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The High Court's Artificial and Fictitious Patent Test

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As every first-year law student learns, the Supreme Court says what the law is,¹ and lower courts (as well as attorneys) have a duty to respect it.² In crafting the law, Supreme Court Justices are supposed to exercise self-restraint using *stare decisis* as their guide.³ Having observed that too many judicial opinions provide an appearance of *stare decisis* while actually straying from it, Justice Benjamin N. Cardozo cautioned in his article, *A Ministry of Justice*, “[t]here is a loss too of simplicity and directness, an increasing aspect of unreality, of something artificial and fictitious, when judges mask a change of substance, or gloss over its importance, by the suggestion of a consistency that is merely verbal and scholastic.”⁴ When the Supreme Court ignores this advice, it creates “artificial and fictitious” law that attorneys must nonetheless respect and rely upon when representing and counseling clients.

One example of the Supreme Court’s “artificial and fictitious” jurisprudence is the framework for determining whether a patent’s claims are ineligible for patent protection. In the unanimous decisions of *Mayo Collaborative Services v. Prometheus Laboratories*⁵ and *Alice Corp. v. CLS Bank Int’l*,⁶ the Supreme Court set forth a two-step test for determining patent eligibility. First, determine whether a claim is directed to an ineligible concept, i.e., an abstract idea, natural phenomenon, or law of nature.⁷ If so, second, determine whether the claim also includes an inventive application of that concept such that the claim amounts to “significantly more” than a claim on only the ineligible concept.⁸ That is, does the claim involve more than performance of well-understood, routine, and conventional activities? Claims that include an inventive application are eligible for patent protection while those that do not are not.

Before *Mayo*, as will be explained below, there did not appear to be a requirement for an inventive application, at least not when the inventor discovered the “ineligible concept” to which a patent was directed. In those instances, the inventor’s discovery served as the requisite act of invention such

¹ *Marbury v. Madison*, 5 U.S. 137 (1803).

² *Rivers v. Roadway Express, Inc.*, 511 U.S. 298, 312 (1994).

³ *Planned Parenthood v. Casey*, 505 US 833, 854 (1992) (citing Benjamin N. Cardozo, *The Nature of the Judicial Process* 149 (1921)).

⁴ Benjamin N. Cardozo, *A Ministry of Justice*, 35 HARVARD L.R. 113, 116 (1921).

⁵ 132 S. Ct. 1289 (2012).

⁶ 134 S. Ct. 2347 (2014).

⁷ *Alice*, 134 S. Ct. at 2355.

⁸ *Id.*

that an application of the discovery did not, in and of itself, need to be inventive; a practical application was sufficient. The Supreme Court ignored this in *Mayo* and again in *Alice* to begin predicating eligibility for all ineligible concepts on inventive application. Although the Court glossed over this substantive change to the law in these opinions, the result of this change is now clear. Since *Alice*, over 100 opinions have issued invalidating patent claims by the two-step test.⁹

This Article attempts to demonstrate how the Supreme Court masked the change by: 1) surveying the set of antiquated cases that the Supreme Court repeatedly cites in its eligibility decisions; 2) critiquing the Supreme Court's mischaracterization in *Mayo* of two key cases that purportedly demonstrated the two-step framework; and 3) subjecting claims from these two cases to the two-step test to show that the test yields eligibility results opposite from that of the two cases.

I. Survey of Antiquated Precedent

The Supreme Court often cites the following antiquated cases in its eligibility decisions: *Neilson v. Harford*,¹⁰ *Le Roy v. Tatham*,¹¹ *O'Reilly v. Morse*,¹² *Rubber-Tip Pencil Co. v. Howard*,¹³ *Tilghman v. Proctor*,¹⁴ *Mackay Radio & Telegraph Co. v. Radio Corp. of America*,¹⁵ and *Funk Brothers Seed Co. v. Kalo Inoculant Co.*¹⁶ Except for *Neilson* and *Tilghman*, these cases did not address the topic of subject-matter eligibility, so it should be incorrect to draw from them general rules concerning eligibility. Nonetheless, the Supreme Court routinely treats all of these cases as eligibility cases and depends on them. But even if they were each eligibility cases, the following review suggests that the foundation they provide for the two-step test is built on out-of-context quotations and questionable interpretations. Moreover, intriguingly, in *Mayo* and *Alice*, the Supreme Court ignored *Tilghman*, which was undeniably an eligibility case and perhaps the most analogous of the bunch.

