

**PATENT ELIGIBILITY AS A FUNCTION OF NEW USE, AGGREGATION, AND
PREEMPTION THROUGH APPLICATION OF PRINCIPLE**

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Abstract

By long-standing judicial precedent, laws of nature, natural phenomena, and abstract ideas are excepted from eligibility for patent protection. The Supreme Court recently promulgated a two-part test that excludes from eligibility subject matter that is directed to any of these judicial exceptions unless there is something “significantly more,” namely “invention” or an “inventive concept.” The test is intended to bar patent protection that would preempt use of any of the judicial exceptions themselves. “Preemption,” however, is related to two earlier, and now obsolete, doctrines of “new use” and “aggregation” in that all three derived from eighteenth-century English case law that viewed inventive methods to be applications of principle within the meaning of eligible “manufactures” under the Statute of Monopolies. When the Patent Act of 1952 recast the language of its predecessor statutes and earlier jurisprudence into separate provisions under Title 35 of the United States Code (U.S.C.) for eligibility (§101), novelty (§102) and non-obviousness (§103), “new use” and “aggregation” were no longer considerations of eligibility because, as stated most succinctly by Judge Learned Hand, “the definition of invention [is] now expressly embodied in § 103.” For the same reason, the doctrine of “preemption” and its attendant “two-part test” should follow suit.

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TABLE OF CONTENTS

I.	INTRODUCTION	3
II.	THE BEGINNINGS OF MODERN PATENT ELIGIBILITY	8
	A. <i>Boulton and Watt v. Bull</i>	8
	1. Justice Buller’s Opinion	10
	2. Lord Chief Justice Eyre’s Opinion	12
	B. <i>Hornblower and Maberly v. Boulton and Watt</i>	16
	1. Justice Grose’s Opinion.....	16
	2. Justice Lawrence’s Opinion	18
	C. Summary and Comparison of Opinions by Chief Justice Eyre, and Justices Buller, Grose, and Lawrence.....	20
III.	NEW USES OF KNOWN MACHINES, MANUFACTURES AND COMPOSITIONS OF MATTER.....	23
	A. The Inherency of Benefit.....	23
	B. Non-Analogous Use	35
	C. Non-Obvious Use	44
	D. The Patent Act of 1952: Splitting Invention from Eligibility.....	50
	1. Statutory and Judicial Conflation Prior to the Patent Act of 1952	50
	2. General Understanding of New Uses Based on <i>In re: Thuau</i>	55
	3. The Split	56
	E. The Demise of New Use Doctrine.....	60
IV.	AGGREGATION OF APPLIED PRINCIPLES	66
	A. “Something More than an Aggregate”	66
	1. Cooperation and Single Purpose	66
	2. Invention as the “Vital Spark”.....	69
	B. The Demise of Aggregation Doctrine	70
V.	PREEMPTION OF LAWS OF NATURE, NATURAL PHENOMENA AND ABSTRACT IDEAS.....	74
	A. Setting the Stage	75
	B. “Mere Principle” and its Application	76
	C. The Two-Part Eligibility Test.....	80
	D. “Preemption” in the Absence of Something “Significantly More” than “Mere Principle”	81
	E. Treatment of Patent Eligibility Since <i>Diamond v. Diehr</i> , and an Alternative	86
VI.	CONCLUSION	101

I. INTRODUCTION

[1] Patent eligibility under 35 U.S.C. § 101¹—as interpreted by the Supreme Court in *Alice v. CLS Bank Int’l.*, and as applied by the United States Patent and Trademark Office under recent guidelines²—is a tiered algorithm.³ The first tier addresses the language of the statutory provision by asking whether the claim is for “a process, machine, manufacture or composition of matter.”⁴ It is followed by a second tier that includes a two-step analysis which asks if the subject matter is directed to any of three judicial exceptions, namely a law of nature, a natural phenomenon or an abstract idea, and disqualifies claims directed to any of those exceptions in the absence of something “*significantly more*.”⁵

[2] It has been argued that the Statute of Monopolies “played, at best, a minimal role in pre-modern patent law.”⁶ Nevertheless, at least one thread of modern jurisprudence stems from the sixth section of the Statute, which authorized patent protection for “the sole working or making of any manner of new *manufactures* within this realm[], to the true and first inventor[] and inventors....”⁷ Specifically, the

¹ See generally, Patent Act of 1952, 35 U.S.C.S. § 101 (2013) (stating “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”); See *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 (2014).

² See 80 Fed. Reg. 45429 (July 30, 2015); see also Memoranda by Robert W. Bahr, Deputy Comm’r for Patent Examination Policy, at 1–2, U.S. Patent & Trademark Office, to Patent Examining Corps (May 4, 2016).

³ See *Alice Corp. Pty. Ltd.*, 134 S. Ct. 2347, 2356 (2014).

⁴ See Patent Act of 1952, 35 U.S.C.S. § 101 (2013).

⁵ Bahr, *supra* note 2, at 1 (emphasis added).

⁶ E.g., BRAD SHERMAN & LIONEL BENTLY, *THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW: THE BRITISH EXPERIENCE, 1760-1911* 209 (Cambridge University Press, 1999) (“If we resist the temptation to rewrite history in our own image, it becomes clear that the Statute of Monopolies played, at best, a minimal role in pre-modern patent law.”).

⁷ Statute of Monopolies, 1623, 21 Jac. 1, c. 3, § 6 (Eng.) (emphasis added).

eighteenth-century English cases of *Boulton v. Bull*⁸ and *Hornblower v. Boulton*⁹ encompassed methods within the term “manufactures” as applications of principle. By doing so, they laid the foundations for some of the most fundamental current questions surrounding patent eligibility.

[3] While both manufactures and methods of use were considered eligible for patent protection under *Boulton* and *Hornblower*, for many years afterward new methods of use of *known* manufactures were not. Manufactures were understood to embody all applications of principle to which they could be put; therefore, new methods generally could only be patented if they were conducted by use of manufactures having an additional, patentably distinct feature. Even then there was a question as to whether the whole manufacture was patentable or only the additional improvement feature. This issue became moot with the advent of claims, whereby exclusionary rights required that *the combination* of elements of a claim be patentably distinct, so that the patentability of any individual element became unnecessary.¹⁰

[4] Eventually, a new method of use of a known device was considered eligible, but only if the new use was *non-analogous* to known uses of the device. More particularly, a new use of an old device must include “invention.”¹¹ The patentability of a new use of a known product, and of a known product for a new intended use, both of which were considered a “dual use,” became the topics of heated debate in the late nineteenth and early-to-mid twentieth centuries, culminating in substitution of the term “process” for that of “art” in the statutory provision for patent eligibility under the Patent Act of 1952.¹² The revised statutory language did not immediately settle

⁸ See *Boulton v. Bull* (1795) 126 Eng. Rep. 651, 653–55; 2 H. BL. 463.

⁹ See *Hornblower v. Boulton* (1799) 101 Eng. Rep. 1285, 1288; 8 T. R. 95.

¹⁰ See, e.g. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996) (“Claims practice did not achieve statutory recognition until the passage of the Act of July 1836 and inclusion of a claim did not become a statutory requirement until 1870, Act of July 8....” (citations omitted)).

¹¹ See *Ansonia Brass and Copper Co. v. Electrical Supply Co.*, 144 U.S. 11, 18 (1892) (“[T]he application of an old process to a new and analogous purpose does not involve invention, ...”).

¹² See Patent Act of 1952, 35 U.S.C.S. § 101 (2013); S. REP. NO. 82-1979, at 2398–99 (1952). (As stated in the legislative history of the Patent Act of 1952: “The word ‘process’ has been used to avoid the necessity of explanation that the word ‘art’ as used in this place means ‘process or method,’ and that it does not mean the same thing as the word ‘art’ in other places. . . . The definition of ‘process’ has been added in section 100 to make it clear that ‘process or method’ is meant, and also to clarify the

the matter.¹³ Ultimately, claims directed to known products having new intended uses were considered to lack novelty, while new uses of known machines generally became questions of “obviousness.”¹⁴

[5] “Aggregation” came into use as a doctrine proscribing patent protection for “new combinations” of devices “without producing a new and useful result [of] the joint product of the elements of the combination and *something more* than an aggregate of old results.”¹⁵ As with a new use, patent eligibility was denied because there was no new underlying application of principle. Rather, aggregation was “[m]erely bringing old devices into juxtaposition, and ... allowing each to work out its own effect without production of something novel.”¹⁶ In neither the case of new use nor of aggregation was there “invention” and, as with new use, aggregation ultimately became essentially a matter of “statutory obviousness” under the Patent Act of 1952.¹⁷ Where aggregation was not subsumed under statutory obviousness, it

present law as to the patentability of certain types of processes or methods *as to which some insubstantial doubts have been expressed.*” (emphasis added)).

¹³ See, e.g., *In re Ducci*, 225 F.2d 683, 688 (C.C.P.A. 1955) (“...a newly discovered use for a known substance, machine or process is still only patentable if it is not merely analogous or cognate to the uses heretofore made.”) (quoting Stefan A. Riesenfeld, *The New United States Patent Act in Light of Comparative Law*, 34 JPOS 406, 416, June, 1954)

¹⁴ See, e.g., *Ex parte Bartelson, Breneman, and Mac Adam*, 151 U.S.P.Q. (BNA) 59 (B.P.A.I. Mar. 29, 1966) (stating that “[a] new use of a known machine may be patentable if defined as a process, where, as here, the prior art does not make either the process or the useful results thereof, obvious.”).

¹⁵ *Hailes v. Van Wormer*, 87 U.S. 353, 368 (1873) (emphasis added).

¹⁶ *Id.*

¹⁷ See Patent Act of 1952, ch. 950, 66 Stat. 798 (1952). 35 U.S.C. § 103 was a new statutory provision requiring non-obviousness under the Patent Act of 1952 that stated: “A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which such subject matter pertains.” See also *In re Gustafson*, 331 F.2d 905, 909 (CCPA, 1964): “On January 1, 1953, all of this mental anguish ceased to be necessary. The test of the presence or absence of ‘invention,’ and along with it the subsidiary question of whether a device or process was or was not an ‘aggregation,’ or a ‘combination,’ or an ‘unpatentable combination’ for want of ‘invention,’ was replaced by the statutory test of 35 U.S.C. § 103.”

was recast as “indefiniteness” under 35 U.S.C. § 112, second paragraph,¹⁸ in that the affected claims failed to “positively recite structural relationships” of the elements.¹⁹ Even here, however, the lack of any new application of principle by the combination of known but unrelated components was apparent.

[6] “Preemption” as –a legal term to justify barring the eligibility of claimed subject matter was first invoked by the Supreme Court in *Gottschalk v. Benson*.²⁰ The Court relied on the “longstanding rule that ‘an idea of itself is not patentable,’”²¹ which in this case was a mathematical formula for converting “binary-coded-decimal (“BCD”) numerals into pure binary numerals.”²² Reciting earlier Supreme Court cases dating back to *Le Roy v. Tatham*,²³ the Court also embraced within this maxim a prohibition against patenting a “principle, in the abstract,”²⁴ or “[p]henomena of nature.”²⁵

¹⁸ 35 U.S.C. § 112 (“The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention”); Patent Act of 1952, ch. 950, 66 STAT. 798 (1952).

¹⁹ *In re Collier*, 397 F.2d 1003, 1005 (C.C.P.A. 1968).

²⁰ *See* *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972) (“The mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”); *see also* Jeffrey A. Lefstin, *Inventive Application: A History*, 67 FLA. L. REV. 565, 571 (2016) (“Yet according to Justice Douglas, *Benson* ‘in a nutshell’ was about preemption. To grant Benson exclusive use of his claimed process would effectively preempt all uses of the underlying algorithm....”).

²¹ *See* *Gottschalk*, 409 U.S. at 67 (quoting *Rubber Tip Pencil Co. v. Howard*, 87 U.S. 498, 507 (1874)).

²² *Id.* at 64.

²³ *See id.* at 67 (citing *Le Roy v. Tatham*, 55 U.S. 156 (1853)).

²⁴ *Id.* at 67 (“‘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.’”) (quoting *Le Roy v. Tatham*, 55 U.S. 156, 175 (1853)).

²⁵ *See id.* (“Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.”).

[7] As with new use and aggregation, the guard against preemption mandated that only an *inventive* “application of the law of nature to a new and useful end”²⁶ was eligible for protection. Preemption thereafter became the pivot point for eligibility under 35 U.S.C. § 101 of claimed subject matter reciting a law of nature, a natural phenomenon or an abstract idea, and was the basis for the test articulated by the Supreme Court in *Alice Corp. v. CLS Bank Int’l.*, in 2014.²⁷

[8] There has never been a satisfactory explanation by the Supreme Court as to why current analyses of patent eligibility cannot be couched within other portions of the statutory framework, such as novelty under 35 U.S.C. § 102 or non-obviousness under 35 U.S.C. § 103. This was a common complaint among dissenting justices in Supreme Court cases during the first few decades under the 1952 Patent Act.²⁸ The Court’s more recent explanation—that “§§ 102 and 103 say nothing about treating laws of nature as if they were part of the prior art when applying those sections,”²⁹—falls flat at least for the simple reason that there also is no such language in section 101.

[9] Part II of this article summarizes dicta in the eighteenth-century English cases of *Boulton and Watt v. Bull* and *Hornblower v. Boulton*. Part III traces the legal doctrine of “dual” or “new” use from its origins in the dicta of *Boulton* and *Hornblower* to its assimilation into statutory provisions for novelty under 35 U.S.C. § 102 and non-obviousness under 35 U.S.C. § 103 following the Patent Act of 1952. Part IV addresses “aggregation” and its parallels with “new use” as a matter of non-obviousness. Part V analyzes legal “preemption” and its relation to earlier doctrines—

²⁶ Gottschalk, 409 U.S. at 67 (quoting *Funk Bros. Seed Co. v. Kalo Co.*, 333 U.S. 127, 130 (1948)).

²⁷ See *Alice Corp. v. CLS Bank Int’l.*, 134 S. Ct. 2347, 2354–55 (2014) (“In *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 132 S.Ct. 1289, 189 L.Ed. 2d 321 (2012), we set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.”).

²⁸ See e.g., *Parker v. Flook*, 437 U.S. 584, 600 (1978) (Stewart, J., dissenting) (stating in Justice Stewart’s dissent: “The Court today says it does not turn its back on well-settled precedents...but it strikes what seems to me an equally damaging blow at basics principles of patent law by importing into its inquiry under 35 U.S.C. § 101 the criteria of novelty and inventiveness. Section 101 is concerned only with subject matter patentability. Whether a patent will actually issue depends upon the criteria of §§ 102 and 103, which include novelty and inventiveness, among many others.”); see also *Diamond v. Diehr*, 450 U.S. 175, 211 (1981) (Stevens, J., dissenting).

²⁹ *Mayo Collaborative Services v. Prometheus Labs, Inc.*, 566 U.S. 66, 90 (2012).

of “new use” and “aggregation,” arguing that, for the same reasons that “new use” and “aggregation” are no longer viable doctrines in their own right, the doctrine of “preemption” also should be foregone in favor of non-eligibility portions of the statute other than that of eligibility under 35 U.S.C. § 101.

