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**AN AUTOMATIC MEANS-PLUS-FUNCTION LIMITATION  
FOR OTHERWISE UNPATENTABLE SUBJECT MATTER**

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## I. INTRODUCTION

Patent law awards deserving applicants an exclusive right to an invention in exchange for disclosure of the innovation.<sup>1</sup> Section 101 of the Patent Act of 1952 sets forth what subject matter is eligible for patent protection.<sup>2</sup> However, the Supreme Court has long held that the scope of subject matter eligibility is not as broad as 35 U.S.C. § 101 may imply.<sup>3</sup> For more than 150 years, the Court has recognized that § 101 and its predecessors contain implicit judicial exceptions.<sup>4</sup> A claim may not qualify as patentable subject matter under § 101 if it is directed to a law of nature, natural phenomenon, or abstract idea.<sup>5</sup>

The rationale behind applying judicial exceptions to the patentable subject matter standard is to prevent an applicant from obtaining patent protection that embodies the basic building blocks of science, which would prevent others from utilizing basic principles.<sup>6</sup> The subject matter eligibility requirement is a threshold test: a patent application must meet other statutory requirements—including novelty, non-obviousness, sufficient written description, and enablement—in order to receive patent protection.<sup>7</sup> Nonetheless, the subject matter eligibility

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<sup>1</sup> See 35 U.S.C. § 154 (setting forth the standard that a patent’s term “shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application was filed in the United States”).

<sup>2</sup> 35 U.S.C. § 101 (“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 therefor, subject to the conditions and requirements of this title.”).

<sup>3</sup> See *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (citing *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)) (explaining that the Court has “long held that [§ 101] contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.”).

<sup>4</sup> See *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) (explaining that a principle is not patentable because “a principle, in the abstract, is a fundamental truth”).

<sup>5</sup> *Alice*, 573 U.S. at 216.

<sup>6</sup> See *id.* at 217 (internal citations omitted) (explaining that “[i]n applying the § 101 exception, we must distinguish between patents that claim the ‘building blocks’ of human ingenuity and those that integrate the building blocks into something more, thereby ‘transform[ing]’ them into a patent eligible invention”).

<sup>7</sup> See 35 U.S.C. § 102 (setting forth the novelty requirement that a prior art reference shall not disclose every element of the claimed invention, explicitly or inherently, in order for the invention to be patentable); § 103 (setting forth the nonobvious requirement that a patent may not be obtained “if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains”); § 112 (setting forth the written description and enablement requirements that a person having ordinary skill in the art would understand the inventor to have possession and would be able to make and use the invention without undue experimentation, in light of the specification).

standard remains an important one, especially in areas of biotechnology, business methods, and computer-implemented technologies (otherwise known as *Alice*-affected technologies).<sup>8</sup> Following *Alice Corp. Pty. Ltd. v. CLS Bank International* in 2014,<sup>9</sup> which was the most recent Supreme Court decision regarding subject matter eligibility, first office actions rejecting applications directed toward *Alice*-affected technologies under 35 U.S.C. § 101 spiked from just 19% to over 30%.<sup>10</sup> Such rejections have led to uncertainties for both innovators and the legal community.<sup>11</sup>

In *Alice*, the Court determined that a patent claim directed toward a computer-implemented scheme for mitigating settlement risk was not patentable subject matter.<sup>12</sup> The Court followed a two-step test, which it set forth just two years earlier in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*<sup>13</sup> In Step 1, the Court first determines whether a claim is directed toward a statutory category enumerated in § 101.<sup>14</sup> Next, in Step 2A, the Court determines whether a claim is directed toward a judicial exception (i.e. natural phenomena, law of

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<sup>8</sup> See ANDREW A. TOOGLE & NICHOLAS A. PAIROLERO, OFF. OF THE CHIEF ECONOMIST, USPTO, ADJUSTING TO *ALICE*: USPTO PATENT EXAMINATION OUTCOMES AFTER *ALICE CORP. V. CLS BANK INTERNATIONAL* 3 (2020), [https://www.uspto.gov/sites/default/files/documents/OCE-DH\\_AdjustingtoAlice.pdf](https://www.uspto.gov/sites/default/files/documents/OCE-DH_AdjustingtoAlice.pdf) [hereinafter *ADJUSTING TO ALICE*] (demonstrating in figure 1 that Section 101 first action examination uncertainty is three times higher for computer *Alice*-affected technologies, which are biotechnology and computer technologies).

<sup>9</sup> See generally *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208 (2014) (setting forth the most recent Supreme Court case on the patentable subject matter standard).

<sup>10</sup> See *id.* at 5; see also *First Office Action Estimator*, USPTO (Nov. 4, 2021 1:23 PM), <https://www.uspto.gov/learning-and-resources/statistics/first-office-action-estimator#:~:text=Definitions,First%20Office%20Action,and%20For%20rejected%20the%20claims> (“An office action is a document written by a patent examiner in the course of examination of a patent application. . . . A first office action on the merits (FOAM) is typically the first substantive examination of the application.”).

<sup>11</sup> See MEIR PUGATCH & DAVID TORSTENSSON, U.S. CHAMBER OF COM., ART OF THE POSSIBLE: U.S. CHAMBER INTERNATIONAL IP INDEX 46–47 (8th ed. 2020), [https://www.theglobalipcenter.com/wp-content/uploads/2020/02/GIPC\\_IP\\_Index\\_2020\\_FullReport.pdf](https://www.theglobalipcenter.com/wp-content/uploads/2020/02/GIPC_IP_Index_2020_FullReport.pdf) (indicating that uncertainty in patent examining exists in the U.S. because “[l]ower and circuit court decisions in patent infringement proceedings have not always been consistent”).

<sup>12</sup> *Alice*, 573 U.S. at 212 (holding that “the claims at issue are drawn to the abstract idea of intermediated settlement, and that merely requiring generic computer implementation fails to transform that abstract idea into a patent-eligible invention”).

<sup>13</sup> 566 U.S. 66, 70–73 (2012) (setting forth the basis of the current patentable subject matter standard).

<sup>14</sup> *Alice*, 573 U.S. at 216; 35 U.S.C. § 101 (setting forth the four statutory categories of patentable subject matter which includes a “process, machine, manufacture, or composition of matter, or any new and useful improvement thereof”).

nature, or an abstract idea).<sup>15</sup> If the claim is not directed toward a judicial exception, the analysis ends and the claim is deemed patentable subject matter.<sup>16</sup> If the claim is directed toward a judicial exception, the claim is then evaluated under Step 2B and must add “significantly more” to the judicial exception in order to qualify as patentable subject matter.<sup>17</sup> Following *Alice*, the United States Patent and Trademark Office (“USPTO”) and the United States Court of Appeals for the Federal Circuit (“Federal Circuit”) were required to interpret the new standard set forth, which became known as the *Alice/Mayo* test.<sup>18</sup> The USPTO has struggled to interpret the *Alice/Mayo* test and has issued a new patentable subject matter standard for examiners to use almost annually.<sup>19</sup>

The USPTO claims to have resolved the ambiguity in the *Alice/Mayo* test with its most recent guidelines.<sup>20</sup> However, confusion at the Federal Circuit is still evident.<sup>21</sup> Recently, in *American Axle & Manufacturing, Inc. v. Neapco Holdings LLC (American Axle I)*, the Federal Circuit issued a 6-6 decision which denied a request for rehearing en banc for claims directed towards the dampening of vibrations on a driveshaft.<sup>22</sup> The five different opinions issued by Federal Circuit Judges in *American Axle I* demonstrate the sharp divide in understanding the subject matter eligibility standard at the Federal Circuit.<sup>23</sup> This confusion translates to patent applicant uncertainty and ultimately threatens the United States’ global competitiveness in *Alice-*

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<sup>15</sup> *Alice*, 573 U.S. at 215.

<sup>16</sup> *Id.*

<sup>17</sup> *See id.*

<sup>18</sup> *See infra* Part II.

<sup>19</sup> *See PUGATCH & TORSTENSSON, supra* note 11, at 46 (“Since 2014 the USPTO has issued and updated patent examination guidelines almost on an annual basis. Lower and circuit court decisions in patent infringement proceedings have not always been consistent. The net result is that rights-holders are left without a clear sense of how decisions on patent eligibility will be made.”); *see also infra* Part IV.

<sup>20</sup> *See ADJUSTING TO ALICE, supra* note 8, at 6 (“[F]or *Alice*-affected technologies, the Berkheimer memorandum induced a statistically significant drop in the rate of first office action Section 101 rejections. The 2019 PEG caused a further, and much larger, decrease in the percentage of first office action Section 101 rejections in *Alice*-affected technologies.”).

<sup>21</sup> *See infra* Section III.B

<sup>22</sup> *See Am. Axle & Mfg., Inc. v. Neapco Holdings LLC (Am. Axle I)*, 966 F.3d 1347, 1348 (Fed. Cir. 2020); *see also Am. Axle & Mfg., Inc. v. Neapco Holdings LLC (Am. Axle II)*, 967 F.3d 1285, 1292 (Fed. Cir. 2020) (modifying the opinion on the rehearing en banc and holding that the claim was not patent eligible because “it simply requires the application of Hooke’s law to tune a propshaft liner to dampen certain vibrations”); *see also infra* Section IV.B.

<sup>23</sup> *See generally Am. Axle I*, 966 F.3d.

affected technologies.<sup>24</sup>

However, the *Alice/Mayo* test need not dictate the United States' global competitiveness in innovation.<sup>25</sup> Rather than being invalidated, a claim that fails to recite additional elements that integrate the judicial exception into a practical application should simply be treated as a means-plus-function claim.<sup>26</sup> A means-plus-function claim limits what is claimed to the described function and the corresponding structure.<sup>27</sup> Thus, the proposed standard would prevent a claim that is directed toward a judicial exception from preempting the use of the judicial exception in its entirety, while still awarding protection to novel innovations that deserve it.<sup>28</sup>

Part II of this Note outlines the history of the patentable subject matter standard.<sup>29</sup> Part III focuses primarily on the *Alice/Mayo* test, which set the framework for the modern subject matter eligibility standard used by the USPTO.<sup>30</sup> Part III also focuses on the Federal Circuit decisions that have attempted to interpret the *Alice/Mayo* test.<sup>31</sup> Part IV evaluates the USPTO's guidelines regarding the patentable subject matter standard and *American Axle I*, which makes it evident that confusion still exists at the Federal Circuit regarding the subject matter eligibility standard.<sup>32</sup> Lastly, Part V analyzes the *Alice/Mayo* test and proposes treating a claim directed toward a judicial exception that does not recite additional elements that integrate the judicial exception into a practical application as a means-plus-function claim.<sup>33</sup>

## II. DEVELOPMENT OF THE PATENTABLE SUBJECT MATTER STANDARD

The Intellectual Property Clause of the United States Constitution empowers Congress to enact laws that “promote the progress of science

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<sup>24</sup> PUGATCH & TORSTENSSON, *supra* note 11, at 46–47 (noting that the confusion on behalf of innovators and legal professionals “seriously undermines the long-standing world-class innovation environment and threatens the nation’s global competitiveness”).

<sup>25</sup> *See infra* Part V.

<sup>26</sup> MPEP § 2181 (9th ed. Rev. 10, June 2020) (explaining that a means-plus-function claim is narrowed to its recited function and the corresponding structures and their equivalents recited in either the claim or the specification). A means-plus-function claim describes an invention by what it does rather than by the terms of its physical structure. *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *See id.*

<sup>29</sup> *See infra* Part II.

<sup>30</sup> *See infra* Part III.

<sup>31</sup> *See infra* Part III.

<sup>32</sup> *See infra* Part IV.

<sup>33</sup> *See infra* Part V.

and useful arts, by securing for limited times to . . . inventors the exclusive right to their . . . discoveries.”<sup>34</sup> The language of the patentable subject matter standard under § 101 has remained virtually unchanged since it was codified in the Patent Act of 1793.<sup>35</sup> The current subject matter eligibility standard comes from the Patent Act of 1952.<sup>36</sup> The only notable change in the language of the statute was the replacement of the word “art” with “process.”<sup>37</sup> However, the Supreme Court noted that this change in language would not change its substantive understanding of the statute.<sup>38</sup> Given that the statutory language of the subject matter eligibility standard has remained practically unchanged for over two centuries, it has been the Supreme Court’s job to apply the original language to novel areas of technology that could not have possibly been foreseen in 1793.<sup>39</sup>

### A. Laying the Framework for the Subject Matter Eligibility Standard

In early cases interpreting the language of § 101, the Supreme Court read the statute broadly in light of Congress’s intent to include “anything under the sun that is made by man” within the scope of § 101.<sup>40</sup> However, the Court has also long held that § 101 and its predecessors include implicit judicial exceptions.<sup>41</sup> These exceptions

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<sup>34</sup> U.S. CONST. art. I, § 8, cl. 8.

<sup>35</sup> See Patent Act of 1793, ch. 11, § 1, 1 Stat. 318, 319 (stating that a patent may be granted to any person or persons who “shall allege that he or they have invented any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter”).

<sup>36</sup> See 35 U.S.C. § 101 (“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 therefor, subject to the conditions and requirements of this title.”).

<sup>37</sup> See *id.*; Patent Act of 1793 § 1.

<sup>38</sup> *In re Bilski*, 545 F.3d 943, 966 (Fed. Cir. 2008) (Dyk, J., concurring) (noting that after the Patent Act of 1952 the “Supreme Court has made clear that this did not alter the substantive understanding of the statute; it did not broaden the scope of patentable subject matter”).