A. *Neilson v. Harford* (1841)

Neilson is a British case from the Court of Exchequer. It may be viewed as a patent-eligibility case because the court addressed whether the patent was invalid for claiming a principle. The patent was directed to “the improved application of air to produce heat in fires, forges, and furnaces, where a blowing apparatus is required.”¹⁷ The patentee, Nielson, discovered that blowing hot air into a furnace worked better than blowing cold air. He claimed placing a well-known vessel for heating air between a well-known combination of a well-known blowing apparatus and a well-known furnace.

⁹ Scott Graham, *Federal Circuit Strikes Two Software Patents Under 'Alice,'* THE RECORDER, <http://www.therecorder.com/id=1202747559660/Federal-Circuit-Strikes-Two-Software-Patents-Under-Alice#ixzz449QUSVIM>.

¹⁰ 151 Eng. Rep. 1266 (1841).

¹¹ 14 How. 156 (1853).

¹² 15 How. 62 (1854).

¹³ 20 Wall. 498 (1874).

¹⁴ 102 U.S. 707 (1881).

¹⁵ 306 U.S. 86 (1939).

¹⁶ 333 U.S. 127 (1948).

¹⁷ THOMAS WEBSTER, REPORTS AND NOTES OF CASES ON LETTERS PATENT FOR INVENTIONS 273 (1844) (hereinafter, WEBSTER PATENT REPORT).

The Court of Exchequer sustained the patent because it determined “after full consideration” that “the plaintiff does not merely claim a principle, but a machine embodying a principle.”¹⁸ The Supreme Court relied heavily on *Neilson* in *Mayo* to create the two-step test and its inventive-application requirement.¹⁹ This was odd because the Court of Exchequer did not reach the issue of whether Neilson’s application was inventive.

The Court of Exchequer determined that Neilson’s machine was useful and that it combined various components in a novel manner.²⁰ That the components were well-known²¹ was of little significance to the patentability analysis because, in 1841, patent-law jurisprudence did not include a mechanism for distinguishing between new and useful innovations that were sufficiently inventive to sustain a patent and those that were not. That mechanism arrived the following decade, when the United States Supreme Court in *Hotchkiss v. Greenwood*²² determined that a patent directed to clay doorknobs was “destitute of ingenuity or invention” because metal doorknobs were well known.²³ Thus, the court in *Neilson* did not discuss whether Neilson’s machine itself—when considered without the support of his discovery of the principle on which the machine operated—was inventive.

Neilson and Baron Sir Edward Hall Alderson both believed that the furnace’s components, including its mode for heating air, were “perfectly well known.”²⁴ Therefore, the furnace likely could not have satisfied a condition of inventiveness—at least when divorced from Neilson’s discovery of the principle that hot air works better than cold air—if any such condition had then existed. Accordingly, the Supreme Court in *Mayo* justified the inventive-application requirement upon a case that sustained a patent for reasons apparently unrelated to inventiveness.

B. *Le Roy v. Tatham* (1853)

Le Roy was not a subject-matter eligibility case when it was decided. It was a novelty case. The patent was directed to machinery for making lead pipe “wrought under heat, by pressure and constriction, from set metal.”²⁵ The claim, however, was poorly drafted. Instead of claiming a new way of using machinery to extrude a better pipe, Justice John McLean determined that the patent might have claimed the prior art machine. Thus, in reversing the decision below on the grounds of an improper jury instruction, he explained, that the “patentees claimed the combination of the machinery as their

¹⁸ *Id.* at 371.

¹⁹ *Mayo*, 132 S.Ct. at 1300.

²⁰ WEBSTER PATENT REPORT 371.

²¹ Jeffrey A. Lefstin, *Inventive Application: A History*, 67 FL. L.R. 565, 586 (2015) (explaining that “Neilson’s instrumentalities were known and conventional in the field.”)

²² 52 U.S. 248 (1851).

²³ *Id.* at 266.

²⁴ WEBSTER PATENT REPORT 377, 344.

²⁵ 55 U.S. at 172.

invention in part, and no such claim can be sustained without establishing its novelty—not as to the parts of which it is composed, but as to the combination.”²⁶

Le Roy should not be considered an eligibility case because the “question whether the newly developed property of lead, used in the formation of pipes, might have been patented, if claimed as developed, without the invention of machinery, was not in the case.”²⁷ Nonetheless, in typical mid-nineteenth century circumlocution, Justice McLean wrote that a “principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.” In so doing, Justice McLean gifted to the Supreme Court one of its favorite bits of dicta to quote out of context in later eligibility decisions.