II. THE BEGINNINGS OF MODERN PATENT ELIGIBILITY

[10] The Statute of Monopolies of 1623 was generally intended to bar patents in England, with the exception of those for new “manufactures,” as prescribed under the sixth section. However, the meaning of “manufactures” under the statute was the subject of great debate, most notably in the famous eighteenth-century cases of *Boulton and Watt v. Bull* and *Hornblower v. Boulton*.³⁰ Ultimately, in *Hornblower v. Boulton*, patent protection for methods as “manufactures” was permitted. Part II-A discusses the contrasting, influential opinions of Justice Buller and Lord Chief Justice Eyre in *Boulton*, and Part II-B discusses Justices Grose and Lawrence’s opinions in *Hornblower*, which if not directly cited, were often reflected in later jurisprudence. Both *Boulton* and *Hornblower* set the stage for so-called “new use” and “aggregation” doctrines that developed during the nineteenth and twentieth centuries under American jurisprudence.

A. *Boulton and Watt v. Bull*

[11] The patent at issue in *Boulton and Watt v. Bull* was a conceded improvement on the Newcomen steam engine (which had been in use for almost one-hundred years, primarily for the purpose of pumping water out of mines).³¹ James Watt discovered that the efficiency of such steam, or “fire” engines as they were known at that time could be significantly improved by condensing spent steam in a chamber separate from the cylinder and piston producing the work.³² This change eliminated the need to cool the cylinder between strokes of the piston, thereby significantly reducing lost work and, consequently, the cost of operation.³³

³⁰ See *Boulton v. Bull* (1795) 126 Eng. Rep. 651, 651 n.1; 2 H. BL. 463; see *Hornblower v. Boulton* (1799) 101 Eng. Rep. 1285, 1287; 8 T.R. 95.

³¹ See *Boulton*, 126 Eng. Rep. at 667.

³² See *id.* at 654.

³³ See WILLIAM ROSEN, THE MOST POWERFUL IDEA IN THE WORLD: A STORY OF STEAM, INDUSTRY, AND INVENTION 104–06 (Ellah Allfrey et al. eds., 2010).

[12] The Drafting of the patent specification, however, posed a difficulty for Watt, if he was to obtain the broadest possible patent protection. If the invention was described in great detail, his patent might be limited to only those particular embodiments. Alternatively, if only broad principles of operation were presented, then the patent might be considered invalid as failing to provide sufficient instruction to enable the public to practice the invention once the patent expired. Watt ultimately took the advice of his friend, William Small, drafting the application to intentionally avoid “descriptions of any particular machinery, but specifying in the clearest manner that you have discovered some principles.”³⁴ Watt obtained his patent and, along with his business partner, Matthew Boulton, was able to obtain, by a private act of parliament and by characterizing the invention as an “engine,” a term of twenty-five years from an initial patent date of January 5, 1769.³⁵

[13] *Boulton* was an enforcement action, against infringement of Watt’s patent, that ultimately resulted in no judgment because the court was split.³⁶ According to Lord Chief Justice Eyre in *Boulton*, there were two issues: “the first, whether the patent is good in law, and continued by the act of parliament mentioned in the case; the second, whether the specification stated in the case is in point of law sufficient to support the patent?”³⁷ Though ostensibly distinct, the two questions were related. The exposition of “discovered” principles in the specification spoke directly to the question of whether the patent was good in law, since it was generally well-accepted that “there can be no patent for a mere principle.”³⁸ For example, the defendants in *Boulton* stated:

By obtaining a patent for principles only, instead of one for the result of the application of them, the public is prevented, during the term from improving on those principles, and at the end of the term is left in

³⁴ JENNY UGLOW, *THE LUNAR MEN: FIVE FRIENDS WHOSE CURIOSITY CHANGED THE WORLD* 243 (Julian Loose et al., eds., 2002) (quoting William Small to James Watt, February 1769 Matthew Boulton Papers, Birmingham City Archives 340/4.)

³⁵ See *Boulton*, 126 Eng. Rep. at 651.

³⁶ See *id.*

³⁷ *Id.* at 665.

³⁸ *Id.* at 667.

a state of ignorance as to the best, cheapest, and most beneficial manner of applying them to the end proposed.³⁹

[14] On the other hand, it was unanimously agreed by the Justices that Watt's invention was useful and, as found by the jury and recited by the defendants:

[T]he specification made by Watt, is of itself sufficient to enable a mechanic acquainted with fire-engines previously in use, to construct fire-engines, producing the effect of lessening the consumption of fuel and steam in fire-engines, upon the principle invented by Watt.⁴⁰

1. Justice Buller's Opinion

[15] If the specification, then, did not identify any particular apparatus for the principles "discovered" by Watt, but, nevertheless, was sufficient to "enable a mechanic acquainted with fire-engines previously in use" to practice that method, and thereby benefit from that discovery, on what basis did patent eligibility lie?⁴¹ For Justice Buller, another of the justices hearing the case, the answer was clear: "[T]he true foundation of all patents, ... must be the manufacture itself; and so says the Statute [of Monopolies] 21 Jac. I, c.3."⁴² The Statute of Monopolies, in other words, was the "foundation" for patent protection. Eligibility for such protection under the Statute of Monopolies depended upon the ability to classify the subject of a patent as a "manufacture," as summarized by Justice Buller:

All monopolies except those which are allowed by that statute, are declared to be illegal and void; they were so at common law, and the sixth section excepts only those of the sole working or making any manner of *new manufacture*: and whether the manufacture be with or without principle, produced by accident or by art, is immaterial.

³⁹ *Id.* at 656.

⁴⁰ *Boulton*, 126 Eng. Rep. at 656.

⁴¹ *Id.*

⁴² *Id.* at 663.

Unless this patent can be supported for the *manufacture*, it cannot be supported at all.⁴³

[16] For Justice Buller, the subject matter of the patent must be within the scope of the meaning of the statutory term, “manufacture.” Nevertheless, Justice Buller considered a “*principle* in the patent, and *engine* in the act of parliament [to] mean . . . the same thing.”⁴⁴ The discrepancy between the qualification of a new “manufacture” and a “principle” was resolved by considering the statutory word “manufacture,” to be a threshold requirement for facial patent eligibility, and beneficial utility to be evidence of the existence of the principle embodied in the manufacture.⁴⁵ Once established as a new and beneficial embodiment of principle, the exclusionary right of the patentee extended to *all* uses of that manufacture.⁴⁶

[17] From these general observations, Justice Buller concluded that, while patents of addition or improvements on an old machine may be good, the scope of protection must be limited to the improvement alone, and not extended to include the old machine already in the public domain.⁴⁷ Justice Buller found that there was nothing new in the steam engine described in Watt’s patent,⁴⁸ therefore, the steam engine’s

⁴³ *Id.* (emphasis added).

⁴⁴ *Id.* (emphasis added).

⁴⁵ *See Boulton*, 126 Eng. Rep. at 666.

⁴⁶ *Id.* at 663 (Justice Buller stating that: “In most instances of the different patents mentioned by my Brother Adair, the patents were for the manufacture, and the specification rightly stated the method by which the manufacture was made: but none of them go to the length of proving, that a method of doing a thing without the thing being done or actually reduced into practice, is a good foundation for a patent. When the thing is done or produced, then it becomes the manufacture which is the proper subject of a patent.”).

⁴⁷ *See id.* at 664 (“Since that time, it has been the generally received opinion in Westminster Hall, that a patent for an addition is good...Where a patent is taken for an improvement only, the public have a right to purchase the improvement by itself, without being incumbered[sic] with other things.”).

⁴⁸ *See id.* at 662 (Justice Buller stated: “Upon this state of the case, I cannot say that there is anything substantially new in the manufacture; and indeed it was expressly admitted on the argument, that there were no new particulars in the mechanism: that it was not a machine or instrument which the Plaintiff had invented: that the mechanism was not pretended to be invented in any of its parts: that this engine does consist of all the same parts as the old engine: and that the particular mechanism is not necessary to be considered.”).

manner of use—according to the principles discovered by Watt—must be no more than an application of principle already inherent in known steam engines.⁴⁹ Consequently, the claim was to the “whole machine,” which was known and, as such, Watt’s patent must be void.⁵⁰

2. Lord Chief Justice Eyre’s Opinion

[18] Whereas Justice Buller relied on the negative implications of extending protection beyond the literal confines of the Statute of Monopolies, Lord Chief Justice Eyre looked to broaden the meaning of “manufacture,” recognizing that many cases had already been decided in favor of new uses of known devices.⁵¹ Like Justice Buller, Chief Justice Eyre posited that, “if the machinery itself is not newly invented, but only conducted by the skill of the inventor, so as to produce a new effect, the patent cannot be for the machinery.”⁵² He concluded that patent protection cannot be granted to things known in the art simply on the basis that a new use for that machinery has been discovered.⁵³ Eyre also agreed with Justice Buller’s statement that: “if the principle alone be the foundation of the patent, it cannot possibly stand, with that knowledge and discovery which the world were in possession of before.”⁵⁴

[19] Chief Justice Eyre believed, however, that the language of the Statute of Monopolies should not be so strictly interpreted as to bar all methods of use of known devices, stating that, “[n]ow I think these *methods* may be said to be *new manufactures*, in one of the common acceptations of the word, as we speak of the manufactory of glass, or any other thing of that kind.”⁵⁵ Eyre employed the example

⁴⁹ *See id.*

⁵⁰ *See Boulton*, 126 Eng. Rep. at 665 (“But here, the Plaintiffs claim the right to whole machine. To that extent their right cannot be sustained, and therefore I am of opinion that there ought to be judgement for the Defendant.”).

⁵¹ *See id.* at 667 (“Probably I do not over-rate it, when I state that two-thirds, I believe I might say three-fourths, of all patents granted since the statute [of monopolies] passed, are for *methods* of *operating* and of manufacturing, producing no new substances and employing no new machinery.”).

⁵² *Id.*

⁵³ *See id.*

⁵⁴ *Id.* at 662.

⁵⁵ *Boulton*, 126 Eng. Rep. at 667.

of David Hartley's method of using iron plates to fireproof buildings, stating that Hartley's patent could not be for the effect obtained, namely, "the absence of fire,"⁵⁶ nor could it be for the plates or the method of their manufacture, both of which were commonly known.⁵⁷ Rather, as Chief Justice Eyre stated: "[b]ut the invention consisting in the *method of disposing* of those *plates of iron*, so as to produce their effect, and that effect being a useful and meritorious one, the patent seems to have been very properly granted to him for *his method* of securing buildings from fire."⁵⁸ "It [the patent] must be for [the] *method* detached from *all physical existence whatever*."⁵⁹

[20] Patentability must be, as stated by Chief Justice Eyre, "for a principle so far embodied and connected with corporeal substances as to be *in a condition to act*, and to *produce effects* in any art, trade, mystery, or manual occupation...."⁶⁰ This was "the thing for which the patent stated in the case was granted, and this is what the specification describes, though it *miscalls it a principle*."⁶¹ Eyre asserted:

It is not that the patentee has conceived an abstract notion that the consumption of steam and fire engines may be lessened but he has discovered a *practical manner* of doing it; and for that practical manner of doing it he has taken this patent. Surely this is a very different thing from taking a patent for a principle; it is *not for a principle*, but *for a process*.⁶²

⁵⁶ *Id.* at 666.

⁵⁷ *See id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 667.

⁶⁰ *Boulton*, 126 Eng. Rep. at 667.

⁶¹ *Id.* at 667.

⁶² *Id.*

[21] While Watt, as he had been advised to do, stated “in the clearest manner”⁶³ that he had “discovered some principles,”⁶⁴ and Justice Buller had taken the language of Watt’s specification at face value in this regard, Lord Chief Justice Eyre viewed the invention as being “*not for a principle, but for a process*” albeit by use of no new machinery.⁶⁵ As stated by Eyre, “the machinery is not the essence of the invention but incidental to it”⁶⁶ and, therefore, the method as described in the specification need only “be capable of lessening the consumption to such an extent as to make the invention useful.”⁶⁷ “More precision is not necessary, and absolute precision is not practicable.”⁶⁸

[22] Eyre summarized that, while the act of parliament characterized the invention as an “engine” and the specification described the invention as a discovered principle, in effect, the patent specification described neither.⁶⁹ Rather, Chief Justice Eyre saw the invention as a “process.”⁷⁰ As a method, or “process,” it was the proper subject of a patent wholly apart from whether the device itself was, separately, new or patentable:

The objection on the act of parliament is of the same nature as one of the objections to the specification: the specification calls a *method* of lessening the consumption of steam in fire-engines a *principle*, which it is not; the act calls it an *engine*, which perhaps also it is not; but both the specification and the statute are referable to the same thing, and when they are taken with their correlative are perfectly intelligible.

⁶³ UGLOW, *supra* note 34 at 243.

⁶⁴ *Id.*

⁶⁵ *Boulton*, 126 Eng. Rep. at 667.

⁶⁶ *Id.* at 668.

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *See id.* at 669.

⁷⁰ *Boulton*, 126 Eng. Rep. at 668.

Upon the wider ground I am therefore of opinion that the act has continued this patent.⁷¹

[23] Therefore, while it was true that the Statute of Monopolies provided only for the exception of “the sole working or making of any manner of new manufactures,” according to Chief Justice Eyre patents had routinely been granted under the Statute for new methods of use of known manufactures.⁷² Moreover, for Eyre, equivalency of the terms “method” and “manufacture” was not contingent upon embodiment of a new application of principle. Rather, a new application of principle was independent of the existence of a new “manufacture,” despite his conclusion that “method” and “manufacture” were understood to mean the same thing under the Statute. Therefore, Chief Justice Eyre did not need to address whether the improvement in a machine must be separable from the machine it improved in order to be eligible for patent protection.⁷³ Nor did he need to address the patentability of old devices intended for new and beneficial uses. For Eyre, manufacture and method meant the same thing, not because they were both embodiments of the same new application of principle, but rather, because they were each, independently, *capable* of embodiment of a new application of principle, and that the idea of a new application of principle was the root meaning of the term “manufacture” in the Statute of Monopolies.⁷⁴ Where a new combination of components did not result in some new application of principle, there would be no “manufacture” under the Statute.

[24] For Justice Buller, although terming something as a “manufacture” was a necessary condition for patent eligibility, it was an insufficient condition for patentable distinction. The condition for patentable distinction was, instead, for Buller an embodiment of a new application of principle, for which a new “manufacture” was necessary. For Chief Justice Eyre, on the other hand, patent eligibility and patentable distinction were wrapped up in the term “manufacture” under the Statute, and the meaning of the word embraced both devices and their uses independently of each other, so long as they each embodied a new application of principle. Ultimately, no judgment in *Bolton* was given because the court was split, with Justices Buller and

⁷¹ *Id.* at 669–70 (emphasis added).

⁷² *Id.* at 655.

⁷³ *See id.*

⁷⁴ *See id.* at 655–56.

Heath holding Watt's patent invalid, and Chief Justice Eyre and Justice Rooke holding in favor of the patent.

