteristics of abstract ideas and laws of nature require different considerations.¹³⁰ Through a patchwork of opinions since *Bilski*, the test is now under-inclusive of Information Age technologies that utilize abstract ideas to push forward computer technology.¹³¹ Additionally, the test is over-inclusive of processes that operate via laws of nature because the transformation involved may be a guise for patenting a natural phenomenon, instead of its application.¹³² As courts continue to use the machine-or-transformation test to understand patent eligibility, it is important to examine whether a patent deals with an abstract idea or a law of nature. The next section analyzes two cases where the test

the representative claims of the Classen patents in accordance with their purported scope, we conclude that the claims of the 8139 and 8739 patents reasonably meet the threshold of § 101 eligibility, and that analysis of the subject matter of these claims, and other claims in these patents, should proceed by way of the statutory criteria of patentability.”) (citations omitted).

126. *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010).

127. See, e.g., *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011).

128. See *id.*

129. See *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1298 (2012).

130. Eisenberg, *Wisdom of the Ages or Dead-Hand Control? Patentable Subject Matter for Diagnostic Methods After In re Bilski*, 3 CASE W. RES. J.L. TECH. & INTERNET 1, 85-86 (forthcoming, 2012), available at <http://www.patentlyo.com/files/eisenberg.wisdomordeadhand.patentlyo.pdf> (last visited Mar. 25, 2012).

131. See *Ultramercial*, 657 F.3d at 1323.

132. See *Prometheus*, 132 S. Ct. at 1289.

was inadequate and the courts attempted to resolve this disparity.

A. ABSTRACT IDEAS AND *ULTRAMERCIAL*

In *Ultramercial v. Hulu*, the Federal Circuit reversed the district court’s holding of patent ineligibility due to the claimed process’s failure under the machine-or-transformation test.¹³³ The court stated that the patent “claims a particular method for collecting revenue from the distribution of media products over the Internet.”¹³⁴ Although the process is a practical application of the general concept of advertising as currency, it also required more than mental steps because of the controlled interaction with consumers on the Internet.¹³⁵ The court viewed the interaction with the consumer via the Internet as transforming the method from an abstract idea to a specific application of that idea, making it patent eligible without any physical transformation.¹³⁶

The Federal Circuit’s decision in *Ultramercial* to uphold the validity of a process that failed the machine-or-transformation test begs the question of why this invention differs from all other inventions after *Bilski* that have failed the machine-or-transformation test and have been subsequently deemed patent ineligible. This decision is therefore important in understanding areas where the machine-or-transformation test does not accurately indicate patent eligible subject matter. The Federal Circuit has distinguished *Ultramercial* from a subsequent case, *Fort Properties*, by explaining that the former dealt with “advances in computer technology,” while the latter simply claimed a “computer-aided” algorithm.¹³⁷ Therefore, the Federal Circuit seemed to declare—and lower courts have followed the idea—that the machine-or-transformation test insufficiently determines whether an advance in computer technology qualifies as patentable. However, this test appropriately weeds out algorithms merely performed with a computer.¹³⁸

133. 657 F.3d at 1323.

134. *Id.*

135. *Id.*

136. *Id.*

137. Compare *Ultramercial*, 657 F.3d at 1323 (finding patent-eligible subject matter even though the software did not pass the machine-or-transformation test), with *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317 (Fed. Cir. 2012) (finding patent ineligible subject matter after the software did not pass the machine-or-transformation test).

138. See *Fort Props., Inc.*, 671 F.3d at 1317, 1323 (“Simply adding a ‘computer aided’ limitation to a claim

It is unclear what exactly pulls an invention from the computer-aided-process realm to the advance-in-computer-technology realm. The Federal Circuit stated that *Ultramercial*'s invention was patent eligible because it required complex computer programming, was not drawn to purely mental processes, and greatly improved previous computer technology.¹³⁹ Moreover, the claim scope had meaningful limitations because the patent could not be performed without a computer and a controlled interaction with the customer.¹⁴⁰ On the other hand, in *Fort Properties*, the Federal Circuit held that the patent in question was merely an investment tool implemented with a computer.¹⁴¹ An investment tool was an abstract concept and more of a mental process that did not require complex computer programming.¹⁴² Moreover, the claim scope was not meaningfully limited with the process's use of a computer.¹⁴³ Thus, the Federal Circuit felt this was an example of a "computer-aided" process that did not deserve patent protection.¹⁴⁴

As seen in Part II, courts and the BPAI had been fairly restrictive in applying the machine-or-transformation test after *In re Bilski*, requiring physical steps to satisfy the test.¹⁴⁵ Although a non-

covering an abstract concept, without more, is insufficient to render the claim patent eligible.' *Dealertrack* distinguished itself from *Ultramercial* on the grounds that its claims 'recite[d] only that the method [was] 'computer aided' without specifying any level of involvement or detail,' while the *Ultramercial* claims required 'an extensive computer interface.'").