C. *O’Reilly v. Morse* (1854)

Morse was not a subject-matter eligibility case when it was decided. It was an enablement case. Recall claim 8:

Eighth. I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed for marking or printing intelligible characters, signs, or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer.²⁸

Citing the Patent Act of 1836, Chief Justice Roger Taney wrote that patent rights require the inventor to “specif[y] the means he uses in a manner so full and exact, that any one skilled in the science to which it appertains, can, by using the means he specifies . . . produce precisely the result he describes.”²⁹ He set forth hypothetical examples of claims concerning steam-powered inventions to elucidate the impermissibly broad scope of claim 8.³⁰ He concluded that the scope of claim 8 was “outside” the specification, writing “[t]he Court is of the opinion that the claim is too broad.”³¹ Nonetheless, some consider *Morse* a patent-eligibility decision, likely due to the analysis therein of *Le Roy*.³² Unfortunately, Justice Taney’s treatment of *Le Roy* represents an early instance of the Supreme Court’s distortion of its patent-law jurisprudence. Whereas Justice McLean wrote that the “question whether the newly developed property of lead . . . might have been patented . . . was not in the case,”³³ one term later, Justice Taney contorted this issue dodge into *Le Roy*’s holding, writing that

²⁶ *Id.* at 177.

²⁷ *Id.* at 175.

²⁸ 56 U.S. at 112.

²⁹ *Id.* at 119.

³⁰ *Id.* at 113-14.

³¹ *Id.* at 113, 119-20.

³² *Id.* at 117-18.

³³ 55 U.S. at 175.

“the court held that [the patentee] was not entitled to a patent for this newly-discovered principle or quality in lead; and that such a discovery was not patentable.”³⁴

Professor Mossoff of George Mason University also takes issue with Chief Justice Taney’s analysis.³⁵ Mossoff explains that in the mid-nineteenth century it was “contrary to patent practices to construe an individual patent claim in isolation from the rest of the patent document,”³⁶ yet this is what Justice Taney did because of his political motivations.³⁷ Mossoff concludes that *Morse* should no longer be taken seriously:

Regardless of these ongoing legal and policy debates, the *Morse* myth—that Chief Justice Taney correctly reined in an aggrandizing patentee who was attempting to control electrical telecommunications that went far beyond what he invented—should be officially laid to rest. It is a legally incorrect statement that fails to recognize fundamental differences in patent law doctrine in the Antebellum Era. Even worse, it ultimately conceals a politically motivated decision by a Supreme Court Justice who is widely recognized for inappropriate comportment as a governmental official who placed political policy preferences ahead of and in contravention to the law.³⁸

D. *Rubber-Tip Pencil v. Howard* (1874)

The first case in which the Supreme Court stated that ideas are not patentable was *Rubber-Tip Pencil*. Nonetheless, it was not a subject-matter eligibility case when it was decided—it was a novelty case. The Court framed the issue as whether a “new article of manufacture” was patentable.³⁹ The article was a rubber eraser that could be slipped onto the top of a pencil.⁴⁰ After comparing the claim to what was known, the Court concluded that the claimed device “was not new.”⁴¹

As recently as *Alice*, however, the Supreme Court relied on *Rubber-Tip Pencil* to support the proposition that abstract ideas have long been considered ineligible⁴² because the Court in *Rubber-Tip Pencil* wrote that “[a]n idea of itself is not patentable.”⁴³ Consider this quote in context:

An idea of itself is not patentable, but a new device by which it may be made practically useful is. The idea of this patentee was a good one, but his device

³⁴ 56 U.S. at 117.

³⁵ Adam Mossoff, *O’Reilly v. Morse*, George Mason Law & Economics Research Paper No. 14-22 at 16 (August 18, 2014), <http://ssrn.com/abstract=2448363>.

³⁶ *Id.* at 13-14

³⁷ *Id.* at 3-5.

³⁸ *Id.* at 72.

³⁹ 87 U.S. at 505.

⁴⁰ *Id.*

⁴¹ *Id.* at 507.

⁴² *Alice*, 134 S.Ct. at 2355.