B. *Hornblower and Maberly v. Boulton and Watt*

[25] Boulton and Watt's patent was again challenged, but unanimously upheld as valid at the Court of King's Bench in the 1799 case of *Hornblower and Maberly v. Boulton and Watt*.⁷⁵ While the justices at the Court of King's Bench, like those at the Court of Common Pleas in *Boulton*, differed as to the nature of Watt's invention, they all agreed that the term "manufacture" was broad enough to embrace the application of principle described in Watt's specification, and that the specification was sufficient to enable its practice by ordinary mechanics.⁷⁶ Further, while Justices Kenyon and Amherst summarily upheld the validity of the patent as a manufacture that was sufficiently described in the specification, Justices Grose and Lawrence took up many of the themes laid out by Justice Buller and Chief Justice Eyre in *Boulton*.⁷⁷

1. Justice Grose's Opinion

[26] Justice Grose, for example, following Justices Buller and Eyre in the Court of Common Pleas, asked whether the patent was "for a mere principle, and not for a new manufacture"⁷⁸ and, like Justice Buller, questioned whether the patent, if for a manufacture, was new and, if new, whether it should have been "for the addition only, and not for the whole engine."⁷⁹ Also like Justice Buller, Justice Grose reasoned that, even though Watt had adequately described a new method, it "should hardly" fall within the Statute of Monopolies if it was "not affected or accompanied by a manufacture."⁸⁰ However, he differed from Justice Buller by finding that Watt did, indeed, describe a "new manufacture, by which his principal is realized; that is, by which his steam vessel is kept as hot as the steam during the time the engine is at

⁷⁵ See *Hornblower v. Boulton* (1799) 101 Eng. Rep. 1285, 1285; 8 T.R. 95.

⁷⁶ See *id.* at 1285.

⁷⁷ See *id.*

⁷⁸ *Id.* at 1289.

⁷⁹ *Id.*

⁸⁰ *Hornblower*, 101 Eng. Rep. at 1290.

work; by which means the consumption of steam and fuel is lessened.”⁸¹ Whereas Buller found “nothing new in the machine,”⁸² Grose found several distinctions:

[H]e specifies the particular parts requisite to produce the effect intended, and states the manner how they are to be applied. He describes the case of wood in which the steam vessel is to be inclosed, the engines that are to be worked wholly or partially by condensation of steam, the vessels that he denominates condensers, and the steam vessels where rotary motions are required. Can it then be said that the making and combining of these parts is not some manner of new manufacture? I cannot say that it is not.⁸³

[27] On the other hand, Grose and Buller both conditioned patentable distinction on whether the patent was broad enough to cover the old, unimproved engine, or “only for the addition to or improvement of the old engine.”⁸⁴ Implicit in this analysis is that any device must inherently embody all physical applications of principle to which that device could be put. However, drawing from both Lord Chief Justice Eyre and Justice Buller in the previous case, Justice Grose resolved the difficulty associated with patenting improvements inextricably linked with old machines by limiting patent protection to devices that embodied the improvement. Specifically, as stated by Justice Grose, “[i]f indeed a patent could not be granted for an addition, it would be depriving the public of one of the best benefits of the Statute of James.”⁸⁵ Therefore, the act of parliament granting to Watt his exclusive right in his invention, according to Grose, by “reciting the patent, recites it as a grant of the benefit and advantage of making and vending ‘certain engines *by him invented for lessening the consumption of steam and fuel in fire engines.*’”⁸⁶ Therefore, the “Legislature considered the patent as a patent for the improvement of the invention described in the specification, and not as a patent for a mere method . . .” as contended by Chief

⁸¹ *Id.*

⁸² *Boulton v. Bull* (1795) 126 Eng. Rep. 651, 664; 2 H. BL. 463.

⁸³ *Hornblower*, 101 Eng. Rep. at 1290.

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ *Id.* at 1291 (emphasis added).

Justice Eyre, “. . . or for the original fire engine[,]” as contended by Justice Buller.⁸⁷ For Justice Grose, a “manufacture” under the Statute of Monopolies had to be a device. Also like Justice Buller, Justice Grose implicitly viewed a device as being a physical embodiment of all applications of principle to which it could be put and, therefore, only an improvement on a device embodying a new application of principle could be a basis for an exclusionary right. However, unlike Justice Buller, and drawing from Chief Justice Eyre, Justice Grose did not see the inability to separate an improvement, from a device it improves, as a fatal flaw. Rather, like Chief Justice Eyre, Justice Grose based entitlement to patent protection on the benefit accrued by the improvement.

2. Justice Lawrence’s Opinion

[28] Justice Lawrence borrowed from Justice Grose the criteria, recited in the act of parliament, for granting Watt his patent (for “the sole benefit of making and vending certain engines invented by him for lessening the consumption of steam in fire engines,”).⁸⁸ But, like Chief Justice Eyre, he considered “[e]ngine and method [to] mean the same thing”⁸⁹ and therefore, either “may be the subject of a patent.”⁹⁰ Justice Lawrence also, like Chief Justice Eyre, recognized the terms “engine” and “method” to be “convertible,” implying that an improvement could be embodied in a new use of an unimproved machine. Therefore, a “mechanical contrivance” did not necessarily embody all applications of principal entitled to patent protection.⁹¹ For example, as stated by Justice Lawrence:

[S]ome of the difficulties in the case have arisen from considering the word *engine* in its popular sense, namely, some mechanical contrivance to effect that to which human strength, without such assistance, is unequal: but it may also signify device; and that Watt meant to use it in that sense, –and that the Legislature so understood it, is evident from the words engine and method being used as convertible

⁸⁷ *Id.*

⁸⁸ *Hornblower*, 101 Eng. Reg. at 1291-92.

⁸⁹ *Id.* at 1292.

⁹⁰ *Id.*

⁹¹ *Id.*

terms. Now there is no doubt but that for such a contrivance a patent may be granted, as well as for a more complicated machine: it equally falls within the description of a manufacture; and unless such devices did fall within that description, no addition or improvement could be the subject of a patent.⁹²

[29] In other words, understanding that the legislature intended the terms “engine” and “method” to be “convertible” meant that, so long as the method was effected by mechanical means, Watt’s invention was within the meaning of the statute, and could be embodied in an “addition” to or an “improvement” of a known “machine.” Significantly, however, Justice Lawrence stated that, “Watt claims no right to the construction of engines for any *determinate object*, except that of lessening the consumption of steam and fuel in fire-engines[,]”⁹³ thereby leaving open the possibility that Watt would, in fact, have a right to exclude others from the “construction of engines”⁹⁴ *for the purpose* of “lessening the consumption of steam and fuel and fire engines[,]”⁹⁵ regardless of whether those engines included additions or improvements intended to effect that result.⁹⁶ At any rate, Justice Lawrence did not need to opine on whether Watt’s invention was valid as a method alone, or whether his exclusionary right extended to the construction, use, or vending of old engines with a new intended purpose, because he concluded that Watt had described an “improvement of fire-engines . . . with sufficient accuracy . . ., which may be made in all fire-engines, in such a way as to enable a workman to execute it. . . .”⁹⁷ Specifically, Justice Lawrence stated that Watt had included in the specification

a vessel *for the condensation*, distinct from that in which the powers of steam operate; and to convey the steam, as occasion requires, from the cylinder to the condensing vessel; to keep the cylinder hot by means

⁹² *Id.*

⁹³ *Hornblower*, 101 Eng. Reg. at 1292 (emphasis added).

⁹⁴ *Id.*

⁹⁵ *Id.*

⁹⁶ *Id.*

⁹⁷ *Id.*

distinctly described, and to extract, by pumps, the vapour which may impede the work.⁹⁸

[30] Having articulated the improvement as a specification providing “directions for the purpose,”⁹⁹ Watt again left open, under Justice Lawrence’s analysis, the possibility of patent protection for a vessel and pumps described in the specification that may have been present in previously known steam engines, but not employed as directed by Watt’s specification. If so, then Justice Lawrence, by accepting convertibility of the term “engine” and “method,” was forced to introduce the concept of “intended use” as a criterion for an exclusionary right in the case of Watt’s patent. It didn’t matter whether his invention was characterized as an “engine” or “method,” so long as the “determinate object” was “lessening the consumption of steam and fuel in fire engines.”

C. Summary and Comparison of Opinions by Chief Justice Eyre, and Justices Buller, Grose, and Lawrence

[31] Justices of the courts in each of *Boulton* and *Hornblower*, therefore, set up a dichotomy under the meaning of “manufacture” in the Statute of Monopolies. In *Boulton*, Justice Buller insisted that a “manufacture” was just that, whether it be “with or without principle,” and that the exception under the sixth section of the Statute was to any manner of “new manufacture.”¹⁰⁰ The implication, of course, was that it was only a “new manufacture” that could embody a new application of principle necessary to entitle the “true and first inventor and inventors of such manufactures” to “any letters patent and grants of privilege” under the Statute. A corollary of this reasoning extended such entitlement to all uses of new manufactures, since it was only a new manufacture that could embody a new application of principle. Patents of addition were circumscribed to exclude from patent protection known devices so improved. Lord Chief Justice Eyre, on the other hand, while agreeing that “principle alone [cannot] be the foundation of the patent,”¹⁰¹ determined the meaning of

⁹⁸ *Hornblower*, 101 Eng. Reg. at 1292 (emphasis added).

⁹⁹ *Id.* (“Therefore it seems to me that he has given directions for the purpose: whether those directions were or were not sufficient, is not now a question for our decision, it was a question for the determination of the jury, and they have decided it.”).

¹⁰⁰ *Boulton v. Bull*, 126 Eng. Rep. 651, 663, 665; 2 H. BL. 463.

¹⁰¹ *Id.* at 662.

“manufacture” under the Statute to be the “practical manner” of producing the “effect” of a newly discovered principle in “any art, trade, mystery, or manual occupation....”¹⁰²

[32] A “manufacture,” then, for Chief Justice Eyre, was not limited to “the thing for which the patent stated in the case was granted.” Rather, it could be the manner in which it was employed to embody the “abstract notion” conceived by the inventor, in which case the “machinery,” or “thing,” would only be incidental to the “essence of the invention.”¹⁰³ For Eyre, a “new manufacture” under the Statute was not “with or without principle,”¹⁰⁴ as it was for Buller, but a new embodiment of principle, “as to be in a condition to act,” regardless of whether by virtue of new machinery, or strictly as a process.¹⁰⁵ In *Hornblower*, Justice Grose adopted Justice Buller’s requirement that any protection under the Statute must be “effected or accompanied by a manufacture,” but resolved the problem of improvements by “addition” to known devices by limiting protection to devices and their applications that embodied the improvement.¹⁰⁶

[33] Justice Lawrence, on the other hand, like Chief Justice Eyre in *Boulton*, considered “process” and the means by which it was effected under the Statute to be “convertible.” In doing so, however, he imputed intent by limiting the scope of the exclusionary right to only those means obtaining the benefit. In the case of Watt’s invention this was “lessening the consumption of steam and fuel in fire engines.”¹⁰⁷

[34] Therefore, whereas Buller concluded in *Boulton* that the Statute of Monopolies mandated that a new “manufacture” be a new device regardless of whether it embodied any new principle, and that a new device would embody the principle of any application to which it could be put, Eyre imputed new application of

¹⁰² *Id.* at 667.

¹⁰³ *Id.* at 667–68.

¹⁰⁴ *Id.* at 663.

¹⁰⁵ *Boulton*, 126 Eng. Rep. at 667.

¹⁰⁶ *Hornblower v. Boulton*, (1799) 101 Eng. Rep. 1285, 1290; 8 T.R. 95.

¹⁰⁷ *Id.* at 1291.

principle under the Statute, and broadened “new manufacture” to independently embrace “machinery” and “process.” Buller’s view required that “additions” be separable from the known devices they improved in order to qualify under the Statute—lest they deprive the public, or patentees, of existing rights. Eyre was not so restrictive, instead only limiting the term, “new manufacture,” to machinery and processes that actually embodied new applications of principle.¹⁰⁸

[35] In *Hornblower*, on the other hand, Grose found that a method “not effected or accompanied by a manufacture” did not qualify for protection under the Statute, and limited exclusionary rights to embodiments of improvements consequent to additions to known manufactures. This eliminated the need in Buller’s analysis to afford protection only to inventions that could be separated from known manufactures they improved.¹⁰⁹ Lawrence, like Eyre in *Boulton*, equated machinery to their methods of their use and held them subject to protection as a “new manufacture” under the Statute of Monopolies. However, Eyre did not link machinery and their potential uses, and so was not concerned with patents of addition. Lawrence, unlike Eyre, foresaw the problems associated with granting exclusionary rights to machines and processes that would subsume benefits obtained by unimproved machines and processes. For Lawrence, this was addressed by limiting exclusionary rights to machinery intended for uses that obtained the benefits of the invention.

[36] The positions of Chief Justice Eyre and Justices Buller, Grose, and Lawrence are itemized below:

- **Buller:** A “manufacture” under the Statute of Monopolies embodies all applications of principle to which it can be put and, therefore, methods are not patentable, as such. An addition to a known “manufacture” must be independently patentable.
- **Eyre:** “Manufactures” and methods of their use are independently patentable as “manufactures” under the Statute.
- **Grose:** “Manufactures” do not include methods of use, but additions to known manufactures need not be independently patentable.

¹⁰⁸ *Boulton*, 126 Eng. Rep. at 663.

¹⁰⁹ *Hornblower v. Boulton*, (1799) 101 Eng. Rep. 1285, 1290; 8 T.R. 95.

- **Lawrence:** Methods of use are patentable as “manufactures,” and known manufactures can be patented as such if limited to new intended uses.

[37] As we shall see, each of these viewpoints would play one or more roles among the development of “new use,” “aggregation” and “preemption” doctrines that were to develop in the nineteenth and twentieth centuries. Further, like the views expressed by Eyre, Buller, Grose and Lawrence, all three doctrines were based on the presence of a new application of principle couched as “invention.” Following enactment of the Patent Act of 1952, “new use” and “aggregation” doctrines would be subsumed under the conditions for patentability of “novelty,” and “non-obviousness.” Only preemption doctrine remains linked to questions of statutory patent eligibility.

III. NEW USES OF KNOWN MACHINES, MANUFACTURES AND COMPOSITIONS OF MATTER

[38] The various positions held by the justices in *Boulton* and *Hornblower* regarding eligibility for patent protection as a “manufacture” under the “Statute of Monopolies” ultimately translated in the United States into judicial prohibitions against patentability for new uses of known “machines, manufactures and compositions” under the patent statutes in effect prior to the Patent Act of 1952. Section III–A explores the link between protection of methods as “manufactures” under *Boulton* and *Hornblower*, and how the inherency of principles embodied in manufactures initially justified denial of patent protection for beneficial new uses when those manufactures were previously known. Parts III–B and III–C show how the test for patent eligibility of new uses became one of “invention,” either as “non-analogous” or “non-obvious” uses. Part III–D describes a split under the Patent Act of 1952 that partitioned novelty and the judicial threshold of “invention” from the issue of patent eligibility. Part III–E then explains how the “new use” doctrine was ultimately absorbed into the statutory provisions for novelty and “non-obviousness” under the 1952 Act.