<sup>39</sup> See *infra* Section II.A; Robert Green Sterne & Lawrence B. Bugaisky, *The Expansion of Statutory Subject Matter Under the 1952 Patent Act*, 37 AKRON L. REV. 217, 218 (2004) (“Despite the absence of any substantial change in the statutory language, there has been a substantial expansion of the subject matter being claimed in issued U.S. patents over the last 50 years. This expansion is the result of judicial interpretation of the essentially unchanged language of the Patent Act, and administrative guidelines from the United States Patent and Trademark Office.”).

<sup>40</sup> S. REP. NO. 1979, at 5 (1952).

<sup>41</sup> See *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (citing *Bilski v. Kappos*, 561 U.S. 593, 601–02 (2009)); *O’Reilly v. Morse*, 56 U.S. 62, 115 (1854) (“[T]he discovery of a principle in natural philosophy or physical science is

include laws of nature, natural phenomenon, and abstract ideas.<sup>42</sup> Although not required under the text of § 101, the Court has justified these exceptions because they are consistent with the requirement that to be awarded patent protection, a claim must be new and useful.<sup>43</sup> For policy reasons, the judicial exceptions exist because they are the building blocks of science and technology;<sup>44</sup> monopolizing them would impede innovation rather than spark it.<sup>45</sup>

The particular judicial exception to which a certain type of technology is directed to is irrelevant in the Court's analysis.<sup>46</sup> In fact, a claim may often fall under multiple exceptions.<sup>47</sup> However, it is only pertinent that a claim is directed toward one of the judicial exceptions, as the analysis remains the same regardless.<sup>48</sup>

### 1. *Products of Nature and Natural Phenomena*

In 1948, the Supreme Court determined that an inoculum of naturally occurring bacteria did not constitute patentable subject matter.<sup>49</sup> In *Funk Brothers Seed Co. v. Kalo Inoculent Co.*, the Court held that the discovery of root-nodule bacteria species that were not mutually inhibiting of one another did not rise to the level of an invention under U.S. patent laws.<sup>50</sup> The Court reasoned that the aggregation of select strains was merely a newly discovered quality of naturally occurring bacterium;<sup>51</sup> thus, nothing new had been invented.<sup>52</sup> The Court emphasized that the discovery of a naturally occurring product of nature is not an invention unless it is applied to a new and

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not patentable.”); *Le Roy v. Tatham*, 55 U.S. 156, 160 (1853) (recognizing that the “discovery of a new principle is not patentable; but it must be embodied and brought into operation by machinery, so as to produce a new and useful result”).

<sup>42</sup> *Alice*, 573 U.S. at 216.

<sup>43</sup> *Bilski*, 561 U.S. at 594 (citing *LeRoy v. Tatham*, 55 U.S. 156, 174–75 (1853) (“[T]hese exceptions are consistent with the notion that a patentable process must be ‘new and useful.’ . . . [Judicial] exceptions have defined the reach of the statute as a matter of statutory *stare decisis* going back 150 years.”).

<sup>44</sup> See *Alice*, 573 U.S. at 216 (internal citations omitted).

<sup>45</sup> *Id.* (internal citations omitted) (emphasizing that “patent law [should] not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity”).

<sup>46</sup> See *infra* Subsections III.A.1–2.

<sup>47</sup> See *infra* Subsections III.A.1–2.

<sup>48</sup> See *infra* Subsections III.A.1–2.

<sup>49</sup> See *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948).

<sup>50</sup> *Id.* at 132 (explaining that “[e]ven though [the discovery] may have been the product of skill, it certainly was not the product of invention”).

<sup>51</sup> *Id.* at 130–131.

<sup>52</sup> *Id.* (equating the newly discovered qualities of the bacteria to “the heat of the sun, electricity, or the qualities of metal”).



useful end.<sup>53</sup>

Then, in 1980, the Supreme Court contrasted the inoculum in *Funk Brothers* with the synthetic bacterium in *Diamond v. Chakrabarty*.<sup>54</sup> In *Chakrabarty*, the Court upheld a patent claim directed toward genetically engineered bacterium,<sup>55</sup> stating that the bacterium qualified as patentable subject matter.<sup>56</sup> The engineered bacterium was capable of breaking down crude oil,<sup>57</sup> which was a characteristic that naturally occurring bacterium lacked.<sup>58</sup> The patent claims directed toward the genetically engineered bacterium were found to be patentable subject matter because its characteristics were not found in nature.<sup>59</sup> The claims were “a product of human ingenuity” and, thus, qualified as eligible subject matter under § 101.<sup>60</sup>

## 2. *Abstract Ideas and Laws of Nature*

Claims encompassing abstract ideas or laws of nature are also not patentable subject matter.<sup>61</sup> In the 1972 decision *Gottschalk v. Benson*, the Court held that patent claims directed toward a method of converting signals from binary coded information into pure binary numerals were not subject matter eligible.<sup>62</sup> The Court’s reason for invalidating the patent was that the patent on the software would be a patent for the mathematical algorithm of binary conversion itself, thereby preempting its use by others.<sup>63</sup> However, the Court was cautious in making its decision, stating that its intention was not to preclude patenting of

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<sup>53</sup> *Id.* at 130 (“If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”).

<sup>54</sup> Compare *Funk Bros.*, 333 U.S. at 131 (denying patent protection for an inoculum of naturally occurring bacteria), with *Diamond v. Chakrabarty*, 447 U.S. 303, 305–06 (1980) (upholding patent protection for genetically modified bacteria).

<sup>55</sup> See *Chakrabarty*, 447 U.S. 303 at 318.

<sup>56</sup> *Id.* at 309–10 (explaining that the “micro-organism plainly qualifies as patentable subject matter”).

<sup>57</sup> *Id.* at 303.

<sup>58</sup> *Id.* at 310 (distinguishing from *Funk Bros.* by stating “[h]ere, by contrast, the patentee has produced a new bacterium with markedly different characteristics from any found in nature and one having potential for significant utility”).

<sup>59</sup> *Id.*

<sup>60</sup> *Id.* at 309–10.

<sup>61</sup> *Alice*, 573 U.S. at 216.

<sup>62</sup> *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972) (holding that the use of the mathematical formulas was not patentable subject matter).

<sup>63</sup> *Id.* at 72 (explaining that granting a patent to the claims “would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself”).

computer technology altogether.<sup>64</sup> Though just twenty years had passed since the Patent Act of 1952, the Court called upon Congress to address the complex policy issues regarding the patentability of computer technology under § 101.<sup>65</sup>

In the 1978 decision *Parker v. Flook*, the Court once again urged Congress to address questions regarding the patentability of computer technology.<sup>66</sup> In *Flook*, the Court held that a patent claim directed towards a method of updating alarm limits in a process comprising the catalytic chemical conversion of hydrocarbons was ineligible subject matter under § 101.<sup>67</sup> The USPTO rejected the patent application in light of *Benson*,<sup>68</sup> under the rationale that the novelty of the invention was only in the mathematical formula of updating the alarm limits.<sup>69</sup> In rejecting the patent application, the USPTO considered the state of the prior art when answering a subject matter eligibility issue.<sup>70</sup> The Court of Customs and Patent Appeals (“CCPA”) reversed the decision,<sup>71</sup> reasoning that the patent claim was not preempting the use of the mathematical formula in its entirety, but instead just in the specific use of updating the alarm limit for hydrocarbons.<sup>72</sup> However, the Supreme Court agreed with the USPTO, stating that the mathematical formula was assumed to be prior art and that the application as a whole contained no novel invention.<sup>73</sup> The Court recognized that the principles it was applying under the Patent Act of 1952 were derived long before the

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<sup>64</sup> *See id.* at 71 (“It is said we freeze process patents to old technologies, leaving no room for the revelations of the new, onrushing technology. Such is not our purpose.”).

<sup>65</sup> *See id.* at 73 (explaining that “technological problems tendered in the many briefs before us indicate to us that considered action by the Congress is needed”).

<sup>66</sup> *See Parker v. Flook*, 437 U.S. 584, 595 (1978) (“Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal.”).

<sup>67</sup> *Id.* at 585, 594.

<sup>68</sup> *Id.* at 587.

<sup>69</sup> *Id.* at 587 (stating that the novel aspect of the claimed method “lay in the formula or algorithm described in the claims, a subject matter that was unpatentable under *Benson*”).

<sup>70</sup> *See id.*

<sup>71</sup> *Id.* Under 28 U.S.C. § 1542 (1948), the CCPA was once the exclusive jurisdiction over appeals from the USPTO. However, in 1982, 28 U.S.C. § 1295(a)(1) transferred the “exclusive jurisdiction of . . . appeal[s] from a decision of . . . the [USPTO]” to the Federal Circuit.

<sup>72</sup> *Id.* (stating that the Appeals Court “noted that [the applicant] was only claiming on the use of his method to update his alarm limits in a process comprising the catalytic conversion of hydrocarbons” and not preempting the entire use of the mathematical formula in other areas of technology, thus making the claim subject matter eligible).

<sup>73</sup> *See id.* at 589–90 (affirming the USPTO’s decision that the invention was not patentable subject matter).

emergence of computer related technology and difficult questions of policy were arising relating to the subject matter eligibility of such computer programs.<sup>74</sup> Once again, the Court called to Congress to evaluate this policy decision on the patentability of computer technology to decide whether to uphold claims like the ones at hand.<sup>75</sup>

In the 1981 decision *Diamond v. Diehr*, just three years after *Flook*, the Court issued a rare opinion upholding the validity of a patent claim that utilized a mathematical equation implemented through computer technology.<sup>76</sup> Specifically, the claims were directed toward utilizing the Arrhenius equation and constantly monitoring the temperature inside of a mold to calculate the reaction time of molding raw, uncured, synthetic rubber into cured precision products.<sup>77</sup> The Court noted that the prior art consisted of calculating the cure time before inserting the compound into the mold,<sup>78</sup> which inevitably led to instances of over or underestimating mold time since temperature inside the mold was uncontrollable.<sup>79</sup> In affirming the CCPA's decision, the Court distinguished the patent at hand from those in *Flook* and *Benson* by pointing out that the applicant sought a patent for a process of curing synthetic rubber, not for a mathematical formula in its entirety.<sup>80</sup> Furthermore, the Court noted that the mere implementation of a mathematical formula into a process does not render the claim unpatentable subject matter.<sup>81</sup> The Court held that when a claim containing a mathematical formula is applied to transform an article into

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<sup>74</sup> See *id.* at 596 (explaining that “we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress”).

<sup>75</sup> *Id.* at 595–96 (calling upon Congress to revise the current patentable subject matter standard).

<sup>76</sup> See *Diamond v. Diehr*, 450 U.S. 175, 191–93 (1981) (upholding a patent directed toward an abstract idea).

<sup>77</sup> See *id.* at 177 n.2 (explaining the Arrhenius equation for reaction time during the cure:  $\ln(v)=CZ+x$ ; where  $v$  is the total required cure time,  $C$  is the activation energy constant to each unique batch of the particular compound being molded; and  $x$  is another constant that is dependent on the shape of the geometry of the particular mold of the press).

<sup>78</sup> See *id.* at 178.

<sup>79</sup> *Id.* (explaining that operating the press with “an uncontrollable variable inevitably led in some instances to overestimating the mold-opening time and overcuring the rubber, and in other instances to underestimating that time and undercuring the product”).

<sup>80</sup> *Id.* at 187 (distinguishing from claims in earlier cases that were not patentable subject matter because the claims at hand were seeking “patent protection for a process of curing synthetic rubber”).

<sup>81</sup> *Id.* at 187–88 (“[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer. . . . In determining the eligibility of respondents’ claimed process for patent protection under § 101, their claims must be considered as a whole.”).

a different state or thing, the claim satisfies the subject matter eligibility standard.<sup>82</sup> Although the Court noted the state of the prior art in making its decision,<sup>83</sup> it stated that the novelty standard was not to be mixed with the subject matter eligibility standard and held that whether a particular element of a claim is novel has no place in the subject matter eligibility analysis.<sup>84</sup>

Also relevant to the pre-*Alice/Mayo* test is the Supreme Court's more recent decision in *Bilski v. Kappos*.<sup>85</sup> The Court determined that claims directed toward the process of hedging against the risk of price changes in the energy market was not patentable subject matter under § 101.<sup>86</sup> The Court held that granting patent protection to this application would preempt the use of the hedging formula in all fields, not only within the specified computer program.<sup>87</sup> Additionally, the Court held that the Federal Circuit's machine-or-transformation test is not the sole test for patent eligibility under § 101; rather, it is simply a useful investigative tool.<sup>88</sup> The Court applied the patentable subject matter standard to both independent and dependent claims.<sup>89</sup>

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<sup>82</sup> *Id.* at 191–92 (“[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.”).

<sup>83</sup> *See id.* at 189.

<sup>84</sup> *Id.* at 188–89 (pointing out that “[t]he ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter”).

<sup>85</sup> *See Bilski v. Kappos*, 561 U.S. 593, 611 (2009) (holding that the implementation of a mathematical formula into a computer is not patentable subject matter).

<sup>86</sup> *Id.*

<sup>87</sup> *Id.* at 611–12 (“Allowing petitioners to patent risk hedging would preempt use of this approach in all fields and would effectively grant a monopoly over an abstract idea.”).