139. *Ultramercial*, 657 F.3d at 1328 ("Many of these steps are likely to require intricate and complex computer programming. In addition, certain of these steps clearly require specific application to the Internet and a cyber-market environment. One clear example is the third step, 'providing said media products for sale on an Internet website.' And, of course, if the products are offered for sale on the Internet, they must be 'restricted'—step four—by complex computer programming as well. Viewing the subject matter as a whole, the invention involves an extensive computer interface. This court does not define the level of programming complexity required before a computer-implemented method can be patent-eligible. Nor does this court hold that use of an Internet website to practice such a method is either necessary or sufficient in every case to satisfy § 101. This court simply finds the claims here to be patent-eligible, in part because of these factors.") (citations omitted).

140. *Id.* at 1330 ("Unlike the claims in *CyberSource*, the claims here require, among other things, controlled interaction with a consumer via an Internet website, something far removed from purely mental steps.")

141. *Fort Props., Inc.*, 671 F.3d at 1317, 1322.

142. *Id.*

143. *Id.* at 1323.

144. *Id.* at 1324.

145. Lemley, *supra* note 4, at 1324–25, 1338.

physical transformation might be hard to imagine, perhaps *Ultramercial* is one of the situations where it does satisfy the machine-or-transformation test, but not in the concrete way described by courts. The decision in *Ultramercial* is consistent with the Federal Circuit's opinion in *In re Bilski*, where the court held that physical steps are not needed to pass the machine-or-transformation test.¹⁴⁶

A few cases decided since *Ultramercial* have followed this line of reasoning. The Eastern District of Virginia took a step away from the physicality requirement of the machine-or-transformation test in *VS Technologies v. Twitter*.¹⁴⁷ In *VS Technologies*, the patent claimed a process of formatting of data to create a forum for people to discuss and interact in real-time.¹⁴⁸ Like in *Ultramercial*, the process created something tangible to the consumer via the Internet from raw data very different from the end product.¹⁴⁹ The court in *VS Technologies* denied the defendant's motion for summary judgment because a reasonable juror could find that the patented process satisfied the machine-or-transformation test even without a physical transformation.¹⁵⁰ Similarly, the Eastern District of California,¹⁵¹ the Southern District of New York,¹⁵² and the Eastern District of Texas¹⁵³ denied a defendant's motion for summary judgment in a software process patent case because a reasonable juror could find the invention patent eligible even though no physical transformation occurred. Perhaps courts are opening up to the idea that transformations in the computer technology field do not always have to be physical when the overall invention moves technology further and are learning how to better separate these inventions from those in *Bilski*.

B. LAWS OF NATURE AND *PROMETHEUS*

On May 20, 2012, the Supreme Court reversed the Federal Circuit's decision in

146. *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008).

147. 2:11CV43, 2011 WL 4744572, at *1 (E.D. Va. Oct. 5, 2011).

148. *Id.*

149. *Id.*

150. *Id.*

151. *Iconfind, Inc. v. Google, Inc.*, 2:11-CV-0319-GEB-JFM, 2012 WL 158366, at *1 (E.D. Cal. Jan. 18, 2012).

152. *Island Intellectual Prop. LLC v. Deutsche Bank AG*, 09 CIV. 2675 KBF, 2012 WL 386282, at *1 (S.D.N.Y. Feb. 6, 2012).

153. *Prompt Med. Sys., L.P. v. Allscriptmysys Healthcare Solutions, Inc.*, 6:10-CV-71, 2012 WL 678216, at *1 (E.D. Tex. Feb. 13, 2012).