A. The Inherency of Benefit

[39] Following *Boulton and Watt v. Bull* and *Hornblower v. Boulton*, English jurisprudence generally followed the precept that, under the Statute of Monopolies, inventors were entitled to patent protection for both things and processes.¹¹⁰ A

¹¹⁰ See, e.g., H.I. DUTTON, *THE PATENT SYSTEM AND INVENTIVE ACTIVITY DURING THE INDUSTRIAL REVOLUTION, 1750-1852*, 72–75 (Manchester Univ. Press 1984) (discussing further the controversy in

process, in particular, was eligible for patent protection if the benefit achieved was inherent in an improvement of the device it employed. Conversely, if the device itself was not “improved,” then there was no new “process.” For example, the court in *Gibson & Campbell v. Brand*, before the Court of Common Pleas in 1841, held that a patent “for a new or improved process [f]or manufacture of silk, and silk in combination with certain other fibrous substances,”¹¹¹ was not properly patentable subject matter. According to the jury, despite constituting an improvement, the process represented “no new invention and no new combination.”¹¹² More specifically, Chief Justice Tindal relied upon Chief Justice Eyre’s opinion in *Boulton* that “the subject matter of letters patent, i.e. the word ‘manufacture’ as used in the statute of James, has generally been understood to denote either a thing made...; or it may perhaps extend also to a new process to be carried on by known implements or elements...”¹¹³ However, as with Buller’s reasoning in *Boulton*, the inventive nature of the process was limited to the machine, “by which the work is carried into effect.”¹¹⁴ As stated by Chief Justice Tindal:

Now, looking at the specification in this case, it appears to me, that this patent cannot be supported at law, because the plaintiffs have, in the course of it, claimed more than they are entitled to; for I cannot read the description that they give of their invention, and the parts of their invention, without understanding them to claim improvements that are made upon the machine, which is used for the purpose of producing the desired result.¹¹⁵

English case law and commentary on the meaning of “manufactures” under the Statute of Monopolies surrounding *Boulton and Hornblower*; see HELEN MARY GUBBY, *DEVELOPING A LEGAL PARADIGM FOR PATENTS*, 111 (Eleven Int’l; Pub. 2012); see CHRISTINE MACLEOD, *INVENTING THE INDUSTRIAL REVOLUTION* 237 n.29 (Cambridge Univ. Press 1988) (“This continued to be a point of judicial uncertainty and debate. One witness in 1829 thought that half the patents overturned in the courts were lost on the judge’s adverse definition of ‘manufacture.’”).

¹¹¹ *Gibson v. Brand*, 1 W.P.C. 626, 633 (1841).

¹¹² *Id.* at 635.

¹¹³ *Id.* at 633.

¹¹⁴ *Id.* at 634.

¹¹⁵ *Id.*

[40] “[D]isclaim[ing] those parts of the process or mechanism, which may have been, previously to granting our patent, well known,”¹¹⁶ the patentees directed “the well-known spinning frame,” and “the improvements we have applied to it,” to the “new and useful purpose of spinning silk waste of long fibres.”¹¹⁷ However, in view of the jury’s determination that there was “no new invention and no new combination,” despite an improvement in the process, the jury verdict was upheld.¹¹⁸ An improved process, using a known machine, or a known machine embodying only a slight variation, did not amount “to any thing which might properly be the subject of a patent.”¹¹⁹

[41] In *Losh v. Hague*, Lord Abinger, Chief of the Court of Exchequer, construed an argument in favor of patentability of a new use of railway carriage wheels (a known contrivance), or a “double use.”¹²⁰ Drawing an analogy to a new use of a “medicine known as a valuable specific in one class of complaints, fevers,”¹²¹ Lord Abinger stated:

[T]he application of that medicine to such a new purpose would not be the subject-matter of letters patent. The medicine is a manufacture, and the making or compounding it might be the subject of a patent; but the medicine being known, the discovery of any new application is not any manner of manufacture. . . .

Cases of this kind are well described by the term ‘double use;’ and under such circumstances it is truly said, there cannot be a patent for a double or new use of a known thing, because such use cannot be said to lead to any manner of new manufacture.¹²²

¹¹⁶ *Gibson*, 1 W.P.C. at 634.

¹¹⁷ *Id.* at 635.

¹¹⁸ *Id.*

¹¹⁹ *Id.* at 636.

¹²⁰ *Losh v. Hague*, 1 W.P.C. 202, 208 n.(f) (1838).

¹²¹ *Id.*

¹²² *Id.*

[42] Therefore, as had been advocated by Justice Buller in *Boulton v. Bull*, a device embraced all applications to which it could be put, all such use being considered by the courts to be exactly “analogous to what was done before.”¹²³ The test for patent eligibility, then, was whether *any improvement* on the device when applied to a new use was, “in fact, made on the same principle, in either whole or in part;...”¹²⁴

[43] A patent directed to use of anthracite to fuel blast furnaces employed in smelting iron was upheld by the Court of Common Pleas in *Crane v. Price*, despite an earlier patent for the same type of furnace that did not mention the use of anthracite.¹²⁵ The court, again under Chief Justice Tindal, held that the “application of anthracite or stone coal and culm, combined with the using of hot air blast, in the smelting and manufacturer of iron from iron stone, mine, or ore,”¹²⁶ is not a “manufacture within the intent and meaning of the Statute of James.”¹²⁷ It was immaterial that the particular type of air blast furnace itself had been known, or that anthracite had previously been known in the manufacture of iron. Rather, patentability was consequent to the fact that “the combination of the two together (the hot blast and anthracite) were not known to be combined before in the manufacture of iron....”¹²⁸ Significantly the court found that, while there were “numerous instances of patents which have been granted, where the invention consisted no more than in use of things already known,”¹²⁹ that “failed on other grounds,”¹³⁰ such as “want of

¹²³ *Id.* at 208.

¹²⁴ *Id.*

¹²⁵ *Crane’s Patent*, 1 W.P.C. 375, 375 (1836).

¹²⁶ *Crane v. Price & Others*, 1 W.P.C. 377, 378 (1842).

¹²⁷ *Id.* at 378–79.

¹²⁸ *Id.* at 408.

¹²⁹ *Id.* at 409.

¹³⁰ *Id.*

novelty, or defective specification,”¹³¹ there were “none that failed on the ground that the invention itself was not the subject of a patent.”¹³²

[44] Therefore, according to the court, Crane’s use of anthracite (a known fuel) in an otherwise known method of smelting iron, was within the meaning of “manufacture” under the Statute of Monopolies as a combination of these known features.¹³³ The reasoning here is critical because, just as had been argued by Justice Grose in *Hornblower*, eligibility for patent protection hinged on a combination of elements as opposed to an improvement or alteration in any element of a known device.¹³⁴ The point is that the issue of a “double use” did not arise, because the invention was an embodiment of a novel combination of known elements rather than the novel application of known elements to any particular new use. As a novel combination, eligibility for patent protection was presumed, and did not hinge on patentable distinction of any particular element of the invention. Further, because patentability lay in the combination of elements, there was no need to link patentability to an intended use of any of those elements or their combination.

[45] In the United States, and in the same year that *Crane v. Price* was decided, Justice Story riding circuit in the Circuit Court for the District of Massachusetts held, in *Howe v. Abbott*, that “[t]he application of an old process to manufacture an article, to which it had never before been applied, is not a patentable invention.”¹³⁵ However, “[t]here must be some new process, or some new machinery used, to produce the result.”¹³⁶ Here, the invention was directed to “a new and useful improvement in the application of a material called ‘palm leaf,’ or ‘brub grass,’ to the stuffing of beds, mattresses, sofas, cushions, and all of the uses for which hair, feathers, moss, or other soft and elastic substances are used.”¹³⁷ Justice Story found that, because “Smith has

¹³¹ *Crane v. Price & Others*, 1 W.P.C. 377, 409 n.(e) (1842).

¹³² *Id.*

¹³³ *See id.* at 409.

¹³⁴ *Boulton v. Bull* (1795) 126 Eng. Rep. 651, 651 n.(a)¹.

¹³⁵ *Howe v. Abbott*, 12 F. Cas. 656, 658 (C.C.D. Mass. 1842) (No. 6766).

¹³⁶ *Id.* at 658.

¹³⁷ *Id.* at 657.

invented no new process or machinery; but has only applied to palm leaf the old process, and the old machinery used to curl hair, it does not strike me, that the patent is maintainable.”¹³⁸ The invention was, consequently, “the mere application of an old process and old machinery to a new use.”¹³⁹

[46] Although not discussed by Justice Story, it would appear that the distinction of the invention from that of the earlier case of *Crane* is that *Crane*’s process for smelting ore was considered a new process by virtue of combination of an “invention already known to the public,” with “something else” to thereby obtain a new process.¹⁴⁰ Smith’s invention in *Howe*, on the other hand, was considered “no new process or machinery,”¹⁴¹ but, rather, “an old process and old machinery [put] to a new use.”¹⁴² There was, in other words, no new application of principle in *Howe*, but, instead, simply application of a known principle to a new material, in this case, “palm leaf,” instead of hair.

[47] Likewise, in *Bean v. Smallwood*, also before the Circuit Court for the District of Massachusetts, Justice Story held that a “new and useful improvement in the rocking chair,”¹⁴³ was not patentable because the point of novelty lay in a feature that had “been long in use, and applied, if not to chairs, at least in other machines, to purposes of a similar nature.”¹⁴⁴ The invention was not “substantially new,” but rather, “old, and well-known, and applied only to a new purpose...”¹⁴⁵ Therefore, even in an instance where the device technically was novel as a whole, the novel

¹³⁸ *Id.*

¹³⁹ *Id.*

¹⁴⁰ *Crane*, 1 W.P.C. 393 at 413 (“But the present specification expressly says, I take the whole of the invention already well known to the public, and I combine it with something else.”).

¹⁴¹ *Howe*, 12 F. Cas. at 658.

¹⁴² *Id.*

¹⁴³ WILLIAM W. STORY, SAMUEL BEAN V. THOMAS SMALLWOOD (1843), in REPORTS OF CASES ARGUED AND DETERMINED IN THE CIRCUIT COURT OF THE U.S. 408, 408 (1845).

¹⁴⁴ *Bean v. Smallwood*, 2 F. Cas. 1142, 1143 (C.C.D. Mass. 1843) (No. 1171).

¹⁴⁵ *Id.*

combination was not sufficient to connote patentability if the point of novelty was found to be known and merely applied to “a new purpose.” As stated by Justice Story:

In short, the machine must be new, not merely the purpose to which it is applied. A purpose is not patentable; but the machinery only, if new, by which it is to be accomplished. In other words, the thing itself which is patented must be new, and not the mere application of it to a new purpose or object.¹⁴⁶

[48] The combination, in other words, albeit novel, was not patentable because it merely served to apply a known device to a new purpose and was not “substantially new.”¹⁴⁷

[49] In *Le Roy v. Tatham* (“*Le Roy I*”) the Supreme Court in 1852 held that the instructions to the jury dismissing the novelty of machinery employed to fabricate lead pipe was error.¹⁴⁸ Drawing from *Bean v. Smallwood*, the Court stated “that a machine, or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor, must in itself be substantially new. If it is old and well known, and applied only to a new purpose, that does not make it patentable.”¹⁴⁹

[50] In dissent, Justice Nelson responded that, in effect, the patentees claimed “the combination of the machinery, only when used to form pipes under heat and pressure, in the manner set forth, or in any other manner substantially the same.”¹⁵⁰ More specifically, according to Justice Nelson, “[t]hey do not claim it as new separately, or when used for any other purpose, or in any other way; but claim it only, when applied

¹⁴⁶ *Id.*

¹⁴⁷ *Id.* (“Now I take it to be clear, that a machine or apparatus, or other mechanical contrivance, in order to give the party a claim to a patent therefor, must itself be substantially new.”)

¹⁴⁸ *Le Roy v. Tatham*, 55 U.S. 156, 177 (1852) [hereinafter *Le Roy I*] (“We think there was error in the above instruction, that the novelty of the combination of the machinery, specifically claimed by the patentees as their invention, was not a material fact for the jury, and that on that ground, the judgment must be reversed.”).

¹⁴⁹ *Id.* (quoting *Bean v. Smallwood*, 2 F. Cas. 1142, at 1143 (C.C.D. Mass. 1843)).

¹⁵⁰ *Id.* at 180 (Nelson, J., dissenting).

for the purpose and in the way pointed out in the specification.”¹⁵¹ The dissent criticized the majority for necessitating novelty in the “combination of the machinery employed” which, according to Nelson, is “contrary to the fair and reasonable import of the language of the specification, and also of the summary of the claim.”¹⁵² If the naturally-occurring feature—by which “lead, when in a set state, being yet under heat, can be made, by extreme pressure to reunite perfectly around a core after separation, and then be formed into strong pipes or tubes,”¹⁵³—were absent, the “simple apparatus employed” would be rendered “useless.”¹⁵⁴ As stated by Justice Nelson:

The patentees have certainly been unfortunate in the language of the specification, if, upon a fair and liberal interpretation, they have claimed only the simple apparatus employed; when they have not only set forth the discovery of this property in the metal, as the great feature in their invention, but, as is manifest, without it the apparatus would have been useless. Strike out this property from their description and from their claim, and nothing valuable is left.¹⁵⁵

[51] In essence, the dissent, as Chief Justice Eyre had done in *Boulton*, founded patentability on physical application of a naturally-occurring principle, regardless of whether the machinery employed to effect that application were new or old.¹⁵⁶ The majority, under Justice McClean, instead paralleled the reasoning of Justice Buller linking novelty in application of principle to novelty in the machinery by which that application was manifested.¹⁵⁷

[52] Justice Nelson then went further than Chief Justice Eyre, finding that discovery of a new application of principle entitled a patentee to “all other modes of

¹⁵¹ *Id.* (Nelson, J., dissenting).

¹⁵² *Id.* at 181 (Nelson, J., dissenting).

¹⁵³ *Le Roy I*, 55 U.S. at 179 (Nelson, J., dissenting).

¹⁵⁴ *Id.* at 182 (Nelson, J., dissenting).

¹⁵⁵ *Id.* (Nelson, J., dissenting).

¹⁵⁶ *See Boulton v. Bull* (1795), 126 Eng. Rep. 651, 655, 667; 2 H. BL. 463.

¹⁵⁷ *Id.* at 658.

carrying the same principle or property into practice for obtaining the same effect or result.”¹⁵⁸ By expanding protection of a new application of principle to whatever mode of application that principle employed to obtain the same result, Justice Nelson flipped Justice Buller’s reasoning in *Boulton* (extending patent protection to all manners of use of novel machinery). The corollary of this conclusion is that it is immaterial whether that mode itself is novel, so long as it is applied to effect the newly-discovered principle. As stated more fully by Justice Nelson:

The mode or means are but incidental, and flowing naturally from the original conception; and hence of inconsiderable merit. But, it is said, this is patenting a *principle, or element of nature*. The authorities to which to which I referred, answer the objection. It was answered by Chief Justice Eyre, in the case of *Watt’s* patent in 1795, fifty-seven years ago; and more recently in still more explicit and authoritative terms. And what if the principle is incorporated in the invention, and the inventor protected in the enjoyment for the fourteen years. He is protected only in the enjoyment of the application for the special purpose and object to which it has been newly applied by his genius and skill. For every other purpose and end, the principle is free for all mankind to use.¹⁵⁹

Justice Nelson concluded:

They suppose that the patentees have claimed only the combination of the different parts of the machinery described in their specification, and therefore, are tied down to the maintenance of that as the novelty of their invention. I have endeavored to show, that this is a mistaken interpretation; and that they claim the combination, only, when used to embody and give a practical application to the newly-discovered property in the lead....¹⁶⁰

[53] By decoupling novelty from the machinery employed to apply a newly-discovered “principle, or element of nature,” Justice Nelson, as had Justice Lawrence

¹⁵⁸ *Le Roy I*, 55 U.S. at 185 (Nelson, J., dissenting).