<sup>88</sup> *Id.* at 600 (internal citations omitted) (“The [Federal Circuit] held that a claimed process is surely patent-eligible under § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. The Federal Circuit concluded this ‘machine-or-transformation test’ is the sole test governing § 101 analyses, and thus the test for determining patent eligibility of a process under § 101.”); *id.* at 594 (“The machine-or-transformation test is not the sole test for patent eligibility under § 101. The Court’s precedents establish that although that test may be a useful and important clue or investigative tool, it is not the sole test for deciding whether an invention is a patent-eligible ‘process’ under § 101 . . .”).

<sup>89</sup> *See* Jeanne C. Fromer, *Claiming Intellectual Property*, 76 U. CHI. L. REV. 719, 739 (2009) (explaining that dependent claims “are claims incorporating an independent claim in the patent, further limiting the independent claim”); Daniel H. Brean, *Grading Patent Remedies: Dependent Claims and Relative Infringement*, 84 BROOK. L. REV. 1187, 1188 (2019) (reciting the difference between independent and

*Bilski* demonstrates the Court's struggle in applying an outdated patentable subject matter standard to unforeseen technology.<sup>90</sup> The broad language and refusal to set bright line rules in *Bilski* resulted in an unpredictable § 101 standard.<sup>91</sup> This generated early criticism of the patentable subject matter standard from academics and professionals.<sup>92</sup>

## B. Early Criticism of the Subject Matter Eligibility Standard

The subject matter eligibility standard received criticism even prior to the *Alice/Mayo* standard, especially following the *Bilski* holding.<sup>93</sup>

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dependent claims and that “[i]ndependent claims stand alone, while dependent claims incorporate by reference all the features recited in the independent claims but go on to add further features or details”).

<sup>90</sup> See generally *Bilski*, 561 U.S. 593 (2009).

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

<sup>92</sup> See *infra* Section II.B

<sup>93</sup> See Richard S. Gruner, *Intangible Inventions: Patentable Subject Matter for an Information Age*, 35 LOY. L.A. L. REV. 355, 467 (2002) (discussing new areas of computer technology and stating that “patent rewards should encourage intangible, information-processing inventions in the same way that patent rights have previously encouraged tangible inventions”); Michael Risch, *Everything Is Patentable*, 75 TENN. L. REV. 591, 658 (2008) (“[T]he PTO and courts should focus on answering specific questions about how to best apply rigorous standards of novelty, nonobviousness, utility, and specification with a scalpel rather than simply eliminating broad swaths of innovation with a machete.”); David J. Kappos et al., *A Technological Contribution Requirement for Patentable Subject Matter: Supreme Court Precedent and Policy*, 6 NW. J. TECH. & INTELL. PROP. 152, 170 (2008) (suggesting the Supreme Court follow its precedent and hold that “a technological contribution should be required for subject matter patentability, which would render non-technological business methods outside the scope of patentable subject matter”); Andrew Beckerman-Rodau, *The Problem With Intellectual Property Rights: Subject Matter Expansion*, 13 YALE J.L. & TECH. 35, 39 (2011) (discussing the implications in having too broad and overlapping protection in all areas of Intellectual Property law); Jad Mills, *Recent Development: Patentable Subject Matter in Bilski v. Kappos*, 130 S. Ct. 3218 (2010), 34 HARV. J.L. & PUB. POL’Y 377, 390 (2011) (“The Court’s decision in *Bilski* will likely produce protracted uncertainty regarding the limits of patentable subject matter because it fails to give clear guidance to lower courts and seemingly inhibits the Federal Circuit from doing so.”); John M. Golden, *Patentable Subject Matter and Institutional Choice*, 89 TEX. L. REV. 1041, 1042 (2011) (discussing optimal patent-system performance and stating that “administrative rulemaking appears to be the best process for [maintaining a categorical filter], rather than the Federal Circuit”); Robert A. McFarlane & Robert G. Litts, *Business Methods and Patentable Subject Matter Following In re Bilski: Is “Anything Under the Sun Made by Man” Really Patentable?*, 26 SANTA CLARA HIGH TECH. L.J. 35, 83 (2012) (proposing that the Supreme Court “overrule *In Re Bilski* and return to a flexible standard as has served the Constitutional purposes of the patent laws for more than 200 years”); Ben McEniery, *Physicality and the Information Age: A Normative Perspective on the Patent Eligibility of Non-Physical Methods*, 10 CHI.-KENT J. INTELL. PROP. 106, 166–67 (2011) (criticizing the machine-or-transformation test and stating that a physicality requirement is not desirable because “it is not an

Legal scholars have primarily focused their criticism on the emergence of computer technology and business practices that broke the dichotomy between tangible and intangible technologies, the latter of which historically received no protection.<sup>94</sup> With the emergence of computer technology came the emergence of questions about how to integrate existing U.S. patent law to these new areas of technology.<sup>95</sup> A wide array of solutions have been proposed by legal scholars, including broadening, limiting, or preserving the current patentable subject matter standard.<sup>96</sup> The Court addressed many questions regarding the future of the patentable subject matter standard in *Alice* and *Mayo*.<sup>97</sup>

### III. *ALICE*, *MAYO*, AND THE FEDERAL CIRCUIT’S INTERPRETATION OF THE *ALICE/MAYO* TEST

After receiving much criticism for its opinion in *Bilski*, the Supreme Court readdressed the subject matter eligibility question in 2012 and 2014 in the cases of *Mayo* and *Alice*, respectively.<sup>98</sup> Although it has been slightly modified since the Court issued the opinions, the *Alice/Mayo* test is the basis for the current patentable subject matter framework for evaluating patent applications.<sup>99</sup>

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appropriate means of encouraging much of the valuable innovation we are likely to witness during the Information Age”).

<sup>94</sup> See Gruner, *supra* note 93, at 357 (pointing out that “federal courts have . . . redefined the boundaries of patentable subject matter to include a substantial range of intangible discoveries”).

<sup>95</sup> See *id.* at 358 (setting forth some of the difficult questions that arise in identifying patentable subject matter in intangible discoveries; asking “[w]hat sorts of linkage to a physical environment should be required to distinguish a patentable method for interpreting or controlling that environment from a mere intangible description of the characteristics of the environment and the scientific principles governing the environment”).

<sup>96</sup> See McFarlane, *supra* note 93, at 82–83 (suggesting that the subject matter eligibility standard return to a more flexible, rather than formalistic approach); Kappos et al., *supra* note 93, at 170 (suggesting a narrowing of the patentable subject matter standard by issuing a per se rule that business-method patents unpatentable); Risch, *supra* note 93, at 657–58 (suggesting that the subject matter questions “should be answered by the general criteria that Congress has established—criteria that have worked for over 150 years—to determine whether a particular patent claim should be allowed”).

<sup>97</sup> See generally *Mayo Collaborative Servs. V. Prometheus Lab’ys, Inc.*, 566 U.S. 66 (2012); *Alice Corp. v. CLS Bank Int’l*, 573 U.S. 208 (2014) (setting forth the standards that serve as the basis for the *Alice/Mayo* test).

<sup>98</sup> See generally *Mayo*, 566 U.S. 66; *Alice*, 573 U.S. 208.

<sup>99</sup> See *infra* Section III.B.

### A. *Alice/Mayo* Framework

The *Alice/Mayo* test involves a two-step process that first asks if the claim is directed toward one of the four statutory categories of patentable subject matter (“Step 1”).<sup>100</sup> If the claim does not fall within one of the four statutory categories, the USPTO is not to award it a patent, even if the subject matter is otherwise new and useful.<sup>101</sup> If the claim passes Step 1, the USPTO then asks whether the claim is directed toward a judicial exception (“Step 2A”).<sup>102</sup> If not, then the claim is patentable subject matter.<sup>103</sup> However, if the claim is directed toward a judicial exception, the USPTO then considers whether the claim amounts to “significantly more” than the judicial exception (“Step 2B”).<sup>104</sup> If the claim does not add significantly more, the claim is not patentable subject matter.<sup>105</sup> Conversely, if the claim does add significantly more, then it passes the *Alice/Mayo* test and is patentable subject matter under § 101.<sup>106</sup>

#### 1. *Mayo at the Supreme Court*

In *Mayo*, the Supreme Court invalidated patent claims directed toward the treatment of autoimmune diseases with the use of thiopurine drugs.<sup>107</sup> Prior to the discoveries set forth in the patent, treatment was known to be ineffective on a patient who received too little of a dosage.<sup>108</sup> On the other hand, there was a significant risk of harmful side effects when the dosage was too high.<sup>109</sup> Furthermore, “scientists routinely measured metabolites as part of investigations [to determine]

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<sup>100</sup> See MPEP § 2106.03 (9th ed. Rev. 10, June 2020) (“35 U.S.C. [§] 101 enumerates four categories of subject matter that Congress deemed to be appropriate subject matter for a patent: processes, machines, manufactures, and compositions of matter.”).

<sup>101</sup> *Id.* § 2106.03.

<sup>102</sup> *Id.* § 2106.04 (stating that “claims directed towards nothing more than [judicial exceptions] are not eligible for patent protection”).

<sup>103</sup> *Id.*

<sup>104</sup> *Id.* § 2106.05 (referring to this step as “the search for an inventive concept”).

<sup>105</sup> *Id.*

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

<sup>107</sup> *Mayo Collaborative Servs. V. Prometheus Lab’ys, Inc.*, 566 U.S. 66, 73 (2012) (explaining that autoimmune diseases include Crohn’s disease and ulcerative colitis).

<sup>108</sup> *Id.* at 73 (explaining that patients metabolize thiopurine differently, resulting in varying levels of metabolites among patients who were administered identical doses of thiopurine).

<sup>109</sup> *Id.* at 73–74 (“At the time the discoveries embodied in the patents were made, scientists already understood that the levels in a patient’s blood of certain metabolites . . . were correlated with the likelihood that a particular dosage of a thiopurine drug could cause harm or prove ineffective.”).

the relationship between metabolite levels and [the] efficacy and toxicity of thiopurine [drugs].”<sup>110</sup> However, the precise correlations between metabolite levels and likelihood of ineffectiveness or harm was unknown in the prior art.<sup>111</sup> The novel aspect of the patent claims in *Mayo* involved (1) instructing the physician administering the thiopurine drug to measure the patient’s blood metabolite levels;<sup>112</sup> (2) describing the concentrations in which the metabolite levels would correlate with too little or too high dosage of thiopurine; and (3) directing the physician to increase or decrease the dosage as needed.<sup>113</sup> Therefore, the Court determined that the claims were directed toward a process (Step 1).<sup>114</sup>

The Court held that the patent claims were directed toward a judicial exception, specifically a law of nature (Step 2A).<sup>115</sup> Upon finding that the claim was directed toward a judicial exception, the Court then asked whether the claims did significantly more than simply describe naturally occurring relationships (Step 2B).<sup>116</sup> The Court answered that question in the negative.<sup>117</sup> Under *Mayo*, a process reciting a law of nature is not patentable subject matter unless the process has been integrated in such a way that a patent on it would not preempt others from using the law of nature itself.<sup>118</sup> The Court reasoned that the steps recited in the process claims of the patent at issue were not themselves laws of nature, but that they did not sufficiently transform the claims into patentable subject matter.<sup>119</sup> The Court then explained that some of the most influential scientists, including Einstein and Archimedes, could not have secured patents for their findings of scientific principles that are widely used in a variety of technologies to this day.<sup>120</sup>

In *Mayo*, the Court considered each of the three steps of the process

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<sup>110</sup> *Id.* at 79.

<sup>111</sup> *Id.* at 73–74 (explaining that the exact correlations between metabolite levels and likely harm or ineffectiveness was not prior art).

<sup>112</sup> *See id.* at 74–75.

<sup>113</sup> *See id.*

<sup>114</sup> *Id.* at 74.

<sup>115</sup> *Id.* at 77 (“[The] 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.”).

<sup>116</sup> *Id.* (identifying that the precise question is whether the “patent claims add *enough* to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that *apply* the natural laws”).

<sup>117</sup> *See id.*

<sup>118</sup> *Id.*

<sup>119</sup> *Id.*

<sup>120</sup> *Id.* at 78 (“Einstein, we assume, could not have patented his famous law by claiming a process consisting of simply telling linear accelerator operators to refer to the law to determine how much energy an amount of mass has produced (or vice versa).”).



claims and the process as a whole.<sup>121</sup> The steps recited in the claims included (1) an administering step, (2) a determining step, and (3) a wherein step.<sup>122</sup> As for the administering step, the Court noted that the interested public was a “pre-existing audience” because doctors used thiopurine drugs to treat patients with autoimmune diseases long before the patent application was filed.<sup>123</sup> Furthermore, the Court held that the prohibition against patenting a claim directed toward a judicial exception cannot be bypassed by restricting the use of the judicial exception to a particular area of technology.<sup>124</sup> With respect to the determining step, the Court noted that a doctor determining the level of metabolites in a patient’s blood was well known in the medical field.<sup>125</sup> In doing so, the Court considered the prior art of the claim and held that conventional or obvious pre-solution or post-solution activity is not sufficient to transform a patent claim directed toward a judicial exception into patentable subject matter.<sup>126</sup> For the wherein step of the claim’s process, the Court noted that this step simply restated the natural law and left it up to the user to apply it where relevant.<sup>127</sup> Therefore, the claimed process added nothing to the natural law and was not patentable subject matter.<sup>128</sup>

In considering the claimed process as a whole, the Court stated “the three steps as an ordered combination adds nothing to the laws of nature this is not already present when they are considered separately.”<sup>129</sup> The Court acknowledged that a combination of steps may add significantly more to the judicial exception, thereby transforming the claim into

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<sup>121</sup> *See id.* at 78–79 (explaining that the individual aspects of the claims should be considered, as well as the claim as a whole).