Prometheus.¹⁵⁴ The Court held Prometheus’s patents ineligible because they did not significantly claim anything more than a law of nature.¹⁵⁵ The Court examined each step of the claimed process, explaining that each step was not a law of nature and also not enough to transform the nature of the claim.¹⁵⁶ According to the Court, the first step of “administering” the drugs merely involved the preexisting audience of doctors who treat patients with autoimmune disorders.¹⁵⁷ Moreover, the Court cited *Bilski* for the proposition that this was not a meaningful limitation to the laws of nature because limiting the use of the abstract idea or law of nature to a particular technological environment could not be used to “circumvent” the exclusion of patenting abstract ideas.¹⁵⁸ The second step of the process, called the “wherein” clause, simply informed the physician of the laws of nature and trusts her to apply it appropriately.¹⁵⁹ The third step of “determining” the metabolite levels in the blood merely instructed the physician to use whatever known process she preferred to determine the metabolite levels.¹⁶⁰ The Court declared this step conventional and routine for scientists in the field, and “‘conventional or obvious’ [pre]-solution activity’ was normally not sufficient to transform an unpatentable law of nature into a patent-eligible application of such a law.”¹⁶¹ Finally, the Court examined the method as a whole and held that the combination of steps does not add anything more to the laws of nature than when each step was considered separately.¹⁶² Therefore, the steps were not sufficient to constitute patentable applications of unpatentable natural correlations.¹⁶³

154. *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 132 S. Ct. 1289 (2012).

155. *Id.* at 1291.

156. *Id.* at 1298.

157. *Id.* at 1297.

158. *Id.*

159. *Id.*

160. *Prometheus*, 132 S. Ct. at 1297–98.

161. *Id.* at 1298.

162. *Id.*

163. *Id.* (“The upshot is that the three steps simply tell doctors to gather data from which they may draw an inference in light of the correlations. To put the matter more succinctly, the claims inform a relevant audience about certain laws of nature; any additional steps consist of well-understood, routine, conventional activity already engaged in by the scientific community; and those steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately. For these reasons we believe that the steps are not sufficient to transform unpatentable natural correlations into patentable applications of those regularities.”).

The Supreme Court also discussed the machine-or-transformation test briefly in its opinion.¹⁶⁴ The Court seemed skeptical that the process recited meaningful transformations.¹⁶⁵ According to the Court, the “administering” step merely selected the group of people interested in applying the law of nature.¹⁶⁶ Furthermore, the “determining” step did not require a transformation to occur if science developed a completely new system for determining the metabolite levels.¹⁶⁷ The Court then proceeded to cite *Bilski* in asserting that the machine-or-transformation test was only an “important and useful clue” to the § 101 inquiry and stated that the test failed here.¹⁶⁸

Although the machine-or-transformation test faced criticism for its lack of applicability to Information Age inventions because of its supposed physicality requirement,¹⁶⁹ *Prometheus* exposed the shortcomings of the test as currently applied in the biotechnology industry as well. The Supreme Court has never defined “law of nature” or “abstract idea,” but the former is inherently tied to physical, tangible objects in the real world while the latter is not because a law of nature is discovered in the universe and an abstract idea is created from one’s mind and imagination.¹⁷⁰ Laws of nature are inherently

164. *Id.* at 1303.

165. *Id.*

166. *Prometheus*, 132 S. Ct. at 1303.

167. *Id.*

168. *Id.*

169. See, e.g., Ben McEnery, *Physicality and the Information Age: A Normative Perspective on the Patent Eligibility of Non-Physical Methods*, 10 CHI.-KENT J. INTELL. PROP. 106, 133–34 (2010) (“As Judge Rader noted in dissent in *In re Bilski*, the Federal Circuit’s machine-or-transformation test propagates unanswerable questions surrounding the extent and degree of physicality needed. Dispensing with the physicality requirement avoids those difficult and arbitrary questions. It removes from the patent eligibility analysis difficult questions such as: What form or amount of ‘transformation’ is needed? When is a transformation of data that is ‘representative’ of a physical object sufficiently linked to that object to satisfy the transformation test? What, in theory and in practice, is the material difference between data ‘representative’ of a physical object and data which are not? What link to a machine is sufficient to invoke patent eligibility? Is a general purpose computer running a software program a ‘specific machine?’ If under United States law, § 101 recognizes ‘machines’ as a category of patentable subject matter, why does the ‘process’ category require a machine prong, and if it does, what connection with a machine is necessary? Does the machine prong of the machine-or-transformation test require that a process be a machine or that it merely involve or rely on the use of a machine?”).