¹⁵⁹ *Id.* at 187 (Nelson, J., dissenting).

¹⁶⁰ *Id.* at 188 (Nelson, J., dissenting).

in *Hornblower*,¹⁶¹ provided for exclusionary rights to known modes where their application employed a newly discovered principle.¹⁶² To do otherwise would limit patent protection to new manufactures, *per se*. Presaging later developments that would mark the introduction of the modern conception of non-obviousness, Justice Nelson also linked eligibility of a “mode or means of the new application of principle”¹⁶³ to a threshold requirement of invention:

To hold, in the case of inventions of this character, that the novelty must consist of the mode or means of the new application producing the new result, would be holding against the facts of the case, as no one can but see, that the original conception reaches far beyond these. It would be mistaking the skill of the mechanic for the genius of the inventor.¹⁶⁴

[54] Despite these analyses of the relationship between patentability of devices and of the uses to which they may be put, the general understanding that an invention could not lie in the new use of an old machine persisted. For example, in *Brown v. Piper, a method* of “preserving fish and other articles in a close chamber by means of a freezing mixture, having no contact with the atmosphere of the preserving chamber,”¹⁶⁵ was held to be an “application by the patentee of an old process to a new subject, without any exercise of the inventive faculty, and without the development of any new idea which can be deemed new or original in the sense of the patent law.”¹⁶⁶ Accordingly, the patent was considered invalid because “[t]he thing was within the circle of what was well known before, and belonged to the public.”¹⁶⁷

¹⁶¹ *Id.* at 187 (Nelson, J., dissenting).

¹⁶² See *Hornblower v. Boulton* (1799) 101 Eng. Rep. 1285, 1291–92; 8 T.R. 95.

¹⁶³ *Le Roy I*, 55 U.S. at 186–87 (Nelson, J., dissenting).

¹⁶⁴ *Id.* at 187 (Nelson, J., dissenting).

¹⁶⁵ *Brown v. Piper*, 91 U.S. 37, 39 (1875).

¹⁶⁶ *Id.* at 41.

¹⁶⁷ *Id.*

[55] Similarly, In *Roberts v. Ryer*, the Supreme Court denied patentability to a device that was intended for a new use.¹⁶⁸ The device was “a mere carrying forward or new or more extended application of the original thought, a change only in form, proportions, or degree, doing substantially the same thing in the same way, by substantially the same means, with better results.”¹⁶⁹ The patent at issue was directed to an open bottom ice-box that included a dividing partition and a chamber directly under the ice-box, in which articles to be refrigerated “may be placed in such manner as to receive the descending current of air from the ice box directly upon them.”¹⁷⁰ The Court found that, compared to an earlier patent, “[t]here was no change in the machine: it was only put to a new use.”¹⁷¹ The Court unequivocally stated, without citation that, “[i]t is no new invention to use an old machine for a new purpose. The inventor of a machine is entitled to the benefit of all the uses to which it can be put, no matter whether he had conceived the idea of the use or not.”¹⁷²

[56] Shortly thereafter, in 1877, the Supreme Court in *Cochrane v. Deener*, squarely placed processes within the statutory framework of “art.”¹⁷³ Further, the Court partitioned the patentability of machinery employed to perform a process, from the process itself:

That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed [sic].... A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new and patentable; whilst the process itself may be altogether new, and produce an

¹⁶⁸ See *Roberts v. Ryer*, 91 U.S. 150, 159 (1875).

¹⁶⁹ *Id.* (quoting *Smith v. Nichols*, 88 U.S. 112,112 (1874)).

¹⁷⁰ *Id.* at 153.

¹⁷¹ *Id.* at 159.

¹⁷² *Id.* at 157.

¹⁷³ See *Cochrane v. Deener*, 94 U.S. 780, 788 (1877).

entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.¹⁷⁴

The parallel between the patentability of processes and machinery were each, separately, founded upon novelty and utility, thereby inherently negating “double use” as an issue.

[57] Another case, *Hartranft v. Wiegmann* stated that “[t]he application of labor to an article, either by hand or by mechanism, does not make the article necessarily a manufactured article, within the meaning of that term as used in the tariff laws.”¹⁷⁵ This case was not centered on the eligibility of subject matter under patent laws. Nevertheless, it was borrowed in later cases, most notably *Diamond v. Chakrabarty*, where the Supreme Court held that genetically manipulated microorganisms were patentable subject matter under 35 U.S.C. §101 because “the patentee has produced a new bacterium with markedly different characteristics from any found in nature and one having the potential for significant utility.”¹⁷⁶ The Court in *Chakrabarty*, in fact, relied on the reasoning under *Hartranft*¹⁷⁷ that shells, despite processing, “were still shells. They had not been manufactured into a new and different article, having a distinctive name, character or use from that of a shell.”¹⁷⁸

[58] Interestingly, there is no mention in *Chakrabarty* of instances in *Hartranft*, whereby a “distinctive name, character or use” *would* qualify subject matter as a “manufacture.” One such example in *Hartranft* was that of an India rubber sole fabricated by “simply allowing the sap of the India rubber tree to harden upon a mould.”¹⁷⁹ The Court in *Hartranft* considered the rubber sole to be a manufactured

¹⁷⁴ See *id.* at 787–88.

¹⁷⁵ *Hartranft v. Wiegmann*, 121 U.S. 609, 615 (1887).

¹⁷⁶ See *Diamond v. Chakrabarty*, 447 U.S. 303, 310 (1980).

¹⁷⁷ See *id.* at 309-310 (“[Chakrabarty’s] claim is not to a hitherto unknown natural phenomenon, but to a nonnaturally occurring manufacture or composition of matter – a product of human ingenuity “having a distinctive name, character [and] use.” *Hartranft v. Wiegman*, 121 U.S. 615 (1887)).

¹⁷⁸ See *Hartranft*, 121 U.S. at 615.

¹⁷⁹ See *id.*

article “because it was capable of use in that shape as a shoe, and had been put into a new form, capable of use and designed to be used in such new form.”¹⁸⁰ In other words, even under the tariff laws at the time, subject matter could qualify as a “manufacture,” despite being of a material found in nature, if it was “designed for use in a new form.” According to the Supreme Court decision in *Hartranft*, material derived from nature qualified as a “manufacture” if some new utility inherent in that material was manifested as a consequence.

B. Non-Analogous Use

[59] The Supreme Court introduced “analogous use” in *Penn. Railroad Co. v. Locomotive Engine Safety Truck Co.*, stating that “application of an old process or machine to a similar or analogous subject, with no change in the manner or application, and no result substantially distinct in its nature, will not sustain a patent, even if the new form of result has not before been contemplated.”¹⁸¹ Relying on earlier English cases that stated “there must be some invention in the manner in which the old process is applied,”¹⁸² the Court held that the subject matter of the patent being challenged, which was “already in use under railroad cars, is applied in the old way, without any novelty in the mode of applying it, to the analogous purpose of forming the forward truck of a locomotive engine.”¹⁸³ According to the Supreme Court, the “application is not a new invention, and therefore not a valid subject of a patent,”¹⁸⁴ thereby hinging eligibility for patent protection on the “novelty in the mode of applying”¹⁸⁵ the patent’s subject matter to a non-analogous purpose.¹⁸⁶

¹⁸⁰ *See id.*

¹⁸¹ *Penn. Railroad Co. v. Locomotive Engine Safety Truck Co.*, 110 U.S. 490, 494 (1884).

¹⁸² *Id.* at 496 (quoting *Brook v. Aston*, 27 LAW JOURNAL (N.S.) Q.B. 145).

¹⁸³ *Id.* at 498.

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *Penn. Railroad Co.*, 110 U.S. at 498 (As stated by the Court: “In the case at bar, the old contrivance of a railroad truck, swiveling upon the king-bolt, with traverse slot, and pendant diverging links, already in use under railroad cars, is applied in the old way, without any novelty in the mode of applying it, to the analogous purpose of forming the forward truck of a locomotive engine. This application is not a new invention, and therefore not a valid subject of a patent.”)

[60] In *Ansonia Brass and Copper Co. v. Electrical Supply Co.*, the Supreme Court relied on *Roberts v. Ryer*, asserting that “application of an old process to a new and analogous purpose does not involve invention, even if the new result had not before been contemplated.”¹⁸⁷ Stated in positive terms, the Court equated non-analogous use with inventive skill sufficient to warrant patentability:

On the other hand, if an old device or process be put to a new use which is not analogous to the old one, and the adaptation of such process to the new use is of such a character as to require the exercise of inventive skill to produce it, such new use will not be denied the merit of patentability.¹⁸⁸

[61] Thereafter, several cases were decided by the Supreme Court that equated new, non-analogous use with inventiveness warranting patent protection, the absence of which was considered a prohibited “double use.” For example, in *Grant v. Walter* the Court stated:

The most that can be said of this Grant patent is that it is a discovery of a *new use* from an old device which does not involve patentability.... [I]t forms only an analogous or *double use*, or one so cognate and similar to the uses and purposes of the former cross-reeled and laced skein *as not to involve anything more than mechanical skill, and does not constitute invention*....¹⁸⁹

[62] Likewise, in *Potts v. Creager*:

As a result of the authorities upon this subject, it may be said that, if the new use be so nearly analogous to the former one, that the

¹⁸⁷ *Ansonia Brass & Copper Co. v. Electrical Supply Co.*, 144 U.S. 11, 18 (1892) (citing *Roberts v. Ryer*, 91 U.S. 150 (1875)) (“It was said by Chief Justice Waite in *Roberts v. Ryer*, 91 U.S. 150, 157, that ‘it is no invention to use an old machine for a new purpose. The inventor of a machine is entitled to all the uses to which it can be put, no matter whether he had conceived the idea of the use or not.’”).

¹⁸⁸ *Id.*

¹⁸⁹ *Grant v. Walker*, 148 U.S. 547, 556 (1893) (emphasis added).

applicability of the device to its *new use* would occur to a person of ordinary mechanical skill, it is only a case of *double use*, but if the relations between them be remote, and especially if the use of the old device produce a new result, *it may at least involve an exercise of the inventive faculty*. Much, however, must still depend upon the nature of the changes required to adapt the device to its new use.¹⁹⁰

[63] Judge Learned Hand of the Circuit Court for the Southern District of New York, and later of the Second Circuit Court of Appeals, played a significant role in the development of patent law, particularly with respect to eligibility. Probably most famously, in *Parke-Davis & Co. v. H.K. Mulford Co.*, he upheld the validity of claims for purified adrenaline (ammonia magnesium phosphate) extracted from adrenal glands.¹⁹¹ Judge Hand based their validity on utility embodied within the claimed product. Dismissing the charge that the patent is “only for a degree of purity, and therefore not for a new ‘composition of matter,’”¹⁹² Judge Hand stated that, “while it is of course possible logically to call this a purification of the principle, it became for every practical purpose a new thing commercially and therapeutically. That was a good ground for a patent.”¹⁹³ He summarized that, “[t]he line between different substances and degrees of the same substance is to be drawn rather from the common usages of men than from nice considerations of dialectic.”¹⁹⁴ In essence, Judge Hand asserted that the purified extract was not an embodiment of a bare principle, but, rather a novel composition embodying a new application of principle. On appeal, validity of the claimed extract was upheld by the Circuit Court of Appeals for the Second Circuit, albeit under a narrower construction that limited the composition to a

¹⁹⁰ *Potts v. Creager*, 155 U.S. 597, 608 (1894) (emphasis added).

¹⁹¹ *Parke-Davis & Co. v. H.K. Mulford & Co.*, 189 F. 95, 98, 104 (S.D.N.Y. 1911); *see also*, e.g., AMY L. LANDERS, UNDERSTANDING PATENT LAW 300 (Matthew Bender ed., LexisNexis 2d ed. 2012) (“The *Parke-Davis* opinion, which permitted the patent for a purified substance that evidenced properties beyond those existent in the material’s natural state, has been recognized as laying the foundation for the patentability of the more complex biotechnological inventions developed today. The *Parke-Davis* opinion demonstrates that a product derived from nature that evidences alteration from their natural origins constitutes patentable subject matter.”).

¹⁹² *Parke-Davis & Co.*, 189 F. at 103.

¹⁹³ *Id.*

¹⁹⁴ *Id.*

substance “in whose production the suprarenal glands (whose physiological characteristics were already known) have played some part.”¹⁹⁵ Novelty of the composition and a new use, made possible by a new application of principle embodied in that composition, were central to the holdings in both cases.

[64] In *Traitel Marble Co. v. U T. Hungerford Brass & Copper Co.*, Judge Hand, “[a]ssuming...that the law is absolute that there can be no patent for the new use of an old thing,”¹⁹⁶ held as patentable subject matter that embodied “very slight structural changes..., when they presuppose a use not discoverable without inventive imagination.”¹⁹⁷ According to Judge Hand, while “the statute allows no monopolies merely for ideas or discoveries...” [devices were to be judged] not by the mere innovation and their form or material, but by the purpose which dictated them and discovered their function.”¹⁹⁸ Therefore, like Justice Buller in *Boulton*, Judge Hand believed that a device continued to embody all purposes to which it might be put to use. Nevertheless, he also found that even a slight variation in the device, if “inventive,” and if beneficial when put to a new use, would make the device and its method of use eligible for patent protection.

[65] Likewise, Judge Hand, three months later in *H.C. White v. Morton E. Converse & Son Co.*, held valid a mechanical patent for a tricycle, even though the necessary changes to obtain the improvement were quite “simple” and by means that “have been also always at hand.”¹⁹⁹ For Judge Hand, “[t]he fact that the changes were so slight is quite irrelevant, so long as they were essential to the purpose, as they were.”²⁰⁰ Judge Hand explained:

While the statute grants monopolies only for new structures, and not for new uses, invention is not to be gauged by the necessary physical

¹⁹⁵ *Parke-Davis & Co. v. H.K. Mulford & Co.*, 196 F. 496, 498 (2d. Cir. 1912).

¹⁹⁶ *Traitel Marble Co. v. U.T. Hungerford Brass & Copper Co.*, 18 F.2d 66, 68 (2d Cir. 1927).

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *H.C. White v. Morton E. Converse & Son Co.*, 20 F.2d 311, 313 (2d Cir. 1927).

²⁰⁰ *Id.*

changes, so long as there are some, but by the directing conception which alone can beget them.²⁰¹

[66] Even where the changes to a known device might be small and well-known, a combination “essential to the purpose” that obtained a novel and beneficial result was, for Judge Hand, inventive and sufficient to merit patent protection, despite the fact that “this inventor merely thought to unite them by a fortunate insight which had thereto escaped the imagination of others.”²⁰² Therefore, as had been stated by Justice Grose in *Hornblower*, additions to known devices need not be independently patentable to make the improved device eligible for patent protection.