⁴³ *Id.*

to give it effect, though useful, was not new. Consequently he took nothing by his patent.⁴⁴

The problem with the patent was not that it claimed an idea—it claimed a device to give the idea effect. The problem also was not that this device lacked utility—the Court determined that it was useful. Rather, as the Court held, the problem was that the device was not new. Even so, the current Supreme Court relies on this case for out-of-context dictum that “[a]n idea of itself is not patentable,” while ignoring the inconvenient and plain meaning of the full quote—that patentability of an idea requires a *practical* application, not an inventive application, of the idea.

Likely, the ongoing reliance on *Rubber-Tip Pencil* depends on that case’s unfortunate use of the word “idea.” The “idea” was that “if a pencil is inserted into a cavity in a piece of rubber smaller than itself the rubber will attach itself to the pencil, and when so attached become convenient for use as an eraser.”⁴⁵ Putting a rubber eraser on a pencil is not abstract. Therefore, *Rubber-Tip Pencil* should not be relied upon for the proposition that abstract ideas are not patentable.

E. *Tilghman v. Proctor* (1881)

Tilghman is a patent-eligibility case. In this case, the Court grappled with the eligibility of processes and whether the claimed processes should be limited to the modes of implementation disclosed in the patent. In 1853, Tilghman discovered that fat could be dissolved into its constituent elements with water alone, subject to high heat and pressure.⁴⁶ After reviewing some of the foregoing cases, the Court set forth “the key to almost every case that can arise,” which was that “[w]hoever discovers that a certain useful result will be produced in any art by the use of certain means is entitled to a patent for it, provided he specifies the means,” which may be a machine, apparatus, or process.⁴⁷ The Court did not suggest that the “means” of implementing the discovery be inventive in and of itself. Instead, it suggested the opposite:

If the mode of doing it, or the apparatus in or by which it may be done, is sufficiently obvious to suggest itself to a person skilled in the particular art, it is enough, in the patent, to point out the process to be performed, without giving supererogatory directions as to the apparatus or method to be employed. If the mode of applying the process is not obvious, then a description of a particular mode by which it may be applied is sufficient. There is, then, a description of the process and of one practical mode in which it may be applied.⁴⁸

Even though *Tilghman* may be the most clear example of a subject-matter eligibility case in this survey, it is intriguing that it is also the only case in this survey that did not appear in *Mayo* or *Alice*. The Supreme Court apparently lost its “key.”

⁴⁴ 87 U.S. at 507.

⁴⁵ *Id.*

⁴⁶ 102 U.S. at 721.

⁴⁷ *Id.* at 728.

⁴⁸ *Id.*

F. *Mackay Radio & Telegraph Co. v. Radio Corp. of America (1939)*

Mackay Radio was not a subject-matter eligibility case when it was decided. Writing for a unanimous Court, Justice Harlan F. Stone assumed away issues of invalidity to reach the issue of infringement and determine that the patent was not infringed. Beginning with words that the Supreme Court repeatedly quotes out of context, here is how Justice Stone leap-frogged invalidity:

While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be. But we do not stop to solve the problem whether it was more than the skill of the art to combine the teaching of Abraham with that of Lindenblad and others who had pointed out that the arrangement of the wires at an angle enhanced directional radio activity along their bisector. We assume, without deciding the point, that this advance was invention even though ***it was achieved by the logical application of a known scientific law to a familiar type of antenna.***⁴⁹

If the inventive-application requirement was law in 1939, as the current Supreme Court would have us believe,⁵⁰ Justice Stone would probably have had an easier time deciding the issue of invalidity instead of assuming it away to reach the issue of infringement. Indeed, what could more clearly fail the two-step test than a patent for an “application of a known scientific law to a familiar type of antenna”?

G. *Funk Bros. Seed v. Kalo Inoculant Co. (1948)*

Even if each of the cases in the foregoing survey are considered patent-eligibility cases, none of these cases expressly discussed a requirement of inventive application for eligibility or patentability, a requirement that treats an inventor’s discovery of an ineligible concept as irrelevant. Although *Funk Bros.* might be first case to set forth such a requirement,⁵¹ the following analysis shows that this requirement should have become a requirement for patentability, not eligibility.