<sup>122</sup> *Id.* at 79 (explaining that the administering step involved instructing the doctor to administer the thiopurine to the patient; the determining step instructed the doctor to measure the metabolite levels in the patient’s blood; and the wherein step described the acceptable metabolite concentration level and instructed the doctor to increase or decrease thiopurine administration).

<sup>123</sup> *Id.*

<sup>124</sup> *Id.* at 78 (holding that a patent claim cannot “circumvent” the prohibition of claims directed toward judicial exceptions simply by limiting the use of the formula to a particular technological environment).

<sup>125</sup> *Id.* at 79 (explaining that “scientists routinely measured metabolites as part of their investigations into the relationships between metabolite levels and efficacy and toxicity of thiopurine compounds”); *see also* Michael J. Malecek & Kenneth M. Maikish, *The Prometheus Effect on Software Patents*, 24 INTELL. PROP. & TECH. L.J. 3, 7 (2012) (suggesting that the points of novelty be identified before evaluating whether the invention is patentable subject matter).

<sup>126</sup> *See Mayo*, 566 U.S. at 79–80.

<sup>127</sup> *Id.* at 78 (analogizing the claim at hand to “Einstein telling linear accelerator operators about his basic law and then trusting them to use it where relevant”).

<sup>128</sup> *Id.* at 80.

<sup>129</sup> *Id.*

patentable subject matter.<sup>130</sup> However, according to the Court, the combination of the steps in this case did not add to significantly more than instructing doctors to apply the natural law.<sup>131</sup> Thus, the process was not patentable subject matter.<sup>132</sup>

In *Mayo*, the Court distinguished the claim at hand from those in which significantly more had been added to the judicial exception.<sup>133</sup> The claims that added significantly more involved unconventional steps not routinely exercised by those of ordinary skill in the art.<sup>134</sup> The Court also admitted that judges are not suited to consider how narrow or broad a law of nature is and how much granting a patent on one would stunt innovation and, thus, refused to consider this question.<sup>135</sup>

## 2. *Alice at the Supreme Court*

The second landmark case in the modern patentable subject matter standard is *Alice*, in which the Court invalidated patent claims on the grounds that the claims were directed toward an abstract idea.<sup>136</sup> The claims in *Alice* were directed toward a scheme for mitigating settlement risk.<sup>137</sup> The claims were designed to promote transactions by using a computer system as a third-party intermediary.<sup>138</sup> The Supreme Court grouped the patent claims into three different categories: “(1) the foregoing method for exchanging obligations (the method claims), (2)

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<sup>130</sup> *Id.* (quoting *Diamond v. Diehr*, 450 U.S. 175, 188 (1981)) (“[A] new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made”).

<sup>131</sup> *Id.*

<sup>132</sup> *Id.* (reasoning that “the combination amounts to nothing significantly more than an instruction to doctors to apply the applicable laws when treating their patients”).

<sup>133</sup> *See id.* at 81–84.

<sup>134</sup> *Id.* at 84 (noting that a previous claim directed toward a law of nature “included not only a law of nature but also several unconventional steps . . . that confined the claims to a particular, useful application of the principle”).

<sup>135</sup> *See id.* at 88–89 (explaining that this “bright-line” rule is also much more easily applied).

<sup>136</sup> *See Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 226–27 (2014) (invalidating the patent because the “method claims recite the abstract idea implemented on a generic computer [and] the system claims recite a handful of generic components configured to implement the same idea”).

<sup>137</sup> *Id.* at 213 (defining settlement risk as “the risk that only one party to an agreed-upon financial exchange will satisfy its obligation”).

<sup>138</sup> *Id.* at 214 (explaining that the intermediary creates shadow records that mimic the parties’ real world bank accounts and summarizing that “[a]t the end of the day, the intermediary instructs the relevant financial institutions to carry out the ‘permitted’ transactions in accordance with the updated shadow records . . . thus mitigating the risk that only one party will perform the agreed-upon exchange”).

a computer system configured to carry out the method for exchanging obligations (the system claims), and (3) a computer-readable medium containing program code for performing the method of exchanging obligations (the media claims).”<sup>139</sup>

In *Alice*, the Court followed the test it set forth in *Mayo* just two years earlier.<sup>140</sup> Under Step 1, the Court determined that the claims were directed toward method and apparatus claims.<sup>141</sup> Next, under Step 2A, the Court determined that the claims were directed toward the abstract idea of intermediated settlement.<sup>142</sup> The Court analogized the concept of intermediated settlement to the hedging concept in *Bilski* by stating that both were long-standing and widely known economic practices.<sup>143</sup>

Under Step 2B, the Court determined that none of the three claim sets contained an inventive concept sufficient to transform the abstract idea of intermediated settlement into patentable subject matter.<sup>144</sup> In doing so, the Court rejected the argument that the method claims integrate an inventive concept by requiring a material role for the computer because merely integrating an abstract idea into a generic computer is not sufficient to transform the abstract idea.<sup>145</sup> The computer system and media claims were invalidated for the same reasons.<sup>146</sup> The Court emphasized that the recitation of specific components within a computer do not transform a claim directed toward an abstract idea if the hardware was recited in “purely functional and generic” form.<sup>147</sup>

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<sup>139</sup> *Id.* (pointing out that all of the claims involve the use of a computer).

<sup>140</sup> *See id.* at 217.

<sup>141</sup> *See id.*

<sup>142</sup> *See id.* at 218 (concluding that the claims are drawn toward an abstract idea); *see also* Christopher Moreno, *They Know It When They See It: Patentable Subject Matter After Alice*, 27 INTELL. PROP. & TECH. L.J. 6, 7 (2015) (noting that the claims at issue in *Alice* closely resemble those in *Bilski*).

<sup>143</sup> *Alice*, 573 U.S. at 219–20 (2014) (quoting *Bilski v. Kappos*, 561 U.S. 593, 611 (2009) (analogizing the concept of intermediated settlement to hedging and explaining that both are “fundamental economic practice[s] long prevalent in our system of commerce”).

<sup>144</sup> *See id.* at 221–27 (invalidating all three of the claim sets).

<sup>145</sup> *See id.* at 224–25 (rejecting the argument that the method claims contained an inventive concept to transform the claims into patent-eligible subject matter).

<sup>146</sup> *Id.* at 226 (invalidating the computer system and computer-readable medium claims “for substantially the same reasons” as the method claims”).

<sup>147</sup> *See id.* (explaining that the system claims were “no different from the method claims in substance” because the hardware recited was “purely functional and generic”).

## B. Federal Circuit’s Interpretation of the *Alice/Mayo* Test

In the first eighteen months following *Alice*, the likelihood of an applicant receiving a first office action with a rejection for ineligible subject matter increased by 31% in *Alice*-affected technologies.<sup>148</sup> Furthermore, uncertainty in patent examination increased by 25% during that same time period.<sup>149</sup> Many of these rejections were appealed to the Patent Trial and Appeal Board (“PTAB”), and subsequently to the Federal Circuit.<sup>150</sup> The Federal Circuit has jurisdiction over most appeals when claims relate to a federal patent statute.<sup>151</sup> The Federal Circuit also has exclusive jurisdiction over appeals from decisions made by PTAB at the USPTO.<sup>152</sup> Therefore, the Federal Circuit plays an important role in interpreting Supreme Court decisions and creating binding precedent with regard to patent law.<sup>153</sup>

A key case in which the Federal Circuit interpreted the Supreme Court’s *Alice/Mayo* test was in *Berkheimer v. HP Inc.*<sup>154</sup> In *Berkheimer*, the Federal Circuit vacated the district court’s judgment that patent claims directed toward methods for digitally processing and archiving files were not patentable subject matter.<sup>155</sup> The Federal Circuit agreed with the district court’s determination that such claims were directed

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<sup>148</sup> ADJUSTING TO *ALICE*, *supra* note 8, at 3 (finding that the likelihood of receiving a first office action rejecting an application based on 35 U.S.C. § 101 increased drastically following *Alice*).

<sup>149</sup> *Id.* at 1 (explaining that uncertainty in patent examination is “measured as variability in patent subject matter eligibility determinations across examiners in the first action stage of examination”).

<sup>150</sup> *See, e.g., In re Marco Guldennar Holding B.V.*, 911 F.3d 1157, 1158 (Fed. Cir. 2018); *see also* Trading Techs. Int’l, Inc. v. IBG LLC, 921 F.3d 1378, 1381 (Fed. Cir. 2019) (reviewing the decision of the Patent Trial and Appeals Board).

<sup>151</sup> 28 U.S.C. § 1295(a)(1) (“The United States Court of Appeals for the Federal Circuit shall have exclusive jurisdiction of an appeal from a final decision of a district court of the United States . . . in any civil action arising under . . . any Act of Congress relating to patents.”); *see also* *Christianson v. Colt Indus. Operating Corp.*, 486 U.S. 800, 801 (1988) (setting forth the standard that the Court of Appeals for the Federal Circuit only has jurisdiction under 28 U.S.C. § 1295(a)(1) when either “federal patent law creates the cause of action or . . . the plaintiff’s right to relief necessarily depends on resolution of a substantial question or federal patent law, in that patent law is a necessary element of one of the well-pleaded claims”).

<sup>152</sup> § 1295(a)(4)(A) (“The United States Court of Appeals for the Federal Circuit shall have exclusive jurisdiction of an appeal from a decision of the Patent Trial and Appeal Board of the United States Patent and Trademark Office with respect to a patent application.”).

<sup>153</sup> *See id.*

<sup>154</sup> *See Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364–70 (Fed Cir. 2018) (applying the *Alice/Mayo* test to the patent claims directed toward an abstract idea).

<sup>155</sup> *Id.* at 1362 (explaining that the patent claims describe “digitally processing and archiving files in a digital asset management system”).

toward abstract ideas.<sup>156</sup> However, the Federal Circuit held that there were genuine issues of material fact regarding Step 2B of the *Alice/Mayo* test because it was unknown whether the claim element or combination of elements was “well-understood, routine and conventional to a skilled artisan in the relevant field.”<sup>157</sup> Accordingly, the Federal Circuit remanded the case to the district court to determine the state of the prior art.<sup>158</sup>

The Federal Circuit used similar reasoning in *Exergen Corporation v. Kaz USA, Inc.*<sup>159</sup> However, the state of the prior art in *Exergen* allowed the patents to evade invalidation under Step 2B of the *Alice/Mayo* test.<sup>160</sup> Under Step 1 of the *Alice/Mayo* test, the court determined that the claims included both method and apparatus claims.<sup>161</sup> Under Step 2A, the court determined that the claims were directed towards the measurement of a natural phenomenon: measuring a person’s core body temperature.<sup>162</sup> Under Step 2B, the court upheld the patent claims on the ground that the measurement method was not “conventional, routine, and well-understood.”<sup>163</sup> Thus, the claims transformed the judicial exception into new and useful methods and devices that could “noninvasively and accurately detect human body temperature.”<sup>164</sup>

In making its determinations in *Berkheimer* and *Exergen*, the Federal Circuit placed great weight on whether the claimed invention was well-understood in the prior art when evaluating whether the claims transformed the judicial exception into patentable subject matter under Step 2B of the *Alice/Mayo* test.<sup>165</sup> Traditionally, prior art considerations are reserved for analyzing novelty and non-obviousness under 35

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<sup>156</sup> *Id.* at 1366–67.

<sup>157</sup> *Id.* at 1368, 1370.

<sup>158</sup> *See id.* at 1370–71.

<sup>159</sup> *See Exergen Corp. v. Kaz USA, Inc.*, 725 F. App’x 959, 962 (Fed. Cir. 2018) (considering the prior art of the patent when making its subject matter eligibility determination).

<sup>160</sup> *See id.* at 966 (finding that the claims were directed toward an abstract idea, but the abstract idea was transformed into patentable subject matter).

<sup>161</sup> *Id.* at 962 (“The claims at issue include both apparatus claims and method claims.”).

<sup>162</sup> *Id.* at 966 (explaining that the patent was directed toward measuring one’s core body temperature).

<sup>163</sup> *Id.* (explaining that the claims incorporated “an unconventional method of temperature measurement”).

<sup>164</sup> *Id.* at 964 (explaining that the invention at hand “transformed the underlying natural laws into inventive methods and useful devices that noninvasively and accurately detect human body temperature”).

<sup>165</sup> *See Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018) (putting great weight on whether the claims were “well-understood, routine, [and] conventional to a skilled artisan in the relevant field”); *Exergen*, 725 Fed. App’x at 967.