[67] There was, however, growing confusion over eligibility of subject matter at this time, as highlighted in the case of *Ex parte Brown*, a decision by the Patent Office on appeal to reverse the rejection of claims directed to “electrical insulating material composed of plant leaves of the Bromelia family.”²⁰³ The Commissioner reasoned that, because the “[a]ppellant appears to have been the first to discover that this [fiber] material possesses unexpectedly superior electric insulating properties,”²⁰⁴ the claimed “electric insulating material” composed of the fiber material was patentable.²⁰⁵ It relied on dicta from *General Electric Co. v. Hoskins Mfg. Co.*, including the following:

The novelty of the patent in suit consists in discovering a new use for the chromium-nickel alloy in which is produced most extraordinary and unexpected results. . . .

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Ex parte Brown*, 387 Off. Gaz. Pat. Office 461, 461 (1928) (discussing exemplary claims of the patent at issue, U.S. 1,725,335, were directed to the material itself: “1. An electric insulating material composed of the fiber of plant leaves of the Bromelia family; 6. An electric insulating material for conduits in the form of a paper composed of the fiber of the caroa plant of the neoglaziovia variegata species of the Bromelia family”).

²⁰⁴ *Id.* at 462.

²⁰⁵ *See id.*

[Marsh] first disclosed the properties and great advantages of the chromium nickel alloy as a resistance element. . . .

Inasmuch as Marsh is not claiming novelty for his alloy as such, we need not give the objection further attention.²⁰⁶

[68] Close inspection of the decision in *General Electric*, however, reveals that the court distinguished between claims to the chromium-nickel alloy and its embodiment as an “electrical resistance element.”²⁰⁷ As stated by the court, “unless Placet anticipates Marsh’s material *as an electrical resistance element*, it is not anticipated.”²⁰⁸ As further stated by the court:

From the foregoing statements it is evident that Placet and the other prior art and prior publication references fell far short of disclosing, even to those skilled in the art, the subject matter of the patent in suit.²⁰⁹

[69] The Patent Office in *Brown*, however, went further and viewed naturally-occurring *material* as patentable, if characterized as a discovery of its inherent properties. In other words, the patentability of the claims was upheld as an “*electric insulating material*,” because the property of electrical resistivity was the discovery that formed the basis of the patent application.²¹⁰

[70] Similarly, in *Ex parte Oscar Hannach*, the Patent Office Board of Appeals in 1931 reversed the final rejection of claims directed to a “refrigerating composition, consisting of a mixture of ammonium-chloride and sodium-carbonate adapted to produce a decrease of temperature upon being dissolved,” in view of a German patent disclosing a mixture of ammonium-chloride and sodium-carbonate for extinguishing fires.²¹¹ The examiner argued that the “appellant is not entitled to a patent for merely

²⁰⁶ *General Electric Co. v. Hoskins Mfg. Co.*, 224 F. 464, 470–73 (7th Cir. 1915).

²⁰⁷ *Id.* at 469, 471.

²⁰⁸ *Id.* at 467 (emphasis added).

²⁰⁹ *Id.* at 470.

²¹⁰ *See Ex parte Brown*, 387 Off. Gaz. Pat. Office 461, 462 (1928).

²¹¹ *Ex parte Oscar Hannach*, 8 U.S.P.Q. (BNA) 13 (Bd. Pat. App. 1931).

perceiving this [refrigerating] property of the old substance.”²¹² The Board, on the other hand, did “not consider that the uses are sufficiently analogous or the functions of the chemicals sufficiently similar so that any suggestion of the use of the fire extinguishing mixture as a refrigerating mixture would be received without the exercise of invention.”²¹³ Again, like the position held by Justice Lawrence in *Hornblower*, patent eligibility was available for known devices if limited to a particular use. Here, discovery of a non-analogous use was sufficient to support a claim to a known composition distinguished only by its characterization and intended use.

[71] It was also at about this time that the Supreme Court began calling into question the statutory meaning of “manufacture” under patent law. In *American Food Growers, Inc. v. Brogdex Co.*, the Supreme Court in 1931 held that the claimed combination of natural fruit and a “boric compound carried by rind or skin in an amount sufficient to render the fruit resistant to decay,”²¹⁴ was not a “manufacture,” because there was “no change in the name, appearance, or general character of the fruit.”²¹⁵ The Court quoted *Hartranft*²¹⁶ and another case, also unrelated to patent law, *Anheuser-Busch Ass’n. v. United States*, to thereby impose the requirement that a “manufacture” must embody “something more”:

“Manufacture implies a change, but every change is not manufacture, and yet every change in an article is the result of treatment, labor and manipulation. But *something more* is necessary....There must be transformation; a new and different article must emerge ‘having a distinctive name, character or use.’”²¹⁷

²¹² *Id.*

²¹³ *Id.*

²¹⁴ *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11 (1931).

²¹⁵ *Id.* at 12.

²¹⁶ *Hartranft*, 121 U.S. at 615. (“They were still shells. They had not been manufactured into an article, having a distinctive name, character or use from that of a shell.”) *See also*, text *supra* at note 175.

²¹⁷ *American Fruit Growers, Inc.* 283 U.S. at 12 (quoting *Anheuser-Busch Ass’n.*, 207 U.S. at 562 (quoting *Hartranft*, 121 U.S. at 609)).

As we shall see, a threshold requirement resembling “something more” would be echoed by the Supreme Court in later decisions addressing the statutory eligibility of claimed subject matter.²¹⁸

[72] Shortly after *American Fruit Growers* was decided, Judge Hand in *H.K. Regar & Sons, Inc. v. Scott & Williams*, again held to Justice Buller’s standard in *Boulton* that “a new use of an old thing or an old process, quite unchanged, can under no circumstances be patentable,”²¹⁹ and directly related this conclusion to the statutory provision that “allows patents only for a new ‘art, machine, manufacture or composition of matter’ [35 USCA § 31].”²²⁰ For Judge Hand, a “new use begets a new device. In such cases it requires but little physical change to make an invention.”²²¹ Therefore, and seemingly in contrast to some earlier decisions by the Patent Office,²²² recharacterization of known subject matter and intended use could not connote statutory eligibility as a new “art, machine, manufacture or composition of matter.”

[73] Judge Hand addressed the issue of “new use” more directly in *Hookless Fastener Co. v. G.E. Prentice Mfg. Co.*, as a conflict between the eligibility of new machines and the lack of eligibility of new uses of known components.²²³ As stated by Judge Hand:

We conceive the rule to be that if the invention be merely of a new use for an old machine, it is never patentable; the statute does not authorize patents for uses, though processes come close aboard at times. But if the patent be for a new machine, there is no such doctrine, and indeed could not be, because substantially every machine is sure to be composed of old elements. The real difficulty is, as it

²¹⁸ See *infra* text accompanying note 404, et seq.

²¹⁹ *H.K. Regar & Sons, Inc. v. Scott & Williams, Inc.*, 63 F.2d 229, 231 (2d. Cir. 1933).

²²⁰ *Id.*

²²¹ *Id.*

²²² See *infra* text accompanying note 213, et seq.

²²³ See *Hookless Fastener Co. v. G.E. Prentice Mfg. Co.*, 68 F.2d 940, 941 (2d Cir. 1934).

usually is, in fixing the marches where these conflicting doctrines meet.²²⁴

[74] Judge Hand was, possibly without recognizing it, wrestling with Judge Buller's insistence that to be patentable, an improvement on a machine must be patentable apart from its combination with the machine so improved, and the dilemma of Lord Mansfield in *Morse v. Branson* in 1776, that "if the objection to this patent was on the ground that it was only for an addition to an old machine, that objection would revoke almost every patent."²²⁵ Regardless, Judge Hand's position remained the same: arts, machines, manufactures, and compositions of matter all inherently embodied applications of principle, thereby prohibiting from eligibility patent protection for previously undiscovered uses, regardless of the novelty of the use and any new benefits or utilities obtained by such new discoveries.

[75] The Patent Office, however, continued to grant patents based on discoveries that made known subject matter amenable to new and beneficial uses. For example, in 1934, the Patent Office Board of Appeals in *Ex parte Walter H. Fulweiler*, upheld the validity of a process for the "use of aluminum soap of cocoanut oil to stuff the leather" for use in gas meter diaphragms, because, although known as a method to "render it pliable and waterproof," the applicant had discovered "new properties in this material especially adapting it for use in gas meters."²²⁶ The Board stated that the case was "believed to be similar to that of *Ex parte Brown*," where the fiber of plant leaves was held to be patentable subject matter as "electric insulating" material.²²⁷ In another example, the Patent Office Board of Appeals, in *Ex parte Jos. A. Weiger*, held that claims directed to a valve seat, where the "only alleged novelty of the claims resides in the use of the material for the seat not heretofore used for that purpose," were patentable because, although the material itself was taught in an earlier patent, there was no description in that patent "to any great extent the properties of the material."²²⁸ According to the Board, the appellant's "selection of the patented

²²⁴ *Id.*

²²⁵ HELEN GUBBY, DEVELOPING A LEGAL PARADIGM FOR PATENTS 28 (Erasmus University of Rotterdam 2011).

²²⁶ See *Ex parte Fulweiler*, 24 U.S.P.Q. (BNA) 268 (P.T.A.B.. 1934).

²²⁷ See *id.*; see also *supra* text accompanying note 203.

²²⁸ See *Ex parte Weiger*, 26 U.S.P.Q. (BNA) 25 (P.T.A.B.. 1934).

material and determination of its suitability [as a valve seat] is an accomplishment warranting the grant of a patent.”²²⁹ Thus, while Judge Hand at the Circuit Court of Appeals for the Second Circuit continued to insist that “new uses” could only be consequent to employment of new devices within the mandate of the patent statute, and while the Supreme Court generally allowed for such “new uses” only when they were not “analogous” to known uses or processes, the Patent Office reversed rejections made by examiners of claims to materials distinguished only by their intended use.²³⁰

C. Non-Obvious Use

[76] The Supreme Court case of *Cuno Eng’g. Corp. v. Automatic Devices Corp.*, is well-known for its assertion that a “new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling,” to qualify for patent protection.²³¹ Although the Court in *Graham v. John Deere* later dismissed this language as mere “rhetorical embellishment,”²³² *Cuno* is also noted for invoking the 1851 Supreme Court case of *Hotchkiss v. Greenwood*.²³³ *Hotchkiss* is now widely

²²⁹ *See id.* at 3.

²³⁰ *See Ex parte Bosland*, 44 U.S.P.Q. 695, 696 (P.T.A.B. 1940). This practice by the Patent Office resulted in a memorandum that was prepared “for discussion only.” The memorandum listed ten forms of claim construction and commented that the first four of them were proper while the others were not. According to an editor’s note in the United States Patent Quarterly, the “discussion was not concluded, and the paper consequently never distributed to the examining divisions.” The ten forms of claim construction were as follows:

1. The process which comprises adding X to milk.
2. The composition comprising milk and the substance X.
3. A milk composition containing X.
4. A milk preservative comprising X.
5. A material for preserving milk comprising X.
6. For use for preserving milk the substance X.
7. As a preservative for milk the substance X.
8. The use of X for preserving milk.
9. The material X, which when added to milk acts to preserve it.
10. A composition adapted for preserving milk comprising X..

²³¹ *See Cuno Eng’g. Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941).

²³² *See Graham v. John Deere Co.*, 383 U.S. 1, 15 n.7 (1966).

²³³ *See Cuno*, 314 U.S. at 90 (citing *Hotchkiss v. Greenwood*, 52 U.S. 248 (1851)).

acknowledged as establishing a requirement for patentability of “more ingenuity and skill” than that of “the skillful mechanic”²³⁴ that later became the basis for the modern statutory requirement of “non-obviousness.”²³⁵ There is less recognition that the Court in *Cuno* based its decision, in part, on the prohibition against new uses of old devices. Specifically, the Court extrapolated the Constitutional provision for patent protection to a requirement of “inventive genius” by relying on the bar against patenting a “new application of an old device:”

We cannot conclude that his skill in making this contribution reached the level of inventive genius which the Constitution (Art. I, § 8) authorizes Congress to reward. He merely incorporated the well-known thermostat into the old ‘wireless’ lighter to produce a more efficient, useful and convenient article. *A new application of an old device may not be patented if the ‘result claimed as new is the same in character as the original result’ even though the new result had not before been contemplated.*²³⁶

Therefore, the prohibition against claiming a “new use” of known subject matter continued to be a viable doctrine, even under the Supreme Court, and was included in the reasoning that would eventually become the seeds of modern statutory “non-obviousness.”

[77] In 1943, the Court of Customs and Patent Appeals in *In re Thuau* upheld a rejection of claims directed to “a new therapeutic product for the treatment of

²³⁴ *Hotchkiss*, 52 U.S. at 267; See, e.g., John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 TEX. L. REV. 1, 39 (2007) (“*Hotchkiss v. Greenwood*, the Supreme Court’s first major opinion in this case, replaced the early requirement of inventive principle with a more general doctrine that demanded a sufficient ‘degree of skill and ingenuity’ as a condition for patentability.” (quoting *Hotchkiss*, 52 U.S. at 267)).

²³⁵ See *infra* text at note 255.

²³⁶ *Cuno*, 314 U.S. at 91 (citations omitted, emphasis added). The reasoning employed by the Court in *Cuno* in this respect closely resembled that of the defendants in *Hotchkiss*: If in the present case the patentees had invented an improvement in the mode of fastening the knobs to the handles, or if they had invented a new mode of making knobs out of clay or other materials, their patent might have been sustained; but we maintain *they cannot obtain a patent for a new use, or double use, of the article of clay, any more than they could sustain a patent for a new use of an old machine.* *Hotchkiss* 52 U.S. at 261 (emphasis added).

diseased tissue.”²³⁷ All three claims were directed to products, and two of the three claims at issue were directed to known products limited to an intended use.²³⁸ As framed by the appellants, the issue was “whether the products defined involved a new and unobvious use --namely, a therapeutic product for the treatment of diseased tissue.”²³⁹ The Court of Customs and Patent Appeals rephrased the question to “whether a new and unobvious use for an old composition renders claims for such use patentable.”²⁴⁰ The issue, as rephrased by the court, seems incongruous with the subject matter of the claims on appeal because those claims were directed, in each case, to a product and not to its use. As we have seen, equating a product to a method of its use would only find sanction if, as asserted by Justice Buller in *Boulton*, a manufacture embodied all possible applications of principle of its use by definition, rather than that of Lord Chief Justice Eyre, who determined that methods, or processes, could be held patentable as “manufactures” under the Statute, independent of the patentability of the means by which the methods are effected. The remainder of the opinion in *Thuau*, indeed, assumes equivalency of products and methods of their use; the court repeatedly referenced the patentability of “a new use of an old thing or old process:”

But a new use of an old thing or old process, quite unchanged, can under no circumstances be patentable; not because it may not take as much inventiveness to discover it, as though some trivial change were necessary, but because the statute allows patents only for a new “art, machine, manufacture or composition of matter”.... The test is objective; mere discovery will not do.²⁴¹

²³⁷ *In re Thuau*, 135 F.2d 344, 345 (C.C.P.A. 1943).