In *Funk Bros.*, the patentee discovered that certain strains of various species of root-nodule bacteria did not exhibit the well-known and long-felt problem of “mutual inhibition.”⁵² The patent in *Funk Bros.* was directed to a packaged combination of the non-inhibitive strains, which the Court described as “an important commercial advance.”⁵³ Nonetheless, the Court held the patent invalid because it “fell short of invention.”⁵⁴ Justice William O. Douglas wrote for the majority:

⁴⁹ 306 U.S. at 94 (emphasis added).

⁵⁰ See *Mayo*, 132 S.Ct at 1300 (relying on *Neilson*, as “further support for the view that simply appending conventional steps, specified at a high level of generality, to laws of nature, natural phenomena, and abstract ideas cannot make those laws, phenomena, and ideas patentable”).

⁵¹ See Lefstin, *supra* note 21, at 623.

⁵² 333 U.S. at 133 (Frankfurter, J., concurring).

⁵³ *Id.* at 132 (Douglas, J.).

⁵⁴ *Id.* at 131.

[A] product must be more than new and useful to be patented; it must also satisfy the requirements of *invention* or discovery. . . . [O]nce nature’s secret of the non-inhibitive quality of certain strains of the species of Rhizobium was discovered, the state of the art made the production of a mixed inoculant a simple step. Even though it may have been the product of skill, it certainly was not the product of *invention*. There is no way in which we could call it such unless we borrowed *invention* from the discovery of the natural principle itself.⁵⁵

Because some patent attorneys may be unfamiliar with Justice Douglas’s usage of the term “invention,” a brief review of *Graham v. John Deere*⁵⁶ is in order. In *Graham*, the Supreme Court explained that “invention” was “a word of legal art signifying patentable inventions” that had its origin in *Hotchkiss*.⁵⁷ The term “merely distinguished between new and useful innovations that were capable of sustaining a patent and those that were not.”⁵⁸ One question the Court needed to address in *Graham* was whether the nature of this distinction changed with the passage of the 1952 Patent Act, including 35 U.S.C. § 103.⁵⁹ The Court concluded that section 103 “was not intended by Congress to change the general level of patentable invention.”⁶⁰ Rather, section 103 was “intended merely as a codification of judicial precedents” concerning the condition of invention “with congressional directions that inquiries into the obviousness of the subject matter sought to be patented *are a prerequisite to patentability*.”⁶¹ In other words, the condition of invention morphed into the condition for non-obviousness, not a requirement of eligibility under section 101.

Returning to *Funk Bros.*, this was a case where the patentee’s application of his own discovery “fell short of invention” because the “step” between his discovery and his advance was too “simple” to be considered a “product of invention.”⁶² Thus, *Funk Bros.* was an “invention” case when it was decided.⁶³ Under *Graham*, the 1952 Patent Act should have codified the precedent of *Funk Bros.* into the obviousness inquiry of section 103. Therefore, even if the genesis of inventive application was

⁵⁵ *Id.* at 131-32 (emphasis added).

⁵⁶ 383 U.S. 1 (1966).

⁵⁷ *Id.* at 11.

⁵⁸ *Id.*

⁵⁹ *Id.* at 3 (“The questions, involved in each of the companion cases before us, are what effect the 1952 Act had upon traditional statutory and judicial tests of patentability and what definitive tests are now required.”).

⁶⁰ *Id.* at 3-4.

⁶¹ *Id.* at 4 (emphasis added).

⁶² 333 U.S. at 132.

⁶³ Furthermore, the only case Justice Douglas cited for the “requirements of invention or discovery” was *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941). *Funk Bros.*, 333 U.S. at 131-132. According to the *Graham* court, Congress passed section 103 to supersede *Cuno*, 383 U.S. at 15, further indicating that *Funk Bros.* was an “invention” case and not an eligibility case. *But see* Lefstin, *supra* note 21, at 628-29 (explaining that *Funk Bros.* should be regarded as an eligibility case because the prior art taught away from the patentee’s discovery).

Funk Bros., it is likely incorrect to rely on *Funk Bros.* as justifying an inventive-application requirement for eligibility.

H. Survey Summary

The foregoing analysis of antiquated cases suggests that there is within them little if any support for an inventive-application requirement for subject-matter eligibility. Except for *Neilson* and *Tilghman*, these cases did not address subject-matter eligibility issues. The analysis of *Neilson*, *Tilghman*, *MacKay*, and *Funk Bros.* also indicates that the two-step test's requirement for an inventive application is a recent fabrication that the Supreme Court pretends has been the law since at least *Neilson*. Finally, the Court curiously ignored *Tilghman* in *Mayo* and *Alice* even though it was perhaps the best precedent to apply in those cases.