U.S.C. § 102 and § 103, respectively.<sup>166</sup>

The Federal Circuit’s interpretation of the *Alice/Mayo* test failed to clarify how the patentable subject matter, novelty, and non-obviousness analyses were to be separately considered.<sup>167</sup> Thus, the USPTO was left to interpret the ambiguous *Alice/Mayo* test and develop its own standards.<sup>168</sup>

#### IV. “MEANINGFUL” GUIDANCE BY THE USPTO AND THE *AMERICAN AXLE* DECISION

The USPTO began to implement the Supreme Court’s new subject matter eligibility guidance into its examining procedures immediately following the *Mayo* decision.<sup>169</sup> Although Supreme Court precedent remains unchanged—apart from *Alice*, which followed *Mayo*—the USPTO’s 2012 guidance is vastly different from the current guidance.<sup>170</sup> This change in guidance is partly due to the Federal Circuit’s many interpretations of and modifications to the *Alice/Mayo* test throughout the years.<sup>171</sup> The ever-changing standard has resulted in examination of patent applications under different guidance depending on when the application was filed.<sup>172</sup> Patent applications filed only months apart were evaluated under different subject matter eligibility standards.<sup>173</sup>

##### A. USPTO’s Interpretation of the *Alice/Mayo* Test

In 2012, shortly after the Court announced its decision in *Mayo*, the USPTO included two flow charts in its guidance on the patentable subject matter standard that sought to implement the *Mayo* decision.<sup>174</sup>

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<sup>166</sup> See 35 U.S.C. § 102 (setting forth the statutory basis for the novelty standard); 35 U.S.C. § 103 (setting forth the statutory basis for the obviousness standard).

<sup>167</sup> See generally *Alice*, 573 U.S. 208 (2014).

<sup>168</sup> See *infra* Part IV.

<sup>169</sup> See generally USPTO, OFF. PAT. LEGAL ADMIN., EVALUATING SUBJECT MATTER ELIGIBILITY UNDER 35 U.S.C. 101: AUGUST 2012 UPDATE (2012) [hereinafter EVALUATING SUBJECT MATTER ELIGIBILITY], [https://www.uspto.gov/sites/default/files/patents/law/exam/101\\_training\\_aug2012.pdf](https://www.uspto.gov/sites/default/files/patents/law/exam/101_training_aug2012.pdf) (setting forth guidance for USPTO examiners).

<sup>170</sup> See *id.*; MPEP §§ 2103–2106.07(c) (9th ed. Rev. 10, June 2020) (giving the USPTO’s current subject matter eligibility guidance).

<sup>171</sup> See MPEP §§ 2103–2106.07(c) (9th ed. Rev. 10, June 2020) (citing various Federal Circuit decisions as the basis for its rules).

<sup>172</sup> See *infra* Section IV.A. The discussion herein focuses on the changes in USPTO examining procedures from 2012–2020 with respect to the patentable subject matter standard and the *Alice/Mayo* test.

<sup>173</sup> See *infra* Section IV.A.

<sup>174</sup> See EVALUATING SUBJECT MATTER ELIGIBILITY, *supra* note 169, at 25, 32.

One flow chart was to be used when the claim recited product claims (machines, manufactures, and compositions of matter) and the other was to be utilized when the claim recited a process or method.<sup>175</sup> Parts of these 2012 flow charts have been preserved in subsequent guidance,<sup>176</sup> however, the distinction between whether a claim is directed toward a product, process, or method has been abandoned.<sup>177</sup> Successive guidance combined all of the claim types into one analysis.<sup>178</sup>

Although the 2014 interim guidance (issued after *Alice*) seems to set forth a relatively simple analysis involving only two steps, the reality of applying the *Alice/Mayo* test to a particular set of facts is no easy task.<sup>179</sup> In subsequent years, the USPTO has frequently updated its subject matter eligibility standard as it attempted to integrate the *Alice/Mayo* test into examiner guidelines in a way that would yield uniform results when examiners would evaluate patents directed toward judicial exceptions.<sup>180</sup> According to its examination outcomes, the USPTO

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<sup>175</sup> See *id.* (detailing the product flow chart analysis pictured on the left, and the process or method flow chart analysis on the right).

<sup>176</sup> 2106 Patent Subject Matter Eligibility, USPTO.GOV (June 25, 2020), <https://www.uspto.gov/web/offices/pac/mpep/s2106.html>.

<sup>177</sup> See 2014 Interim Guidance on Patent Subject Matter Eligibility, 79 Fed. Reg. 74,618, 74,621 (Dec. 16, 2014) (demonstrating that the distinction between product, process, and method claims in the subject matter eligibility analysis has been abandoned).

<sup>178</sup> See *id.* (instructing examiners to ask whether the claim is to a “process, machine, manufacture, or composition of matter” rather than separating out the analysis for different claim types); *id.* (diagramming the subject matter eligibility test as of December 2014).

<sup>179</sup> See Robert Daniel Garza, *Software Patents and Pretrial Dismissal Based on Ineligibility*, 24 RICH. J.L. & TECH. 2, 6 (2018) (stating that “in practice, both the courts and the United States Patent and Trademark Office . . . have had a difficult time in defining what is subject matter eligible”); Jad Mills, *Patentable Subject Matter in Bilski v. Kappos*, 130 S. Ct. 3218 (2010), 34 HARV. J.L. & PUB. POL’Y 377, 390 (2011).

<sup>180</sup> See July 2015 Update on Subject Matter Eligibility, 80 Fed. Reg. 45,429, 45,429 (July 30, 2015) (commenting on the “2014 Interim Patent Eligibility Guidance, along with additional suggestions on claim examples for explanatory example sets”); ROBERT W. BAHR, USPTO, MEMORANDUM: FORMULATING A SUBJECT MATTER ELIGIBILITY REJECTION AND EVALUATING THE APPLICANT’S RESPONSE TO A SUBJECT MATTER ELIGIBILITY REJECTION 2 (May 4, 2016), <https://www.uspto.gov/sites/default/files/documents/ieg-may-2016-memo.pdf> (“A subject matter eligibility rejection under Step 2 should: identify the judicial exception by referring to what is recited (i.e., set forth or described) in the claim and explain why it is considered an exception; identify any additional elements (specifically point to claim features/limitations/steps) recited in the claim beyond the identified judicial exception; and explain the reason(s) that the additional elements taken individually, and also taken as a combination, do not result in the claim as a whole amounting to significantly more than the judicial exception.”); see also USPTO, DECEMBER 2016:

claims that recent guidance has cleared any ambiguity that may have existed in the subject matter eligibility standard.<sup>181</sup> The current guidance consists of two documents: a memorandum issued after *Berkheimer* in April of 2018,<sup>182</sup> and a Revised Patent Subject Matter Eligibility Guidance (2019 PEG).<sup>183</sup> The 2019 PEG and an October 2019 Update include the current examination guideline flowchart—identified in Figure 1 below—used by examiners at the USPTO:

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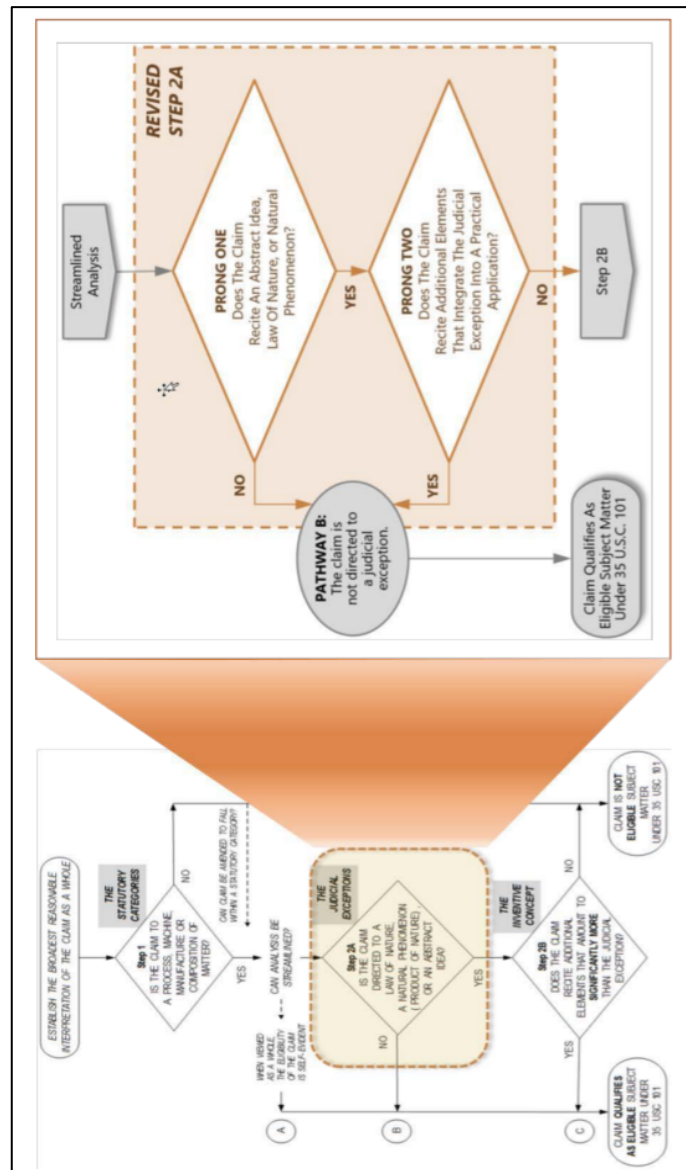
INTERIM ELIGIBILITY GUIDANCE QUICK REFERENCE SHEET (2016), [https://www.uspto.gov/sites/default/files/documents/ieg\\_qrs\\_dec2016.pptx](https://www.uspto.gov/sites/default/files/documents/ieg_qrs_dec2016.pptx) (describing abstract ideas as mathematical relationships and formulas, an idea of itself, fundamental economic practices, and certain methods of organizing human activity).

<sup>181</sup> See ADJUSTING TO *ALICE*, *supra* note 8, at 1 (“Uncertainty in patent examination for *Alice*-affected technologies decreased by 44% in the 12 months following the issuance of the 2019 PEG.”).

<sup>182</sup> BAHR, *supra* note 180.

<sup>183</sup> See 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 50–57 (Jan. 7, 2019); see also USPTO, OCTOBER 2019 UPDATE: SUBJECT MATTER ELIGIBILITY (2019), [https://www.uspto.gov/sites/default/files/documents/peg\\_oct\\_2019\\_update.pdf](https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf) [hereinafter OCTOBER 2019 UPDATE].



Figure 1.<sup>184</sup>

Under the 2019 PEG, Step 2A was the only change. The 2019 PEG broke Step 2A into two prongs (Step 2A Prong One and Step 2A Prong Two), making a claim patentable subject matter if it recites additional elements that integrate the judicial exception into a practical application.<sup>185</sup> If the claim does not, the analysis moves to Step 2B as it would have before.<sup>186</sup>

<sup>184</sup> OCTOBER 2019 UPDATE, *supra* note 183, at 10.

<sup>185</sup> *Id.*

<sup>186</sup> *Id.*

## B. The *American Axle* Decision and Recent Proposed Legislation

In a recent 6-6 decision, the Federal Circuit denied a request for rehearing en banc in *American Axle I*.<sup>187</sup> Modifying the opinion on the rehearing en banc, *American Axle II* established the sharp divide among Federal Circuit judges with respect to what innovations qualify as patentable subject matter.<sup>188</sup> The split Federal Circuit also expressed its concern about the negative effects the patent eligibility standard has had on innovation in the United States and its broad extension of the judicial exceptions in § 101.<sup>189</sup> The dissent explained that other patent requirements, such as enablement under § 112, adequately protect against an applicant claiming the entire use of a mathematical equation.<sup>190</sup>

Due to the confusion evident in the courts and at the USPTO, legislation is currently pending that would abrogate the current subject matter eligibility standard.<sup>191</sup> The proposed legislation expresses concern that the Supreme Court decisions regarding the subject matter eligibility standard will impede innovation in *Alice*-affected technologies.<sup>192</sup> Specifically, the proposed legislation recognizes that

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<sup>187</sup> *Am. Axle I*, 966 F.3d 1347, 1348 (Fed. Cir. 2020) (denying the request for rehearing en banc and generating five different opinions).

<sup>188</sup> *See Am. Axle II*, 967 F.3d 1285, 1304 (Fed. Cir. 2020) (Moore, J., dissenting) (expressing concern that “[t]he majority’s decision expands § 101 well beyond its statutory gate-keeping function and collapses the *Alice*/*Mayo* two-part test to a single step-claims are now ineligible if their performance would involve application of a natural law”).

<sup>189</sup> *Am. Axle I*, 966 F.3d at 1357 (Newman, J., dissenting) (“The court’s rulings on patent eligibility have become so diverse and unpredictable as to have a serious effect on the innovation incentive in all fields of technology. The victim is not only this inventor of this now-copied improvement in driveshafts for automotive vehicles; the victims are the national interest in an innovative industrial economy, and the public interest in the fruits of technological advance.”); *see also Am. Axle II*, 967 F.3d at 1319 (Newman, J., dissenting) (stating “[e]very mechanical invention must apply the laws of physics—that does not render them all ineligible, or maybe it does now”).

<sup>190</sup> *Am. Axle II*, 967 F.3d. at 1319 (Newman, J., dissenting) (“Section 112 adequately protects for exactly the concerns the majority expresses, though honestly, I see no enablement problem and none was raised by the defendant.”); *see also* 35 U.S.C. § 112(a) (“The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.”).

<sup>191</sup> *See* Restoring America’s Leadership in Innovation Act of 2020, H.R. 7366, 116th Cong. § 7 (2020) (setting forth proposed legislation to abrogate the *Alice*/*Mayo* standard).