170. This is not to say that abstract ideas cannot also be tied to tangible objects in the world. See, e.g., *Bilski v. Kappos*, 130 S. Ct. 3218, 3231 (2010) (holding that the invention was an abstract idea tied to real-world objects).

transformative because, by definition, they recite recurring facts or events in the physical world.¹⁷¹ Although some commentators do not agree with the Supreme Court that the correlation in *Prometheus* is in fact a law of nature because it requires medical intervention to occur,¹⁷² this paper does assume that the correlation is a law of nature. To determine whether a patentee is trying to claim an entire law of nature or just its application, the machine-or-transformation test no longer seems to be a useful tool after *Prometheus* because the presence or absence of a “transformation” in the process does not distinguish the two.

Breyer’s opinion noted that methods of treatment would still be patentable, in contrast to *Prometheus*’s patent.¹⁷³ He stated that a method of treatment differed from the *Prometheus* patent because a method of treatment adds significant steps to the law of nature, taking the invention from the law of nature itself to an application of nature.¹⁷⁴ Conceptually, the difference is hard to actually understand. Both processes would consist of the same transformative step of administering the drug to a patient whose body then metabolizes it according to a law of nature. The resulting toxicity or ineffectiveness from a drug metabolite level seems conceptually similar to a particular health outcome caused by a drug metabolite.

However, a difference between the two types of processes exists in the timing and nature of the transformations involved. In *Prometheus*, the Supreme Court characterizes the invention as a mere correlation between a drug metabolite

and toxicity/ineffectiveness, which contains no inherent transformation.¹⁷⁵ The Court noted that transformations that occurred in the process resulted from conventional steps added to the law of nature.¹⁷⁶ The use of the drug for treating the condition, the process of the body metabolizing the drug, and the administering and determining steps were all known in the prior art or are obvious to someone skilled in the art.¹⁷⁷ On the other hand, with a patent for a method of treatment, the use of the drug for a particular health outcome in the patient constitutes the invention. A transformation occurs when the body uses this drug to help the patient’s condition in some way, which is what is being invented. This transformation is not novel or obvious because this is the heart of the invention. The transformation in *Prometheus* should be classified as “merely incidental” to the claimed invention and therefore insufficient for patent eligibility. Although the machine-or-transformation test effectively invalidates unpatentable algorithms that simply require a computer for performance,¹⁷⁸ the test fails in detecting unpatentable laws of nature embedded in conventional and insignificant transformations, like in *Prometheus*.

This approach to determining a transformation, however, arguably takes into account other criteria for patentability, especially novelty, nonobviousness, and claim scope. Courts have deemed § 101 a separate criterion for patentability, but courts must focus on what the invention is to determine if it is patent eligible. Additionally, in order to determine what the invention is, the patent application must be examined in these ways to determine what the heart of the actual invention is and look beyond any evasive drafting techniques like the Supreme Court did in *Prometheus*. Therefore, the other requirements for patentability are implicitly linked in any patent eligibility discussion, and this does not seem improper. The subject matter inquiry remains a separate question using distinct criteria from others. For example, this patent applications inquiry does not impose a requisite level of novelty

171. See *Law of nature*, BRITANNICA ONLINE ENCYCLOPEDIA, <http://www.britannica.com/EBchecked/topic/406522/law-of-nature> (last visited October 21, 2012) (describing a law of nature as a universal order in natural phenomena).

172. Robert R. Sachs, *Punishing Prometheus: The Supreme Court’s Blunders in Mayo v. Prometheus*, PATENTLY-O (Mar. 26, 2012, 9:10 AM), <http://www.patentlyo.com/patent/2012/03/punishing-prometheus-the-supreme-courts-blunders-in-mayo-v-prometheus.html>. But see *Prometheus*, 132 S. Ct. at 1297 (“While it takes a human action (the administration of a thiopurine drug) to trigger a manifestation of this relation in a particular person, the relation itself exists in principle apart from any human action. The relation is a consequence of the ways in which thiopurine compounds are metabolized by the body—entirely natural processes. And so a patent that simply describes that relation sets forth a natural law.”).

173. *Prometheus*, 132 S. Ct. at 1302 (“For here, as we have said, the steps add nothing of significance to the natural laws themselves. Unlike, say, a typical patent on a new drug or a new way of using an existing drug, the patent claims do not confine their reach to particular applications of those laws.”).

174. *Id.*

175. *Id.* at 1296 (“*Prometheus*’ patents set forth laws of nature—namely, relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage of a thiopurine drug will prove ineffective or cause harm.”).