II. The “Artificial and Fictitious” Creation of the Two-Step Test

In *Mayo*, the Court relied primarily on three cases to justify its creation of the two-step test for determining patent eligibility. These cases were *Neilson v. Harford*,⁶⁴ *Parker v. Flook*,⁶⁵ and *Diamond v. Diebr*.⁶⁶ Of these cases, *Flook* was the only one that denied patent protection. In other words, the Court premised the two-step test for subject-matter eligibility—a test that has invalidated scores of issued patents—on *Neilson* and *Diebr*, two cases in which the claimed subject-matter was eligible for patent protection. To do so, Justice Stephen Breyer, writing for a unanimous Court, apparently needed to mischaracterize these two cases.

A. *Neilson* in *Mayo*

Turning first to the treatment of *Neilson* in *Mayo*, Justice Breyer explained that the *Neilson* court sustained the patent because it included “several unconventional steps (such as inserting the receptacle, applying heat to the receptacle externally, and blowing the air into the furnace).”⁶⁷ But how did Justice Breyer determine that? The only support he provided for this conclusion was the following block quote from *Neilson*:

It is very difficult to distinguish [Neilson’s claim] from the specification of a patent for a principle, and this at first created in the minds of some of the court much difficulty; but after full consideration, we think that the plaintiff does not merely claim a principle, but a machine embodying a principle, and a very valuable one. We think the case must be considered as if the principle being well known, the plaintiff had first invented a mode of applying it by a mechanical apparatus to furnaces; and his invention then consists in this—by interposing a receptacle for heated air between the blowing apparatus and the furnace. In this receptacle he directs the air to be heated by the application of heat externally to the receptacle, and thus he accomplishes the object of

⁶⁴ 151 Eng. Rep. 1266 (1841).

⁶⁵ 437 U.S. 584 (1978).

⁶⁶ 450 U.S. 175 (1981).

⁶⁷ *Id.* at 1300.

applying the blast, which was before of cold air, in a heated state to the furnace.⁶⁸

This passage does not support the conclusion that the claim included “several unconventional steps”—about that the passage is silent. Although the passage uses the word “invention,” that word, as used in 1841—before *Hotchkiss* and courts in the U.S. and England began evaluating inventiveness—should not be treated as an indicator of whether certain steps of a process may be conventional. Indeed, the patentee, Neilson, and one of the court’s barons, Baron Alderson, believed that the claimed steps were “perfectly well known.” As the patentee’s attorney argued:

The mode of heating air was perfectly well known; it was no discovery of Mr. Neilson’s, everybody knew it. Air had been heated, and there had been different shaped vessels employed for heating the air; for heating the air economically, and for heating it to a higher or lesser degree of temperature; all that was perfectly well known.⁶⁹

And as Baron Alderson explained:

The blowing apparatus was perfectly well known; the heating of air was perfectly well known; the twire was perfectly well known as applicable to blast furnaces; then what he really discovered is, that it would be better for you to apply air heated up to red heat, or nearly so, instead of cold air as you have hitherto done. That is the principle; that is the real discovery; but, in order to take out a patent, you must have an embodiment of the principle, and his embodiment of the principle is the heating of air in a separate vessel, intermediately between the blowing apparatus and the point where it enters the furnace.⁷⁰

Comparing the foregoing quotes to the Court’s characterization of *Neilson* in *Mayo*, it appears that the Court in 2012 determined that something was unconventional in 1841, when, in 1841, that something was “perfectly well known.” Thus, the statement in *Mayo* that the patent in *Neilson* included several unconventional steps is incorrect. Yet upon it rests the two-step test for determining patent eligibility.

B. *Diehr* in *Mayo*

Mayo also includes a dubious analysis of *Diehr*. In *Diehr*, the claimed process was for molding raw, uncured rubber in a press into cured, molded products.⁷¹ The process involved using the Arrhenius equation to determine when to open the press.⁷² Ultimately, the *Diehr* Court determined that the process was eligible for patent protection. In summarizing and analyzing the *Diehr* Court’s reasoning,

⁶⁸ *Id.*

⁶⁹ WEBSTER PATENT REPORT 344.

⁷⁰ *Id.* at 337.

⁷¹ *Diehr*, 450 U.S. at 177.

⁷² *Id.* at 177-78.