<sup>192</sup> *See id.*

the harmed areas include life sciences and computer software.<sup>193</sup>

#### V. ANALYSIS OF THE EXISTING PATENT ELIGIBILITY STANDARD AND THE NEED FOR CONGRESS TO ACT

The Supreme Court has severely restricted what qualifies as patentable subject matter with the *Alice/Mayo* test,<sup>194</sup> which is contrary to original intent of Congress set forth in § 101.<sup>195</sup> The Senate has suggested its intention was that § 101 include “anything under the sun that is made by man.”<sup>196</sup> While most can agree that such a broad interpretation should not necessarily hold true, the Senate’s desire for a broad application of § 101 should be considered when adapting the subject matter eligibility standard to novel technologies.<sup>197</sup> In setting forth the *Alice/Mayo* standard, the Supreme Court meant to simply interpret the meaning of § 101.<sup>198</sup> However, the Court has gone too far in setting forth a patentable subject matter standard that severely restricts innovation and brings uncertainties upon patent applicants.<sup>199</sup>

The long-held judicial exceptions are in line with the requirement that an invention be novel.<sup>200</sup> Although the language of § 101 includes the requirement that an invention be “new” in order to be awarded patent protection,<sup>201</sup> this requirement is dealt with in much greater detail in the novelty and non-obviousness requirements in § 102 and § 103, respectively.<sup>202</sup> In § 102, Congress has set forth carefully articulated qualifications and exceptions for a particular reference to be considered

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<sup>193</sup> *Id.* (suggesting that *Alice* and *Mayo* be abrogated “to ensure that life sciences discoveries, computer software, and similar inventions and discoveries are patentable, and that those patents are enforceable”).

<sup>194</sup> See generally *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208 (2014).

<sup>195</sup> See *id.* at 216 (explaining that the Court has interpreted “[35 U.S.C.] § 101 and its predecessors . . . for more than 150 years”).

<sup>196</sup> S. REP. NO. 1979, at 5 (1952).

<sup>197</sup> See *id.* (explaining that the Senate’s intention is to define patentable subject matter broadly).

<sup>198</sup> See 35 U.S.C. § 101; see also *Alice*, 573 U.S. at 216 (interpreting 35 U.S.C. § 101).

<sup>199</sup> See generally OCTOBER 2019 UPDATE, *supra* note 183 (setting forth the current standard used by the USPTO when evaluating patent applications under § 101); see also Risch, *supra* note 93, at 628 (criticizing the current subject matter eligibility standard).

<sup>200</sup> See *Bilski v. Kappos*, 561 U.S. 593, 601–02 (2009) (internal citation omitted) (noting that the judicial exceptions “are consistent with the notion that a [patent] be new and useful”).

<sup>201</sup> 35 U.S.C. § 101 (stating that a patent is awarded only to inventions that are “new and useful”).

<sup>202</sup> See § 102 (requiring that an invention be novel in order to be patentable); § 103 (requiring that an invention be nonobvious to “a person having ordinary skill in the art to which the claimed invention pertains”).

prior art for an invention.<sup>203</sup> Furthermore, a long history of case law supports the non-obviousness requirement,<sup>204</sup> making it an easy standard for courts and the USPTO to apply. Moving the novelty and non-obviousness analysis to § 101, which is essentially what the Court has done, usurps § 102 and § 103 and renders them ineffective.<sup>205</sup> When an applicant is faced with a patentable subject matter rejection on the basis of the claims integrating the judicial exception into well-known, routine, or conventional activity, the applicant is unable to set forth the applicable case law and arguments under §§ 102 and 103 to prove that his invention is novel or nonobvious, respectively.<sup>206</sup> Therefore, analyses involving prior art should be left to §§ 102 and 103 and not considered under § 101.<sup>207</sup>

### A. Proposed Legislative Amendment of the Patentable Subject Matter Standard

The Patent Act of 1952 is long outdated and includes a subject matter eligibility standard that does not properly map on to modern technological advances.<sup>208</sup> The Supreme Court has done its best to apply § 101 to *Alice*-affected technologies.<sup>209</sup> However, the Court lacks the resources available to Congress when setting forth a new standard.<sup>210</sup> Adapting the subject matter eligibility standard to *Alice*-affected technologies involves complex policy considerations that determine how the United States economy will compare to that of foreign countries.<sup>211</sup> Thus, it is Congress's constitutional duty to enact

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<sup>203</sup> See § 102(b) (setting forth exceptions as to when prior art is excluded, although it was made before the filing of the patent application).

<sup>204</sup> See, e.g., *Hotchkiss v. Greenwood*, 52 U.S. 248, 264–65 (1850) (invalidating a patent in 1850 for “making door and other knobs of all kinds of clay used in pottery, and of porcelain” because it required “no more skill . . . than that possessed by an ordinary mechanic acquainted with the business”).

<sup>205</sup> See §§ 102–103 (setting forth the novelty and nonobviousness requirements, respectively).

<sup>206</sup> See *id.*

<sup>207</sup> See *id.*; see also § 101; Risch, *supra* note 93, at 658 (urging the USPTO and Courts to focus on the “novelty, nonobviousness, utility, and specification with a scalpel rather than simply eliminating broad swaths of innovation with a machete”).

<sup>208</sup> See § 101.

<sup>209</sup> See discussion *supra* Section I.A (providing instances in which the Supreme Court was attempting to apply § 101 to *Alice*-affected technologies, which include biotechnology and computer technologies).

<sup>210</sup> See *Parker v. Flook*, 437 U.S. 584, 595 (1978) (explaining that Congress has the best access to empirical data and is therefore the better suited to setting forth new standards for patentable subject matter).

<sup>211</sup> See PUGATCH & TORSTENSSON, *supra* note 11, at 20 (concluding that “[a]s economies aspire to stimulate economic growth and foster greater global and region competitiveness, effective IP protection will be key to achieving this goal”).

legislation that updates the subject matter eligibility standard to ensure that the United States will continue to be a leader in innovation for years to come.<sup>212</sup>

*1. Removal of “New” from the Language of § 101*

First, Congress should simply remove the requirement that an invention be “new” under § 101.<sup>213</sup> Although novelty is an essential requirement for an invention to be awarded patent protection,<sup>214</sup> the requirement is better dealt with in the novelty provision under § 102.<sup>215</sup> The novelty and non-obviousness requirements consider what can already be found in the prior art and what a person having ordinary skill in the art would consider obvious in light of the prior art, respectively.<sup>216</sup> Therefore, there is no need for § 101 to consider prior art and the removal of “new” from the statute would ensure that the Court does not consider prior art when determining subject matter eligibility.<sup>217</sup>

*2. Restricting Claims Directed Toward Judicial Exceptions to Their Functional Language*

Next, Congress should set forth the standard of treating a claim as a means-plus-function claim if it fails Step 2A Prong Two.<sup>218</sup> Currently, unless a claim recites means-plus-function language, the stated functionality is not a limitation on the claim.<sup>219</sup> Under the proposed standard, when a claim does not recite additional elements that integrate the judicial exception into a practical application under Step 2A Prong Two, then the claim would automatically be converted into a means-

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<sup>212</sup> See U.S. CONST. art. I, § 8, cl. 8 (empowering Congress “[t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries”).

<sup>213</sup> See 35 U.S.C. § 101 (setting forth the patentable subject matter standard).

<sup>214</sup> *Id.*

<sup>215</sup> See § 102 (setting forth the novelty standard); § 103 (setting forth the obviousness standard).

<sup>216</sup> See § 102; § 103.

<sup>217</sup> See § 101 (currently requiring that an invention be “new” to qualify as patentable subject matter).

<sup>218</sup> See 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 54 (Jan. 7, 2019) (setting forth Step 2A Prong Two which asks if “the claim recite[s] additional elements that integrate the judicial exception into a practical application”); MPEP § 2181 (9th ed. Rev. 10, June 2020) (setting forth the standard that a means-plus-function claim is narrowed to its recited function and the corresponding structures and their equivalents recited in either the claim or the specification).

<sup>219</sup> See MPEP § 2181 (9th ed. Rev. 10, June 2020) (directing examiners that the functional language is limiting when the claim “explicitly uses the term ‘means’ or ‘step’ and includes functional language”).

plus-function claim, and § 112(f) would apply.<sup>220</sup> Of course, the applicant could include a means-plus-function claim in his patent and such a claim would satisfy Step 2A Prong Two,<sup>221</sup> but the broader non-means-plus-function claims would be invalidated under this same step.<sup>222</sup> Thus, the proposed solution would take the claims that do not integrate the judicial exception into a practical application and do so automatically by limiting them to the claimed function and corresponding structure.<sup>223</sup>

The proposed standard set forth above is in line with the primary goal of the judicial exceptions: ensuring that a patentee does not preempt the entire usage of one of the building blocks of technology.<sup>224</sup> Restricting a claim directed toward a judicial exception to its asserted functionality would still allow other inventors to utilize the judicial exception, while granting the applicant exclusive rights to a narrow usage of the judicial exception.<sup>225</sup> Furthermore, the proposed standard eliminates the considerations of novelty and obviousness by eliminating Step 2B of the patentable subject matter analysis.<sup>226</sup> The mixing of novelty and obviousness into the patentable subject matter standard does not occur until Step 2B when the USPTO asks whether the claim has added significantly more to the judicial exception.<sup>227</sup> On the other hand, the October 2019 Update makes it clear that novelty and obviousness are not to be considerations under Step 2A Prong Two.<sup>228</sup>

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<sup>220</sup> See 35 U.S.C. § 112(f) (explaining that if a claim does not recite a structure, then “such [a] claim shall be construed to cover the corresponding structure . . . in the specification and equivalents thereof”).

<sup>221</sup> See MPEP § 2181 (9th ed. Rev. 10, June 2020).

<sup>222</sup> See *id.*

<sup>223</sup> See 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 54 (Jan. 7, 2019).

<sup>224</sup> See *Alice Corp. Pty. Ltd. V. CLS Bank Int’l*, 573 U.S. 208, 216–17 (2014) (internal citations omitted) (stating the “concern that patent law not inhibit further discovery by tying up the future use of [the] building blocks of human ingenuity”).

<sup>225</sup> See MPEP § 2181 (9th ed. Rev. 10, June 2020) (explaining that means-plus-function claiming narrows the claim to the stated function and the corresponding structure); see also *infra*, Section IV.B.3 (analyzing how *Mayo* and *Alice* would be decided under the proposed standard).

<sup>226</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 15. The mixing of novelty and obviousness into the patentable subject matter standard does not occur until Step 2B when the USPTO asks whether the claim has added significantly more to the judicial exception. *Id.* (explaining that under Step 2B, the USPTO is to consider “well-understood, routine, [and] conventional activity”).

<sup>227</sup> See *id.* (explaining that under Step 2B, the USPTO is to consider “well-understood, routine, [and] conventional activity”).

<sup>228</sup> *Id.* (“[W]ell-known, routine, conventional activity is not a consideration at Step 2A in the 2019 PEG. Therefore, whether a claim limitation is extra-solution activity will not be based upon whether the limitation is well-known. Instead, well-

Some scholars may argue that the proposed standard would not prevent the preemption of the building blocks of technology because applicants would simply claim broad functions; however, the written description and enablement requirement of § 112 assure that an applicant would be unable to do so.<sup>229</sup> The Manual of Patent Examining Procedure (“MPEP”) includes robust guidance with respect to the written description and enablement requirements, and even contains specific sections dedicated to the written description and enablement requirement as applied to computer implemented technologies that employ means-plus-function language.<sup>230</sup> Therefore, under the proposed standard, an applicant would be unable to simply claim a broad function of a judicial exception because § 112 would prevent them from doing so.<sup>231</sup>

Unfortunately, even under the proposed standard, nothing can be done about the patents that have been invalidated under the current patentable subject matter standard because granting those applications would extract knowledge out of the public domain.<sup>232</sup> Although it would be possible for such patents to qualify under the proposed standard, they would fail under the novelty analysis.<sup>233</sup> Therefore, the proposed standard is forward looking and would apply only to future patent applicants.<sup>234</sup>

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understood, routine, conventional activity will only be considered if the analysis proceeds to Step 2B.”).

<sup>229</sup> See 35 U.S.C. § 112(a) (setting forth the requirement that the specification must have a “written description of the invention, and of the manner and process of making and using it, . . . as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same”).

<sup>230</sup> See MPEP §§ 2163–64 (9<sup>th</sup> ed. Rev. 10, June 2020) (setting forth guidance for the written description and enablement requirements); *id.* § 2161.01 (setting forth written description and enablement requirements as they relate to computer programming and computer implemented technologies); *id.* § 2181.II.B (setting forth the standard of how computer-implemented means-plus-function limitations should be evaluated).

<sup>231</sup> See 35 U.S.C. § 112 (requiring that the invention and the process of making and using it be described “in such full, clear, concise and exact terms as to enable any person skilled in the art . . . to make and use the same”).

<sup>232</sup> See § 102 (barring patent protection to inventions that are not novel).

<sup>233</sup> See *id.*

<sup>234</sup> See Examination Guidelines for 35 U.S.C. 102 and 103 as Amended by the First Inventor To File Provisions of the Leahy-Smith America Invents Act, 78 Fed. Reg. 11,070, 11,072 (Feb. 14, 2013) (applying the AIA novelty standard only to applications filed on or after March 16, 2013).