²³⁸ *See id.* at 345. The independent claims on appeal from the Board of Appeals were as follows: “1. A new therapeutic product for the treatment of diseased tissue, comprising a condensation product of metacresolsulfonic acid condensed through an aldehyde. ... 5. A new therapeutic product for the treatment of diseased tissue, comprising a condensation product obtained by condensing substantially pure metacresolsulfonic acid with an aldehyde. 14. The reaction product of substantially pure metacresolsulfonic acid and an aldehyde.”

²³⁹ *Id.*

²⁴⁰ *Id.*

²⁴¹ *Id.* at 347 (quoting section 31, title 35 U.S. Code (35 U.S.C.A. § 31(repealed 1999.))).

The claims were denied eligibility for patent protection by the court as a *new use* of an old composition, even though the claims were for *products*, and despite acknowledgement of the value of the discovery and the consequent benefit of the invention:

That appellant has made a valuable discovery in the new use of the composition here involved we have no doubt, and it is unfortunate for him if he cannot make claims adequate to protect such discovery, but to hold that every new use of an old composition may be the subject of a patent upon the composition would lead to endless confusion and go far to destroy the benefits of our patent laws.²⁴²

There was no consideration by the court that, the products being known, the rejections of the claims at issue could have stood on lack of novelty alone, without involving the doctrine of “new use.”

[78] In 1947, Judge Hand, again for the United States Court of Appeals for the Second Circuit, held, in *Old Town Ribbon & Carbon Co., Inc. v. Columbia Ribbon Carbon Mfg. Co. Inc.*, that claims directed to a “device for making a master copy sheet for use either in the gelatin type or in the spirit type of reproduction,” and for a “folded sheet”²⁴³ were anticipated by an earlier-issued patent.²⁴⁴ As stated by the court, “it was a perfect anticipation of both claims in suit, except for the absence of any suggestion that they were fit for the ‘gelatin pad,’ as well as for the ‘spirit,’ process.”²⁴⁵ The court’s reasoning, however, perpetuated the underlying assumption of the Court of Customs of Patent Appeals in *In re Thuau* that “machines,” “manufactures,” and “compositions of matter” were, somehow, inherently, embodiments of any “art” or process employing them:

Nevertheless, since 1793, unless a patent disclosed a “new and useful art,” a new “machine,” a new “manufacture,” or a new “composition

²⁴² *In re Thuau*, 3135 F.2d at 347.

²⁴³ U.S. Patent No. 2,118,888 (filed Sep. 30, 1936).

²⁴⁴ See *Old Town Ribbon & Carbon Co., Inc. v. Columbia Ribbon Carbon Mfg. Co., Inc.*, 159 F.2d 379, 382 (2d Cir. 1947).

²⁴⁵ *Id.* at 381.

of matter,” it has not been a valid patent. If it be merely for a new employment of some “machine, manufacture or composition of matter” already known, it makes not the slightest difference how beneficial to the public the new function may be, how long a search it may end, how many may have shared that search, or how high a reach of imaginative ingenuity the solution may have demanded. All the mental factors which determine invention may have been present to the highest degree, but it will not be patentable because it will not be within the terms of the statute. This is the doctrine that a “new use” can never be patentable.²⁴⁶

For Judge Hand, a “process” was an “art” under the statute only if it employed some novel “machine, manufacture or composition of matter.” The court left no doubt that the issue was one of patent eligibility by explicitly providing for qualification under the statute for even “very slight physical changes in a ‘machine,’ a ‘manufacture’ or a ‘composition of matter,’” while specifying no such provision for a new process or “art” not consequent to some slight variation of a “machine,” “manufacture,” or “composition of matter”:

As we have said in earlier cases, this does not mean that very slight physical changes in a “machine,” a “manufacture” for [sic] a “composition of matter” may not be enough to sustain a patent; the act of selection out of which the new structure arises, is the determinant, and small departures may signify and embody revolutionary changes in discovery; but the law does not protect the act of selection per se, however meritorious, when it is not materially incorporated into some new physical object.²⁴⁷

Without ever citing *Thuau*, Judge Hand repeated the reasoning of the Court of Customs and Patent Appeals in that case by superfluously lumping eligibility of a new “art,” or “process,” with claims directed to other statutory categories when the “machine,” “manufacture,” or “composition of matter” employed by the process was not new. All of the claims were directed to known products and, therefore, as in *Thuau*, Judge Hand did not consider claimed methods of their use, nor any products

²⁴⁶ *Id.* at 382.

²⁴⁷ *Id.*

intended for some specific use, to be statutory subject matter when the products themselves were not novel.²⁴⁸

[79] Interestingly, the Court of Customs and Patent Appeals provided some clarification to the dicta of *Thuau* in *In re Haller*,²⁴⁹ just a few months after *Old Town Ribbon*. Like *Thuau* and *Old Town Ribbon*, the claims at issue in *Haller* were directed to a product, in this case “[a] packaged product comprising cyclopropyl alkyl ether having not more than three carbon atoms in the alkyl group, labeled to show its use as an insecticide.”²⁵⁰ Unlike the dicta in *Thuau*, the court in *Haller* clearly distinguished between claims directed to an old composition having a new intended use, and claims directed to the new use of that old composition:

Counsel for appellant cites numerous authorities to the effect that the concept of using an old material for a new purpose may, if properly claimed, form a basis for a patent. That point is not in issue here. The issue here is whether an old composition can be patented *as a composition* on the basis of the mere statement of a new use.²⁵¹

[80] Relying on *Thuau*, the court stated that “[t]he difficulty is not that there can never be invention in discovering a new process involving the use of an old article, but that the statutes make no provision for the patenting of an article or composition which is not, in and of itself, new.”²⁵²

[81] The dicta by the court in *Haller* also clearly rested on its understanding that the “basis for rejection... in the *Thuau* case... [was] lack of novelty in the composition claimed, rather than lack of invention in the use suggested.”²⁵³

²⁴⁸ *See id.*

²⁴⁹ *In re Haller*, 161 F.2d 280, 281 (CCPA 1947)

²⁵⁰ *Id.* at 280.

²⁵¹ *Id.* at 281.

²⁵² *Id.*

²⁵³ *Id.*

D. The Patent Act of 1952: Splitting Invention from Eligibility

1. Statutory and Judicial Conflation Prior to the Patent Act of 1952

[82] Until enactment of the Patent Act of 1952, the modern concepts of “patent eligibility” and “statutory novelty” were defined under a single paragraph of the patent statute, as they had been under various acts since the Patent Act of 1790. For example, in 1947, at the time of *Haller*, the relevant provision was § 31 at Title 35 of the United States Code, which read, in part, as follows:

§ 31. Inventions Patentable.

Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, ... not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof, or more than one year prior to his application, and not in public use or on sale in this country for more than one year prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor.²⁵⁴

[83] Even more importantly, there was no statutory provision for non-obviousness, which debuted in the Patent Act of 1952. Instead, courts relied on the standard espoused in *Hotchkiss*²⁵⁵ and, before that, “patentable novelty” or “substantial novelty,”²⁵⁶ which was a judicial conceit born from the limitation of the Patent Act of

²⁵⁴ 35 U.S.C. § 31 (1946) (repealed 1999).

²⁵⁵ *Hotchkiss v. Greenwood*, 52 U.S. 248, 267 (1850). (“[U]nless more ingenuity and skill in applying the old method of fastening the shank and the knob were required in the application of it to the clay or porcelain knob than were possessed by an ordinary mechanic acquainted with the business, there was an absence of that degree of skill and ingenuity which constitute essential elements of every invention. In other words, the improvement is the work of the skillful mechanic, not that of the inventor”).

²⁵⁶ See Kenneth J. Burchfiel, *Revising the “Original” Patent Clause: Pseudohistory in Constitutional Construction*, 2 HARV. J.L. & TECH. 155, 191, 195 (1989).

1793 that “simply changing the form or the proportions of any machine, or composition of matter, in any degree, shall not be deemed a discovery.”²⁵⁷

[84] Given that the modern notions of eligibility and novelty were combined within a single statutory provision, and that non-obviousness was a nascent concept, at best, it is not surprising that “invention” continued to play a significant role in determining whether subject matter qualified as any of the statutory categories of “art, machine, manufacture or composition of matter” right up to the introduction of the 1952 Act. In *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, for example, the Supreme Court in 1948 applied the reasoning of *Cuno Engineering* to hold that combinations of different species of bacteria of the genus *Rhizobium* were not eligible subject matter under the statute because, according to the Court, “a product must be more than new and useful to be patented; it must also satisfy the requirements of invention or discovery.”²⁵⁸ Following the logic of the Court in *Cuno*, that “[a] new application of an old device may not be patented if the ‘result claimed as new is the same in character as the original result’ even though the new result had not before been contemplated,”²⁵⁹ the Court in *Funk Bros.* stated:

The application of this newly-discovered natural principle to the problem of packaging of inoculants may well have been an important commercial advance. But once 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*.²⁶⁰

[85] More specifically, the combination of species fell short of “invention” within the meaning of the patent statute because:

²⁵⁷ *Id.* at 184 (discussing the limitations of the Patent Act of 1973).

²⁵⁸ *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 131 (1948) (citing *Cuno Engineering Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) and 35 U.S.C. § 31, R.S. § 4886).

²⁵⁹ *See Cuno Eng’g. Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941). (quoting *Blake v. San Francisco*, 113 U.S. 679, 683 (1885)) (citations omitted). See text *supra* at note 220.

²⁶⁰ *Funk Bros.*, 333 U.S. at 132 (1948) (emphasis added).

No species acquires a different use. The combination of species produces no new bacteria, no change in the six species of bacteria, and no enlargement of the range of their utility. Each species has the same effect it always had. The bacteria perform in their natural way. Their use in combination does not improve in any way their natural functioning. They serve the ends nature originally provided and act quite independently of any effort of the patentee.²⁶¹

The non-mutually inhibitive nature of certain combinations of bacteria were examples of “manifestations of laws of nature, free to all men and reserved exclusively to none,”²⁶² whereby:

He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. 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.²⁶³

[86] The non-mutually inhibitive combination of bacteria claimed by the patentee was no more than “one of the ancient secrets of nature now disclosed.”²⁶⁴ In effect, the combination represented for the Court in *Funk Bros.* “a new use of an old thing or an old process, quite unchanged,” in the words of the court in *Thuau*.²⁶⁵ Therefore, as stated by the Court in *Funk Bros.*, “[a]ll that remains..., are advantages of the mixed inoculants themselves. They are not enough.”²⁶⁶

[87] Following *Haller*, the meaning of *Thuau* was again at issue in *In re Benner*, where the Court of Customs and Patent Appeals upheld a rejection of claims directed to a ball mill lining element.²⁶⁷ The appellant distinguished the holding in *Thuau* as

²⁶¹ *Id.* at 131.

²⁶² *Id.* at 130.

²⁶³ *Id.* (emphasis added).

²⁶⁴ *Id.* at 132.

²⁶⁵ *In re Thuau*, 135 F.2d 344, 346 (CCPA 1943).

²⁶⁶ *Funk Bros.*, 333 U.S. 127, 132 (1948).

²⁶⁷ *See In re Benner*, 174 F.2d 938, 939 (CCPA 1949).

“merely claiming a new use for an old condensation product whereas appellants claims are directed to an article of manufacture which is new.”²⁶⁸ The court found that the “introductory phrase, ‘A ball mill lining element,’ does not constitute a part of the subject matter of the appealed claims to be considered as a limitation in determining the question of patentability.”²⁶⁹ Therefore, “the matter of non-analogous use alleged is not important in this case.”²⁷⁰ The court also responded to the appellants’ further argument that “a change, modification, or adaptation (of the old product), however slight, imparts patentability,” as being “too broad to be accepted as sound law.”²⁷¹ Rather, while “[i]nvention might be present in a very slight alteration, ... such alteration must amount to *something more* than mechanical or professional skill” and, regardless, the court found a “lack of statutory authority for the grant of a patent based solely on use.”²⁷² The court did not comment on the eligibility of claims regarding methods of use, as opposed to claims for the products themselves.

[88] A clear distinction between claims to compositions and methods of their use was again laid out by the Patent Office Board of Appeals in *Ex Parte Wagner*.²⁷³ The claims, directed to a “well drilling process employing a drilling mud to which has been added a water-soluble cellulose sulfate,” were rejected by the examiner as “not being proper process claims.”²⁷⁴ The Board interpreted the examiner’s rejection to mean “that the process claims are unpatentable over the conventional well drilling processes shown in the cited patents and not that they are improper in a statutory sense.”²⁷⁵ The Board reversed the examiner because it found that, under the “*Thuau* doctrine,” claims to compositions and to their methods of use were separately patentable in that, depending upon the prior art, composition claims might fall while

²⁶⁸ *Id.* at 941.

²⁶⁹ *Id.* at 942.

²⁷⁰ *Id.*

²⁷¹ *In re Benner*, 174 F.2d at 942.

²⁷² *Id.*

²⁷³ *See Ex parte Wagner*, 88 U.S.P.Q. (BNA) 217 (P.T.A.B. 1950).

²⁷⁴ *Id.* at 217.

²⁷⁵ *Id.*

those directed to methods of their use might not.²⁷⁶ In *In re Craige*, the United States Court of Customs and Patent Appeals was even more direct.²⁷⁷ Affirming a rejection where no method claims were at issue, the court cited *Thuau* for the proposition that “patents for old compositions of matter based on new use of such compositions, without change therein, may not lend patentability to claims.”²⁷⁸

[89] In *In re Aronberg*, which was decided June 30, 1952, claims for a pipe joint sealing compound were upheld as novel because the claims, despite being open-ended, did not contemplate the presence of a “non-drying oil.”²⁷⁹ The sealing compound, therefore, was “a substance useful in an art wholly non-analogous to the [prior] art....”²⁸⁰ According to the Court of Customs and Patent Appeals, the holding was in conformance with the “well settled rule that discovery of a new use for an old article is not patentable.”²⁸¹ On the eve of the Patent Act of 1952,²⁸² patent protection was justified by reasoning that blended the three concepts of eligibility, novelty and invention:

It is our view that by eliminating or omitting the non-drying oil (the non-siccative) from the composition there was produced a new *composition of matter* which the British patent did not anticipate, and the record justifies the conclusion that the new composition is both

²⁷⁶ See *id.* at 220. (“We agree with appellants that under the *Thuau* doctrine, the situation may reasonably arise, after grant of the patent, where the composition claims may be anticipated by a reference which does not meet the process claims.”)

²⁷⁷ See *In re Craige*, 188 F.2d 505, 506 (C.C.P.A. 1951).

²⁷⁸ See *id.* at 509 (emphasis added).

²⁷⁹ *In re Aronberg*, 198 F.2d 840, 843–44 (CCPA 1952). (“Inasmuch as there is no disclosure in appellant’s application of a non-drying oil, we fail to see how use of the word “comprises,” although it is an inclusive term, properly may be construed to include a non-drying oil as an ingredient of the composition defined.”).

²⁸⁰ *Id.* at 845–46.

²⁸¹ *Id.* at 846.