Justice Breyer mischaracterized *Diehr* in two ways. First, he added non-abstract steps to the claimed process. Second, he relied on the *Diehr* Court's silence concerning the issues of novelty and obviousness, issues that Court did not reach, while ignoring the justifications for patent eligibility that the *Diehr* Court explicitly set forth.

First, Justice Breyer added non-abstract steps to the claims. Consider claim 1, which was the representative claim set forth in the case below, *In re Diehr*.⁷³

1. A method of operating a rubber molding press for precision molded compounds with the aid of a digital computer, comprising:
 - providing said computer with a data base for said press including at least, natural logarithm conversion data (\ln),
 - the activation energy constant (C) unique to each batch of said compound being molded, and
 - a constant (x) dependent upon the geometry of the particular mold of the press,
 - initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,
 - constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,
 - constantly providing the computer with the temperature (Z),
 - repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is
$$\ln v = C Z + x$$
where v is the total required cure time,
 - repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and
 - opening the press automatically when a said comparison indicates equivalence.

Next, consider Justice Breyer's characterization of the *Diehr* Court's summary of the claims:

The Court pointed out that the basic mathematical equation, like a law of nature, was not patentable. But it found the overall process patent eligible because of the way the additional steps of the process integrated the equation into the process as a whole. Those steps included "installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time."⁷⁴

⁷³ 602 F.2d 982 (C.C.P.A. 1979) (Rich, J.):

⁷⁴ *Mayo*, 132 S.Ct. 1299.

Justice Breyer fairly characterized the claims as including a basic mathematical equation and “additional steps.” What is unfair, however, is Justice Breyer’s inclusion of some “additional steps” that were not in each of the claims. That is, the “additional steps” of “installing rubber in a press” and “closing the mold” are not in claim 1.⁷⁵ The actual “additional steps” of claim 1 were limited to “constantly determining,” “constantly recalculating,” and, from that, “automatically opening.”⁷⁶ These actual “additional steps” of claim 1 appear to be a rather routine application of a computer. Thus, it appears that Justice Breyer slipped in a couple of extra steps that were grounded in the physical, non-computer realm, to avoid tension between the new two-step test and the outcome of *Diehr*.

Second, even assuming that Justice Breyer correctly set forth the “additional steps,” his analysis of *Diehr* remains unsound because it ignores the reasons the *Diehr* Court explicitly set forth for eligibility and instead relies on silence concerning the issues of novelty and obviousness, issues the *Diehr* Court did not reach. The *Diehr* Court held that the claims were patent-eligible because “the claims “involve[d] the transformation of an article” and because they were directed to an industrial process of “the type[] which ha[s] historically been eligible to receive the protection of our patent laws.”⁷⁷ As to issues of patentability, the *Diehr* Court explained that novelty or nonobviousness were irrelevant for determining eligibility, writing that a “rejection on either of these grounds does not affect the determination that respondents’ claims recited subject matter which was eligible for patent protection under § 101.”⁷⁸

Giving short shrift to the quotations in the preceding paragraph, Justice Breyer instead found it critical that the *Diehr* Court “nowhere suggested that all these steps, or at least the combination of those steps, were in context obvious, already in use, or purely conventional.”⁷⁹ Although this observation may be correct, relying on it to justify the inventive-application requirement conflicts with the *Diehr* Court’s determination that the issues of novelty and nonobviousness are irrelevant to the eligibility inquiry. Following Justice Breyer’s reasoning, perhaps enablement should also be a requirement for patent eligibility because the *Diehr* Court nowhere suggested it was not?

Justice Breyer revised the precedent of *Neilson* and *Diehr* and relied upon these revisions to justify the two-step test. A unanimous Court agreed with this strategy to overhaul the law of patent eligibility.

III. The Two-Step Test’s Verification Failure

Verification is the term engineers use to refer to a step of a design process whereby they check that a product, service, or system performs as it was originally intended. The U.S. Food and Drug Administration, for example, regards design verification as a critically important step in the development of medical devices, mandating that device developers “shall confirm that the design

⁷⁵ *In re Diehr*, 602 F.2d 982, 983-84 (C.C.P.A. 1979).

⁷⁶ *Id.*

⁷⁷ *Diehr*, 450 U.S. at 184.

⁷⁸ *Id.* at 191.