176. *Id.* at 1299–1300.

177. *Id.* at 1297.

178. See, e.g., *Fort Props., Inc. v. Am. Master Lease LLC*, 671 F.3d 1317 (Fed. Cir. 2012) (holding that the computer program for a real estate investment tool failed the machine-or-transformation test and was patent ineligible).

or nonobviousness. Rather, a particular departure from laws of nature is required, which can only be achieved by distinguishing the law of nature from the invention and examining the separation between the two concepts. Under the transformation prong of the machine-or-transformation test, this departure from the underlying law of nature can be achieved through the inventive process's transformation of an article. The *Prometheus* Court was bothered by the notion that the transformation could simply be a law of nature, as evidenced by its holding that the transformation must have qualified as inventive as well.

V. CONCLUSION

The machine-or-transformation test after *Bilski* has been interpreted with enough consistency and rigidity to provide certainty but also allows some room for technology-specific application. With patents involving abstract ideas (like computer technology), the transformation analysis will usually provide the correct result. As discussed in Part III, requiring (1) transformation of a physical object, (2) a transformation to be more than just a simple algorithm or transfer of data, and (3) the insignificance of post-solution activity—like the electronic transformation of data—are each very important thresholds that will prevent mathematical formula and other computer processes from being patentable. These unpatentable processes are important to determine what qualifies as patent ineligible because they would otherwise be clearly ineligible as abstract ideas without implementation on a general purpose computer, but with these processes, they can be easily disguised as processes that are patent eligible.

However, as in *Ultramercial*, the transformation analysis may also deem processes ineligible that strongly deserve patent protection. If a court determines that a computer technology patent is patent ineligible under the “traditional” transformation analysis, the inquiry should then shift to determine whether the invention is merely a computer-aided algorithm—and therefore patent ineligible—or an advance in computer technology, which is patent eligible. Advances in computer technology should be considered transformative, even though such processes may not fit into the normal transformation framework. Transformations in these processes should be found in the processes' improvements to existing computer technology,

thereby transforming the technology.

With patents involving laws of nature (such as biotechnology patents), courts should first perform the transformation analysis as done with patents involving abstract ideas and described in Part III. If the patent appears to pass the transformation prong at that point, an additional inquiry is needed as to whether the transformation is inventive or whether it is the result of a series of conventional steps aiming to disguise a law of nature as a patentable process. After *Prometheus*, courts should start closely scrutinizing these transformations that are easily connected to laws of nature to determine if they are merely incidental to the invention. If so, and the only inventive concept left is the law of nature, then the invention must be deemed ineligible.

However, if the transformation using the law of nature is part of the invention, i.e., the transformation is novel and nonobvious, then the process should be patent eligible. For example, in a method of treatment patent that claims a process for using a known drug for a new purpose, the method would be patent eligible because the transformation of the body with the drug to treat a particular disease was not known or obvious. In comparison, the patent in *Prometheus* is not patent eligible because the drug's transformative effect on a person's body was already known, and only the correlation between metabolite levels and the drug's toxicity/ineffectiveness were not, which is not by itself a transformation. If conventional steps must be performed—e.g., administering and determining, like in *Prometheus*—for a transformation to occur, this transformation should be considered not central to the claims. Such insignificant post-solution activity should be considered insufficient to transform the invention into patent eligible subject matter. This secondary inquiry for patents involving laws of nature differs greatly from that of patents involving abstract ideas. But these two different secondary inquiries allow the machine-or-transformation test to strike a balance between being flexible enough to accurately determine patent eligibility and retaining its certainty and consistency.

As demonstrated in this paper, the Supreme Court's decision in *Bilski* and subsequent decisions have created a patchy understanding of what constitutes a patentable “process” under §101, despite the Federal Circuit's attempt to add certainty and clarity to the jurisprudence of patent eligibility with its machine-or-transformation test in *In re Bilski*. As the transformation analysis clarifies a

need for a physical change on a physical object—or data representing one—that is significant and necessary to the claims, a necessary divergence between abstract ideas and laws of nature seems to exist in the analysis. While the machine-or-transformation test aptly deems computer-aided algorithms patent ineligible, advances in computer technology that should be eligible are declared to the contrary because of their lack of physicality. Meanwhile, biotechnology processes satisfy the test because of their inherent physicality even though diagnostic methods now are likely no more than unpatentable laws of nature in the form of correlations.