## B. Guidance to be Given to the Supreme Court, USPTO, and Patent Applicants

In addition to setting forth new legislation that limits claims directed to judicial exceptions to their functionality after failing to satisfy Step 2A, Congress should also set forth guidance to the Supreme Court, USPTO, and patent applicants on how to comply with the proposed standard.<sup>235</sup> Similar to the way that the USPTO sets forth rules and drafting recommendations in the MPEP, Congress should take this opportunity to set forth prosecution recommendations; offer guidelines for how to properly invoke the proposed standard; and provide examples of applying the proposed standard to *Mayo* and *Alice*.<sup>236</sup> Doing so will ensure a smooth transition to the proposed standard and a clear elimination of Step 2B of the previous *Alice/Mayo* test.<sup>237</sup>

### 1. Guidance for the Supreme Court and USPTO

The existing guidance may be used for the proposed standard up to Step 2A Prong Two.<sup>238</sup> Under the proposed standard, however, if the Court or the USPTO determines that a claim fails Step 2A, instead of moving on to Step 2B and determining whether the claim adds significantly more to the judicial exception, the claim would simply be construed as a means-plus-function claim if it recited the requisite functionality and corresponding structure.<sup>239</sup> The USPTO's current guidance may easily be amended to integrate the proposed standard, as depicted in Figure 2:

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<sup>235</sup> See generally MPEP (9th ed. Rev. 10, June 2020) (setting forth examination guidelines).

<sup>236</sup> See *id.*

<sup>237</sup> See *Alice*, 573 U.S. at 216 (setting forth the *Alice/Mayo* test).

<sup>238</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11 (setting forth the most recent guidance on how examiners should conduct a subject matter eligibility analysis).

<sup>239</sup> See *id.* at 16 (explaining that the current standard rejects a claim under Step 2B if “the claim is directed to a judicial exception without providing an inventive concept/significantly more”).



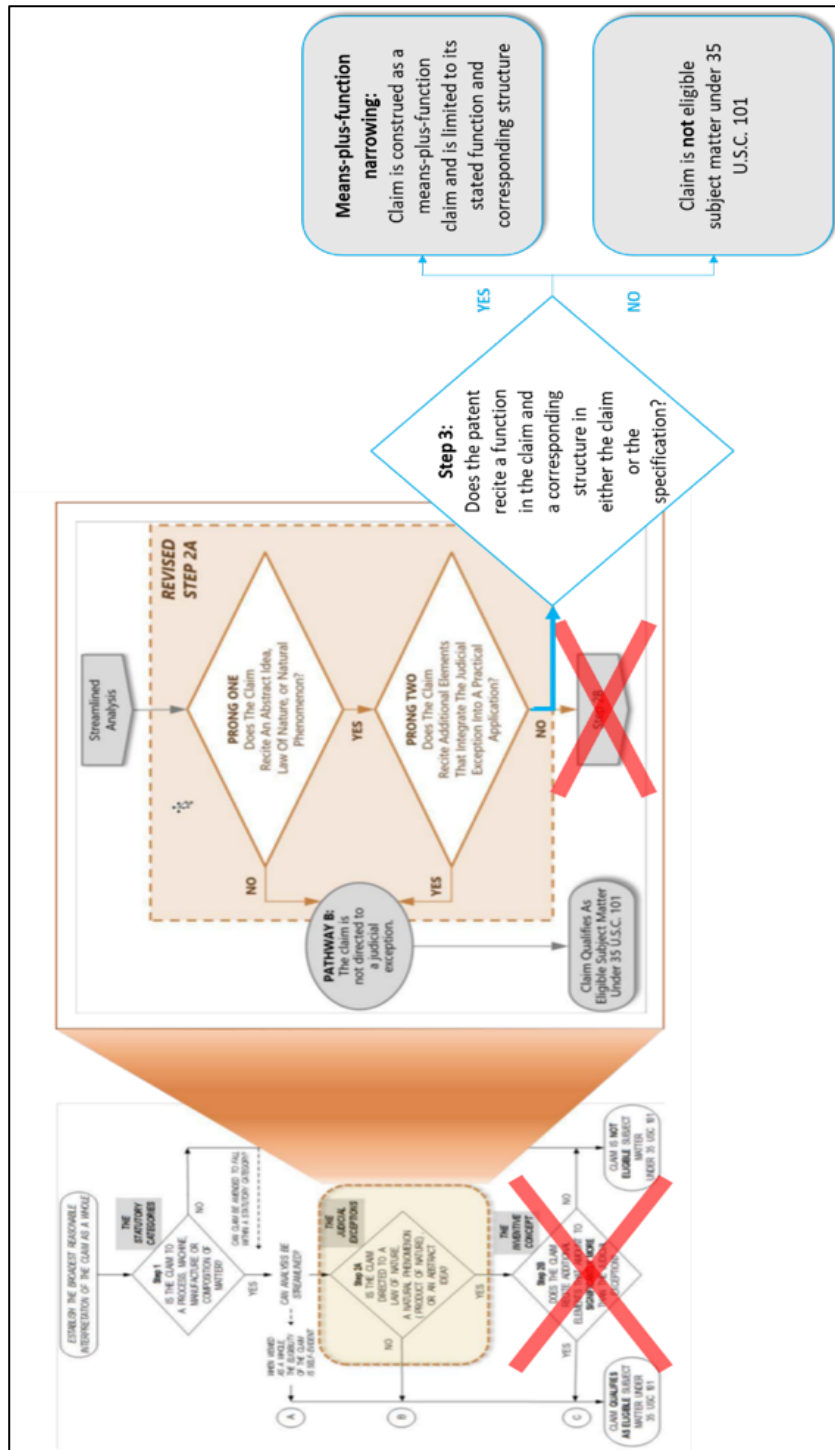


Figure 2. 240

<sup>240</sup> See *id.* at 10–11; the current subject matter eligibility flow-chart has been

Currently, if a patent claim does not satisfy the two prongs of Step 2A and does not add significantly more to the judicial exception, the patent claim is not patent eligible subject matter under § 101.<sup>241</sup> Thus, under current USPTO guidance, if the applicant/patentee cannot satisfy the ambiguous “significantly more” standard after failing Step 2A, the claim is awarded no protection.<sup>242</sup>

Congress should instead advise the USPTO and Supreme Court to eliminate Step 2B from the subject matter eligibility standard altogether.<sup>243</sup> Upon a claim failing to meet the two prongs of Step 2A, Congress’s guidance would instruct the USPTO and Supreme Court to ask if the patent includes functional language in the claim and a corresponding structure in either the claim or specification.<sup>244</sup> If not, then the claim would not be patentable subject matter under § 101.<sup>245</sup> If the patent does recite the required functional language and corresponding structure, then the claim would simply be narrowed to be a means-plus-function claim just as if it had utilized means-plus-function language.<sup>246</sup> MPEP guidance and case law already exist regarding how means-plus-function claims are interpreted;<sup>247</sup> therefore, claims could easily be converted into means-plus-function claims.<sup>248</sup> The MPEP even includes a specific section dedicated to determining

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modified to eliminate Step 2B entirely. The proposed modification eliminates the ambiguity that comes from the search for an inventive concept/significantly more. Step 2B is the part of the existing guidance that raises the most uncertainty for patent examiners and courts. Courts frequently consider the novelty and nonobviousness analysis in this step. It is important to note that the remainder of the chart remains untouched and the guidance for Step 1 and Step 2A remains the same. *See id.*

<sup>241</sup> *See id.*; *see also* *Mayo Collaborative Servs. v. Prometheus Lab’ys, Inc.*, 566 U.S. 66, 84 (2012) (explaining the difference between claims that add significantly more and those that simply recite the judicial exception; those that add significantly more include “several unconventional steps that confine[] the claims to a particular, useful application of the [judicial exception]”).

<sup>242</sup> OCTOBER 2019 UPDATE, *supra* note 183, at 15–16.

<sup>243</sup> *See id.* (explaining Step 2B, which would be eliminated under the proposed standard).

<sup>244</sup> *See* MPEP § 2181.II (9th ed. Rev. 10, June 2020) (enumerating the standard that a means-plus-function claim “shall be construed to cover the corresponding structure . . . described in the specification and equivalents thereof”).

<sup>245</sup> *See* 35 U.S.C. § 101 (enumerating the patentable subject matter standard).

<sup>246</sup> *See id.*

<sup>247</sup> *See, e.g.*, *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015) (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1583 (Fed. Cir. 1996)); *see also* MPEP §§ 2181–2186 (9th ed. Rev. 10, June 2020).

<sup>248</sup> *See* MPEP §§ 2181–2186 (9th ed. Rev. 10, June 2020) (setting forth when means-plus-function limitations are invoked and how means-plus-function claims are examined at the USPTO); *see also* *Phillips v. AWH Corp.*, 415 F.3d 1303, 1311 (Fed. Cir. 2005) (citing *Personalized Media Commc’ns., LLC v. Int’l Trade Comm’n*, 161 F.3d 696, 703–04 (Fed.Cir.1998)) (explaining that the “absence of [the term ‘means’] creates a rebuttable presumption that section 112, paragraph 6, does not apply”).

whether computer-implemented functional claim limitations are novel and nonobvious.<sup>249</sup>

In statutory notes accompanying the proposed legislative amendment, Congress should also note that if it is decided that a claim satisfied either prong of Step 2A, then there is no need for the claim to be narrowed to a means-plus-function claim.<sup>250</sup> It has long been held that the default presumption is that a claim is not restricted by functional language or the limitations enumerated in the specification.<sup>251</sup> The exception is only invoked when a claim utilizes “means for” language.<sup>252</sup> Congress should make it clear that the proposed standard does not change the default presumption and is only invoked when a patent claim fails to satisfy Steps 1 and 2A under the current § 101 analysis.<sup>253</sup> Congress should direct the USPTO and Supreme Court that a claim failing to satisfy Steps 1 and 2A would simply be equivalent to a claim limitation utilizing “means for” language.<sup>254</sup>

Furthermore, in setting forth the proposed standard, Congress should make it clear that a patentee or applicant’s inclusion of functional language and a corresponding structure in a patent is not to be construed as the patentee or applicant admitting that the claim is directed toward a judicial exception.<sup>255</sup> Under the proposed standard,

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<sup>249</sup> See MPEP § 2114.IV (9th ed. Rev. 10, June 2020) (including the section for “determining whether a computer-implemented functional claim limitation is patentable over the prior art under 35 U.S.C. 102 and 103”).

<sup>250</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11.

<sup>251</sup> See MPEP § 2181.I (9th ed. Rev. 10, June 2020) (stating that “a claim limitation that does not use the term ‘means’ or ‘step’ will trigger the rebuttable presumption that [35 U.S.C. § 112(f)] does not apply”); see also *id.* at 2111.01.II (quoting *Superguide Corp. v. DirecTV Enters.*, 358 F.3d 870, 875, (Fed. Cir. 2004)) (“Though understanding the claim language may be aided by explanations contained in the written description, it is important not to import into a claim limitations that are not part of the claim.”).

<sup>252</sup> *Id.* at 2181.I (“[E]xaminers will apply 35 U.S.C. 112(f) . . . to a claim limitation if it meets the following 3-prong analysis: (A) the claim limitation uses the term ‘means’ or ‘step’ or a term used as a substitute for ‘means’ that is a generic placeholder (also called a nonce term or a non-structural term having no specific structural meaning) for performing the claimed function; (B) the term ‘means’ or ‘step’ or the generic placeholder is modified by functional language, typically, but not always linked by the transition word ‘for’ (e.g., ‘means for’) or another linking word or phrase, such as ‘configured to’ or ‘so that’; and (C) the term ‘means’ or ‘step’ or the generic placeholder is not modified by sufficient structure, material, or acts for performing the claimed function.”).

<sup>253</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11 (directing examiners how to conduct a subject matter eligibility analysis under § 101).

<sup>254</sup> See MPEP § 2181 (9th ed. Rev. 10, June 2020) (setting forth the three-prong analysis that examiners use to determine whether functional language in a claim is limiting).

<sup>255</sup> See *id.* (explaining the specific circumstances where functional language is limiting to a claim).

the patentee may still argue that his claim is valid under the two prongs of Step 2A.<sup>256</sup> The existence of a corresponding structure is not to be relevant to the merits of the two prongs of Step 2A.<sup>257</sup>

## 2. *Prosecution Recommendations for Applicants*

Upon enacting the proposed solution, similar to the MPEP, Congress should also set forth drafting recommendations in the statutory notes for patent applicants to take advantage of the proposed standard.<sup>258</sup> In doing so, Congress should recommend that patent applicants always include functional language in a claim and a corresponding structure in the specification, which would not convert it into a means-plus-function claim but would allow it to be easily converted upon a finding that the claim has failed Steps 1 and 2A.<sup>259</sup> Although the failure to include functional language and recite a corresponding structure would not be grounds for invalidation under the proposed standard, the absence of such a structure would render the claim invalid if it fails to satisfy Steps 1 and 2A of the patentable subject matter standard.<sup>260</sup> Therefore, as a back-up, it would be in the applicant's best interest to include functional language and a corresponding structure in the specification even when the applicant does not expect to face a § 101 rejection.<sup>261</sup>

Some may argue that the inclusion of a corresponding structure would not benefit the patentee because means-plus-function claims are far too narrow to grant the patentee any meaningful exclusivity rights.<sup>262</sup> Admittedly, if a claim fails to satisfy Step 2A and is transitioned into a means-plus-function claim, it will be far narrower than before.<sup>263</sup> However, by including a corresponding structure, the patent claim is given a type of “insurance” and will not be deemed completely invalid

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<sup>256</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11 (enumerating the flow-chart for Steps 1 and 2A).

<sup>257</sup> See *id.*

<sup>258</sup> See generally MPEP (9th ed. Rev. 10, June 2020) (setting forth examiner guidelines and drafting recommendations for patent applicants).