⁷⁹ *Mayo*, 132 S.Ct. at 1299.

output meets the design input requirements.”⁸⁰ Because Justice Breyer relied on *Neilson*, *Diehr*, and *Flook* to justify the two-step test, Justice Breyer treated these cases like design inputs, which invites subjecting the two-step test to a design-verification exercise.

To perform this verification exercise, claims from *Neilson*, *Diehr*, and *Flook*—Justice Breyer’s “design input” cases—may be input into the two-step test so that the test’s outputs, i.e., whether the claims are patent eligible, may be compared to the holdings of those cases. For the sake of argument, it is assumed that the two-step test outputs the same result as the holding of *Flook* because the claims in *Flook* were held ineligible. However, as explained below, the two-step test fails the verification exercise because its outputs for the claims in *Neilson* and *Diehr* contradict the holdings of those cases.

A. The Two-Step Test Applied to *Neilson*

The patent in *Neilson* was sustained because it claimed a machine embodying a principle, not just the principle itself. The principle was that blowing hot air into a furnace works better than blowing cold air into the furnace. Applying step one of the two-step test to *Neilson*, it appears that the patent was directed to this principle, which is a natural phenomenon, and therefore, an ineligible concept. Indeed, the Court of Exchequer treated the principle as an ineligible concept because it would not have sustained the patent if it had “merely claim[ed the] principle.”⁸¹

Continuing to step two, the issue becomes whether Neilson’s patent set forth an inventive application of the principle. A claim fails to set forth such an application if it only involves well-understood, routine, and conventional activities previously known to the industry. As explained above, the patentee’s attorney argued and Baron Alderson agreed that the application itself was “perfectly well-known.” Thus, Neilson’s patent lacked an inventive application and therefore fails the two-step test even though, in *Neilson*, the Court of Exchequer sustained it.

B. The Two-Step Test Applied to *Diehr*

The claimed process at issue in *Diehr* was directed to the ineligible concept of a mathematical equation, specifically, the Arrhenius equation. In *Mayo*, Justice Breyer also determined that the mathematical equation was an ineligible concept, referring to basic mathematical equations as being like laws of nature.⁸² Yet the *Diehr* Court sustained the claims because they transformed an article and were of the type that had historically been eligible for patent protection.

Under step one of the two-step test, it appears that claim 1 of Diehr’s application is directed to an application of the Arrhenius equation. Therefore, under step two, the issue becomes whether the additional steps of the claim indicate that the claim is an inventive application of the Arrhenius equation. The additional steps of claim 1 were “constantly determining the temperature of the mold,” “constantly recalculating the appropriate cure time through the use of the formula and a digital computer,” and “automatically opening the press at the proper time.” The inventors believed these additional steps were inventive, arguing that their contribution to the art “resid[ed] in the step

⁸⁰ 21 C.F.R. §820.30(f).

⁸¹ WEBSTER PATENT REPORT 371.

⁸² 132 S. Ct. at 1298.

of repeatedly or constantly measuring the actual temperature in the mold.”⁸³ However, given the many cases since *Alice* invalidating claims for applications of mathematical equations on a generic computer, it is difficult to imagine a court today finding that repeated or constant measurement might establish an inventive application when: 1) humankind has been taking single temperature measurements since long before Diehr’s priority date, and 2) taking single measurements repeatedly is a routine function of computers and has been since long before Diehr’s priority date. More likely, a lower court would find that claim 1 describes how to implement a mathematical equation using a generic computer. Thus, claim 1 appears to lack an inventive application and should fail the two-step test even though the *Diehr* Court found that it was patent-eligible.

Based on the foregoing, the two-step test fails the design-verification exercise. Subjecting the patents of *Neilson* and *Diehr* to the two-step test, the two-step test outputs results that contradict the holdings of those cases. This design-verification failure suggests that the Supreme Court changed the law by introducing the two-step test in *Mayo*.

Conclusion

The two-step test for determining patent eligibility is the law of the land. Irrespective of whether it may sometimes provide preferred results, the two-step test’s inventive application requirement is “artificial and fictitious” because it represents a shift in the law that the Supreme Court created through mischaracterization of precedent, seemingly pretending that no change ever occurred. Nonetheless, we attorneys must respect the two-step test by relying upon it when counseling clients. In doing so, however, we should also respect the United States’ system of law by continuously and constructively critiquing the analytical underpinnings of the Supreme Court’s patent-eligibility jurisprudence.

⁸³ 602 F.2d at 983.



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