<sup>259</sup> See *id.* § 2181.I.B (“[T]he fact that a particular mechanism . . . is defined in functional terms is not sufficient to convert a claim element containing that term into a [means-plus-function claim].”).

<sup>260</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11.

<sup>261</sup> See *id.*

<sup>262</sup> See MPEP § 2163 (9th ed. Rev. 10, June 2020) (quoting 35 U.S.C. § 112(f) (explaining that a means-plus-function claim is interpreted to cover only “the corresponding structure, materials, or acts in the specification and ‘equivalents thereof’”).

<sup>263</sup> See *id.* § 2111 (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005)) (without the means-plus-function limitation, claims pending examination are given their “broadest reasonable interpretation consistent with the specification”).

upon a finding that it does not satisfy Step 2A.<sup>264</sup>

The inclusion of information in a patent application as a type of insurance is nothing new to patent prosecution.<sup>265</sup> Patent applicants routinely include dependent claims that further narrow a broader independent claim.<sup>266</sup> Just as dependent claims act as insurance to the broader independent claim to which it relates, the inclusion of functional language and a corresponding structure would act as insurance if the claim is found to be directed toward an abstract idea and subsequently does not satisfy the two prongs of Step 2A.<sup>267</sup>

Some may also argue that a patent applicant or patentee would still strongly contest that a patent claim does not fail Step 2A Prong Two in order to avoid the means-plus-function narrowing and, thus, the proposed standard would merely shift the point of controversy from Step 2B to Step 2A Prong Two.<sup>268</sup> However, further analogization to independent and dependent claims quickly rebuts this argument.<sup>269</sup> A patentee is still likely to fiercely contest that an independent claim is valid, even though it has been conceded that a narrower dependent claim is valid because the independent claim gives the patentee broader exclusivity rights.<sup>270</sup> The mere anticipation of litigation, even where both parties concede that a narrower dependent claim is valid, is surely no reason to eliminate the existence of dependent claims.<sup>271</sup> Similarly, it is also not a reason for Congress to reject the proposed standard when both parties will likely concede that a narrower means-plus-function claim is valid, but the patentee would nevertheless opt to argue for broader protection.<sup>272</sup>

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<sup>264</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10–11.

<sup>265</sup> Fromer, *supra* note 89, at 739–40 (explaining that dependent claims act as “insurance[,] should a broad independent claim be held invalid, the narrower dependent claims would still stand, so long as they are independently valid”); Brean, *supra* note 89, at 1195 (“[H]aving a variety of independent and dependent claims in a patent allows patent owners to hedge their bets on which claims will be both valid and infringed. Having a narrower ‘backup’ dependent claim[] . . . allows for more refined claim assertion strategies in litigation.”).

<sup>266</sup> See Fromer, *supra* note 89, at 740 (pointing out that the “fallback protection [of dependent claims] has led to an abundance of [them]”).

<sup>267</sup> See *id.*

<sup>268</sup> See October 2019 Update, *supra* note 183, at 1, 15–16.

<sup>269</sup> See Fromer, *supra* note 89, at 739–40 (setting forth the differences between independent and dependent claims).

<sup>270</sup> *Phillips v. AWH Corp.*, 415 F.3d 1303, 1324–25 (Fed. Cir. 2005) (explaining the dynamics of how independent and dependent claims are interpreted in a patent).

<sup>271</sup> See *id.*

<sup>272</sup> See *id.*

### 3. *Analysis of Mayo and Alice Under the Functionality Restricted Subject Matter Eligibility Standard*

In the statutory notes accompanying the proposed standard, Congress should also set forth analyses of how previous landmark cases would have been decided had the proposed standard been applied.<sup>273</sup> In doing so, Congress would inform future applicants and examiners that the claims in *Mayo* would have been limited to means-plus-function claims.<sup>274</sup> On the other hand, the claims in *Alice* would have still been invalidated for failing to recite a corresponding structure for the claims to be narrowed to a means-plus-function claim.<sup>275</sup>

In *Mayo*, the Court had already determined that the claims for administering certain amounts of thiopurine drugs to patients with an autoimmune disease were a process and were directed to a judicial exception, specifically, a law of nature (Step 1 and Step 2A Prong One).<sup>276</sup> Under the new standard, this analysis would remain the same.<sup>277</sup> The claim would pass Step 1 since it is clearly a process.<sup>278</sup> Next, the claim would fail Step 2A Prong One because it recited a law of nature: the human body's reaction to thiopurine drugs.<sup>279</sup> Although the patentee would have a strong argument that the patent recites additional elements that integrate the law of nature into a practical application, Step 2A Prong Two would also not be satisfied.<sup>280</sup> The claim does not recite additional elements that integrate the judicial exception into a practical application and is thus directed toward a judicial exception.<sup>281</sup> The claim fails to limit the law of nature of the

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<sup>273</sup> See *Mayo Collaborative Servs. v. Prometheus Lab'ys, Inc.*, 566 U.S. 66, 73 (2012) (invalidating a claim directed toward the “use of thiopurine drugs in the treatment of autoimmune diseases”); *Alice Corp. Pty. Ltd. V. CLS Bank Int'l*, 573 U.S. 208, 226 (2014) (invalidating claims because they were directed toward “the abstract idea of intermediated settlement using some unspecified, generic computer”).

<sup>274</sup> See *Mayo*, 566 U.S. at 73–74.

<sup>275</sup> See *Alice*, 573 U.S. at 226.

<sup>276</sup> *Mayo*, 566 U.S. at 77 (“[The] patents set forth laws of nature.”).

<sup>277</sup> See *id.* at 77–82 (evaluating the patent under Step 1 and Step 2A).

<sup>278</sup> See *id.* at 74.

<sup>279</sup> See *id.* at 77; see also OCTOBER 2019 UPDATE, *supra* note 183, at 1 (explaining that “a claim recites a judicial exception when the judicial exception is ‘set forth’ or ‘described’ in the claim,” while then explaining that “set forth” means the judicial exception was clearly stated, and “described” means that the judicial exception was stated but not explicitly).

<sup>280</sup> See *Mayo*, 566 U.S. at 77.

<sup>281</sup> See OCTOBER 2019 UPDATE, *supra* note 183, at 10 (noting that Step 2A Prong Two “distinguishes claims that are ‘directed to’ the recited judicial exception from claims that are not ‘directed to’ the recited judicial exception”).

human body's reaction to thiopurine drugs in any meaningful way.<sup>282</sup>

Under the proposed standard, the patent in *Mayo* would not have been invalidated in its entirety, but instead would have been narrowed to be construed as a means-plus-function claim.<sup>283</sup> In analyzing *Mayo* under the proposed standard, the Court would look to the claim to determine if functional language existed to serve as the basis of the means-plus-function claim.<sup>284</sup> The claim in *Mayo* recited a function, namely "optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder."<sup>285</sup> Next, the Court would analyze whether the patent recited a corresponding structure in either the claim or the specification.<sup>286</sup> Although the patent in *Mayo* does not specifically recite a specific structure for performing the function, it enumerates several well-known methods in the art for doing so.<sup>287</sup> Thus, the corresponding structure would be limited to the structures and their equivalents that were well-known in the art at the time the patent application was filed.<sup>288</sup> The claim would not cover structures developed after the time of filing, but this is preferable to the patentee being awarded no protection for a novel and nonobvious innovation.<sup>289</sup>

On the other hand, under the proposed standard, *Alice* would still be invalidated and not limited to a means-plus-function claim because the patent failed to recite the required corresponding structure.<sup>290</sup> The Court's previous analysis under Step 1, Step 2A Prong One, and Step 2A Prong Two would once again still be utilized under the proposed standard.<sup>291</sup> The Court noted that the claims pass Step 1 because they

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<sup>282</sup> See *id.* at 15 (noting that considerations Step 2A Prong Two that indicate integration are "implementing the judicial exception with a particular machine or manufacture, effecting a particular transformation or reduction of an article, and applying the judicial exception in some other meaningful way") (emphasis added).

<sup>283</sup> See *Mayo*, 566 U.S. at 73.

<sup>284</sup> See 35 U.S.C. 112(f) (setting forth the requirements for a means-plus-function claim).

<sup>285</sup> U.S. Patent No. 6,355,623 (filed Apr. 8, 1999) (setting forth the claims that were invalidated in *Mayo*).

<sup>286</sup> See generally *id.*

<sup>287</sup> See *id.* ("The level of a 6-MP metabolite can be determined by methods well known in the art.")

<sup>288</sup> See *id.* (enumerating the filing date of April 8, 1999).

<sup>289</sup> See *Mayo Collaborative Servs. v. Prometheus Lab's, Inc.*, 566 U.S. 66, 92 (2012) (invalidating the patent claims in their entirety because they "effectively claim the underlying laws of nature themselves").

<sup>290</sup> See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 225–27 (2014) (finding that the claims merely implemented an abstract idea into a generic computer); see also U.S. Patent No. 5,970,479 (filed May 28, 1993) (setting forth the claims that were invalidated in *Alice*).

<sup>291</sup> See 573 U.S. at 217–227 (analyzing the patent claims at issue by first determining "whether the claims at issue are directed to a patent-ineligible concept").

are directed toward method and apparatus claims.<sup>292</sup> Next, under Step 2A Prong One, the Court determined that the claims were directed toward the abstract idea of intermediated settlement.<sup>293</sup> Furthermore, Step 2A Prong Two was also not satisfied in *Alice* because the claims did not integrate the abstract idea of intermediated settlement into a practical application;<sup>294</sup> the claim only required the generic computer implementation of the judicial exception.<sup>295</sup>

Next, under the newly proposed standard, instead of evaluating whether the claim recited significantly more to transform the judicial exception, the Court would determine whether the claim recited a function and corresponding structure so that the Court would be capable of narrowing the claim to a means-plus-function claim.<sup>296</sup> Claim 33 of the patent at issue in *Alice*, which the parties agreed was representative of the method claims, recited functional language: creating a shadow credit record; obtaining a start-of-day balance; and allowing only certain transactions to proceed.<sup>297</sup> However, the patent fails to recite a corresponding structure in which the function could be limited to.<sup>298</sup> The disclosed structure in *Alice* was only a general purpose computer, which is not a sufficient corresponding structure for computer-implemented means-plus-function limitations.<sup>299</sup> Therefore, the claim fails Step 3 of the proposed standard and would be invalidated in its entirety, and the previous holding in *Alice* would stand.<sup>300</sup>

Although the proposed standard would have only kept the *Mayo* patent from being invalidated and would not have saved the *Alice* patent, the patentee in *Alice* could have easily satisfied the corresponding structure requirement by enumerating the specific algorithm for performing the claimed function in the specification.<sup>301</sup> If the proposed standard would have been in existence at the time of filing in *Alice*, the applicant surely would have included an algorithm in

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<sup>292</sup> *Id.* at 217.

<sup>293</sup> *Id.* at 218 (stating that the claims are directed toward a judicial exception, specifically “the abstract idea of intermediated settlement”).

<sup>294</sup> *Id.* at 225.

<sup>295</sup> *Id.* at 221 (explaining that “generic computer implementation” fails to make a judicial exception patentable subject matter).

<sup>296</sup> See 35 U.S.C. 112(f) (setting forth the requirements for a means-plus-function claim).

<sup>297</sup> See U.S. Patent No. 5,970,479 (filed May 28, 1993).

<sup>298</sup> See *id.* (setting forth the claims directed toward business method).

<sup>299</sup> See MPEP § 2181.II.B (9th ed. Rev. 10, June 2020) (requiring that the structure for a computer-implemented means-plus-function claim “be more than simply a general purpose computer or microprocessor”).

<sup>300</sup> See *id.*

<sup>301</sup> See *id.* (reciting that “the specification must disclose an algorithm for performing the claimed function” in a computer-implemented means-plus-function claim).



anticipation of a possible means-plus-function narrowing by the Court.<sup>302</sup> Reviewing *Mayo* and *Alice* under the proposed standard shows the modifications to the current analysis are workable and produce results that would further the advancement of science and technology.<sup>303</sup>

## VI. CONCLUSION

Congress has a constitutional duty to enact patent law statutes that encourage the advancement of science and technology.<sup>304</sup> The current subject matter eligibility standard impedes such advancement by not awarding patent protection to a broad category of inventions that implement computer technology.<sup>305</sup> The proposed standard revitalizes the subject matter eligibility standard and ensures that applicants will obtain deserved protection for the disclosure of their inventions.<sup>306</sup> Furthermore, restricting a claim directed toward a judicial exception to its declared function and corresponding structure will not preempt the use of the judicial exception in its entirety.<sup>307</sup> Such a claim would only narrowly cover the judicial exception and not prevent others from building upon it.<sup>308</sup>

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<sup>302</sup> See U.S. Patent No. 5,970,479 (filed May 28, 1993).

<sup>303</sup> See *Mayo*, 566 U.S. 66; *Alice*, 573 U.S. 208.

<sup>304</sup> U.S. CONST. art. I, § 8, cl. 8.

<sup>305</sup> See *Alice Corp. Pty. Ltd. v. CLS Bank Int'l.*, 573 U.S. 208, 216 (2014).

<sup>306</sup> See ADJUSTING TO *ALICE*, *supra* note 8, at 6 (setting forth the existing standard that the proposed solution would add onto).

<sup>307</sup> See 35 U.S.C. 112(f) (setting forth the standard for a means-plus-function claim).

<sup>308</sup> See *id.*