²⁸² Karl B. Lutz, *The New 1952 Patent Statute*, 35 J. PAT. OFF. SOC’Y 155 (1953). The Patent Act of 1952 went into force on January 1, 1953.

novel and useful and that its production involved the *exercise of the inventive faculty*.²⁸³

Because applicants' claimed pipe joint sealing compound was a novel and inventive composition of matter under the law, the maxim that prohibited "a new use for an old article" had not been violated.

2. **General Understanding of New Uses Based on *In re: Thuau***

[90] Before implementation of the Patent Act of 1952, the holding and dicta in *Thuau* commonly was understood to bar "pure uses," as exemplified by Biesterfeld in 1949:

In the past the Patent Office issued quite a large number of patents covering pure uses, which under the decisions shown above must be deemed void. This practice is believed to be coming to an end, following the publication of *In re Thuau* (57 U.S.P.Q.) in 1943. Certainly there is no justification now for the Patent Office to issue any patent claims covering a use *per se*, whether mechanical or chemical.

....

According to the decisions, a patentee is entitled to all the uses of his invention, whether known or unknown to him.

....In conclusion, a use *as such* is unpatentable.²⁸⁴

[91] However, Wachsner criticized "new use" doctrine in an article published in the Journal of the Patent Office Society in June of 1952.²⁸⁵ He began with the assumption that the "*In re Thuau* doctrine" meant that a "new use for an old substance is not patentable, even when the new use is clearly non-analogous."²⁸⁶ The fundamental dilemma identified by Wachsner was that, while patents do not give the absolute right to use an invention (rather they provide only an exclusionary right), it

²⁸³ *In re Aronberg* 198 F.2d at 846 (emphasis added).

²⁸⁴ CHESTER H. BIESTERFELD, PATENT LAW FOR LAWYERS, STUDENTS AND ENGINEERS, 72-73 (John Wiley & Sons Inc., 2d ed. 1949).

²⁸⁵ See Lothar Wachsner, *Patentability of New Uses*, 34 J. PAT. OFF. SOC'Y. 397 (1952).

²⁸⁶ *Id.*

is well-settled that the patentee is “not allowed to... practice a method patented to another person, no matter whether the latter patent is older or younger than his own.”²⁸⁷ Therefore, “the argument against patentability of new uses because of the unrestricted use to which an older patentee is entitled is little convincing.”²⁸⁸ Conversely, decisions inferring that “the principle of the unpatentability of new uses” has to give way where “the new use is non-analogous, that is to say where invention is involved,” must concede that “then, it is no principle at all,” because “invention has always to be present if a patent is to issue, and no amount of inventive genius can make up for the lack of unpatentable [sic] subject matter.”²⁸⁹ For Wachsner, such decisions, hinging eligibility on “inventive genius,” abandoned “a clear distinction ... between patentable matter and invention,”²⁹⁰ in order to “becloud the real issue and to find a way out of the dilemma [of new uses] to refuse a patent to somebody who obviously has deserved it.”²⁹¹

3. The Split

[92] The Patent Act of 1952,²⁹² which was enacted on January 1, 1953, distinguished patent eligibility from “conditions” for patentability of eligible inventions by splitting the previous provisions of section 31 of Title 35 into new 101 (“Inventions patentable”) and 102 (“Conditions for patentability; novelty and loss of right to patent”).²⁹³ Judicial precedence delineating patentable distinction beyond novelty was legislated under section 103 (“Conditions for patentability; non-obvious

²⁸⁷ *Id.* at 399-400.

²⁸⁸ *Id.* at 400.

²⁸⁹ *Id.* at 401.

²⁹⁰ *See* Wachsner, *supra* note 285, at 401.

²⁹¹ *Id.* at 402.

²⁹² *See* Patent Act of 1952, Pub. L. No. 82-593, §1, 66 Stat. 792, 797.

²⁹³ *See* 35 U.S.C. § 102 (amended 2011). *See also* S. Rep. No. 82-1979, at 2395 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2409 (1952). (“Based on title 35 U.S.C., 1946 ed., sec. 31.... The corresponding section of the existing statute is split into two sections, section 101 relating to the subject matter for which patents may be obtained, and section 102 defining statutory novelty and stating other conditions for patentability.”) (“Revision Notes”).

subject matter”).²⁹⁴ New section 101 replicated portions of the language of previous section 31 and included the same categories of subject matter, but substituted the term “art,” with that of “process.” The substitution was made “to avoid the necessity of explanation that the word ‘art’ as used in this place means ‘process or method,’ and that it does not mean the same thing as the word ‘art’ in ‘other places.’”²⁹⁵ The term “process” was defined at § 100 to mean “process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material,”²⁹⁶ and was added “to make it clear that ‘process or method’ is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed.”²⁹⁷

[93] P.J. Federico, a principal author of the new Act, made a distinction between the eligibility of claims directed to a “new use,” on one hand, and claims to “a known process, machine, manufacture, composition of matter, or material” subject to that new use, on the other.²⁹⁸ The former were eligible for patent protection, “provided the conditions for patentability are satisfied,” while the latter were not, regardless of such conditions.²⁹⁹ For Federico, despite the fact that “some of the statements made in the decision are not completely defensible,” the Court of Customs and Patent Appeals in *Thuau* meant “simply that an old material cannot be patented as a composition of matter, because it is an old material, and the fact that the inventor or discoverer may have discovered a new use for the old material does not make the material patentable. To this extent the decision is affirmed by the statute....”³⁰⁰

²⁹⁴ See 35 U.S.C. § 103. See also S. Rep. No. 82-1979, at 2395 (1952), reprinted in 1952 U.S.C.C.A.N. 2410. (“There is no provision corresponding to the first sentence [of new section 103] in the present statute, but the refusal of patents by the Patent Office, and the holding of patents invalid by the courts, on the ground of lack of invention or lack of patentable novelty has been followed since at least as early as 1850.”).

²⁹⁵ *Id.* at 2398-99.

²⁹⁶ 35 U.S.C. § 100(b).

²⁹⁷ S. Rep. No. 82-1979, at 2399 (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2399 (1952).

²⁹⁸ P.J. Federico, *Commentary on the New Patent Act*, 75 J. PAT & TRADEMARK OFF. SOC’Y 161, 176 (1993) [hereinafter *Commentary*].

²⁹⁹ *Id.*

³⁰⁰ *Id.* at 177.

[94] In this discussion by Federico there was no reference to any threshold under new § 101, other than the requirement that the process, machine, manufacture, composition of matter, or material be “new and useful,” as required by the literal language of the statute. Even with respect to “new uses of old materials,” Federico stated that the new statute “recognizes a process or method which involves only a new use of an old material, as within the field of subject matter capable of being patented.”³⁰¹ He then linked recognition under section 101 to the qualification that “conditions and requirements of this title” must, nevertheless, be met:

The reference to the new use of a known machine or manufacture in the definition merely means that processes may utilize old machines or manufacturers and the reference to the new use of a known process simply indicates that the procedural steps in a patentable process might be old. . . .

The methods, however, will still have to satisfy other conditions of the statute in order to be patentable, and the condition expressed in section 103 would rule out many such methods.³⁰²

[95] Section 103, in turn, was deemed by Federico to be a second “major change” that incorporated a judicial requirement of “invention.”³⁰³ According to Federico, section 103 was a “limitation on section 102 and it should more logically have been made part of 102.” But, even as a “third requirement,” beyond novelty and utility, the new provision embraced “invention” under the old statute as “an extension of the statutory requirement for novelty:”

In form this section [103] is a limitation on section 102 and it should more logically have been made part of section 102, but it was made a separate section to prevent 102 from becoming too long and involved and because of its importance. The antecedent of the words “the prior art,” which here appear in a statute for the first time, lies in the phrase “disclosed or described as set forth in section 102” and hence these

³⁰¹ *Id.* at 178.

³⁰² *Id.*

³⁰³ *See* Commentary, *supra* note 298, at 180.

words refer to material specified in section 102 as the basis for comparison. . . .

The source of the requirement under the prior statute has been variously attributed. The opening clause of old R.S. 4886, which specified the classes of patentable subject matter (see section 101), began “Any person who has invented or discovered any new and useful art, machine, etc.” Two requirements may be found here: novelty (although novelty is further defines [sic] to referring [sic] to the conditions which defeat novelty), and utility (which condition is not further defined). The use of the word “invented” in this phrase has been asserted as the source of the third requirement under discussion. However, a different origin, with which the language and arrangement in the new code are in harmony, has also been stated. This is that the requirement originally was an extension of the statutory requirement for novelty.³⁰⁴

Therefore, tests of novelty, including those of sufficiency of “invention” under the statute, were deliberately partitioned from the listing of eligible classes of invention under the old statute and placed under the “conditions for patentability” of “novelty” under section 102 and “non-obvious subject matter” under section 103.

[96] It is telling that Federico’s Commentary includes no discussion of any lingering requirement that a “process” under section 101 of the new Act must meet a threshold of non-analogous use or inventiveness. Rather, both the legislative history and Federico’s Commentary clearly state that qualification as a “process” under section 101 involves “merely the new use of a process, machine, manufacture, composition, or material.” All other requirements associated with obtaining an exclusionary right were relegated to “conditions for patentability” found in the remainder of the statute. Significantly, there was also no mention anywhere in the legislative history of “preemption” or the excepted categories of laws of nature, natural phenomena, and abstract ideas that would figure so prominently in judicial developments that would follow under section 101.

[97] In addition to his Commentary, Federico spoke at a meeting of the American Patent Law Association (APLA) in 1953 on the topic of sections 100 and 101 of the

³⁰⁴ *Id.* at 180, 182.

1952 Act. As reported by the APLA, Federico stated that “*In re Thuau* was reaffirmed by the statute and is still good law with respect to the point decided ‘An old material is still an old material,’”³⁰⁵ presaging statements he would later make in his Commentary. *Ex parte Wagner*, discussed above,³⁰⁶ was used by Federico as an illustration presented to examiners at the Patent Office as a “good decision to study with respect to use claims.”³⁰⁷ As recited above, the Board in *Wagner* stated that, “under the *Thuau* doctrine, the situation may reasonably arise, after grant of the patent, where the composition claims may be anticipated by a reference which does not meet the process claims.”³⁰⁸

[98] Reliance on *Wagner* as a characterization of *Thuau* limited the prohibition against “dual use” to claiming old compositions used for specific processes, rather than claiming new processes using those old compositions. Federico also stated that examiners were barred from allowing claims employing the phraseology, “[t]he use of _____ for _____.”³⁰⁹ Instead, “[t]he claim must specify that it is a process or method.”³¹⁰ Finally, Federico stated that “process claims should no longer be rejected as being merely a conventional way of using a material.”³¹¹

E. The Demise of New Use Doctrine

[99] Comments similar to Federico’s in his Commentary, were made by Riesenfeld in a 1954 article.³¹² It is possible that Riesenfeld had read Federico’s Commentary, although there is no reference to it in his article. There is, however, reference to

³⁰⁵ AM. PAT. LAW ASS’N. BULL., May 1953, at 108. [hereinafter APLA BULL.].

³⁰⁶ See *supra* text accompanying note 273.

³⁰⁷ APLA BULL., *supra* note 305.

³⁰⁸ *Ex parte Wagner*, 88 U.S.P.Q. (BNA) 217, 220 (B.P.A.I. Oct. 6, 1950).

³⁰⁹ APLA BULL., *supra* note 305, at 108.

³¹⁰ *Id.*

³¹¹ *Id.*

³¹² See Stefan A. Riesenfeld, *The New United States Patent Act in the Light of Comparative Law I*, 102 U. PA. L. REV. 291, 297 (1954).

Federico's speech as reported in the Bulletin of the APLA in 1953.³¹³ In his article, Riesenfeld stated that the "substitution of the expression-troika 'process, art or method' in lieu of the single wheel-horse 'art' should not amount to an actual change in the law,"³¹⁴ and questioned how much the new Act limited the "*Thuau* doctrine."³¹⁵ Riesenfeld appears to distinguish the patentability of known "machines, compositions of matter and material" from new uses of those statutory categories as "processes" by asserting that "a newly discovered use for a known substance, machine or process is still only patentable if it is not merely analogous or cognate to the uses heretofore made."³¹⁶ The suggestion could be drawn from this passage that *eligibility* of claims to a process, unlike those directed to other categories of statutory subject matter, required some degree of invention, despite provisions in the new statute for a separate requirement of non-obviousness under section 103.

[100] On closer reading, however, Riesenfeld raises general policy concerns over the prospect of depriving "the public of the benefits of a process, machine or product merely because it has been discovered that such process, machine or product possesses desirable qualities heretofore not apparent which warrant the intensification or expansion of the accepted use."³¹⁷ He then turns the argument around and states that this logic should apply regardless of whether the "new use relates to a known process or a known product," thereby removing the basis for imposing conditions on the statutory eligibility of processes that would not apply to the other categories of machines, manufacturers, and compositions of matter.³¹⁸ Riesenfeld called out a then recently-decided district court case, *United Mattress Mach. Co. v. Handy Button Mach. Co.*, as an example of a "contrary" and "perturbing misunderstanding of the

³¹³ See *id.* at 299 ("As a matter of claim drafting, it is therefore necessary to protect the discovery of new uses by means of process or method claims and not of product claims.") n.53 ("This is also the position of the Patent Office, see report of a speech by Mr. Federico.") (citing APLA BULL., *supra* note 305, at 107).

³¹⁴ *Id.* at 297.

³¹⁵ See *id.* at 299 ("It remains open to doubt how far the section in question modifies or limits the *Thuau* doctrine, although the new act certainly alters the statutory basis of that decision.")

³¹⁶ *Id.*

³¹⁷ Riesenfeld, *supra* note 312, at 299–300.

³¹⁸ *Id.* at 300.

[A]ct,” citing a footnote in that case suggesting that processes and products were to be distinguished under the Act by the fact that “process patents may be granted for a new use in situations where products would not qualify.”³¹⁹ The court in *United Mattress* had explained that, because “[t]he Act contains no comparable language respecting the new use of prior art products, as such,” the limitations on the meaning of “process” under the 1952 Patent Act as a matter of eligibility did not extend to “products.”³²⁰ In other words, Riesenfeld was understanding the court in *United Mattress* to impute a requirement of inventiveness to a “process” under the Act that did not apply to the other categories of eligible subject matter, and he attributed this to a “perturbing misunderstanding” of the statute and its legislative history.³²¹

[101] As stated above, Riesenfeld does not appear to have had the benefit of Federico’s Commentary, clearly stating that *Thuau* was *not* overruled by the statute and that claims to a new use for an old material were eligible while claims to an old material intended for a new use were not. He may also have not been privy to Federico’s statement that the word “invented” under section 101 was to be implemented under the non-obviousness requirement of section 103.³²² Instead, Riesenfeld presumed that the new Act, and the “new statutory definition of ‘process’ restores the broad principles of patentability flowing from a careful analysis of the exposition given by the Supreme Court in the *Ansonia* case....”³²³ According to

³¹⁹ *Id.* at 300; *United Mattress Mach. Co v. Handy Button Mach. Co.*, 207 F.2d 1, 4 n.5 (3d Cir. 1953). The cases cited by *United Mattress* in support of this proposition were *General Electric*, 224 F.2d 464 (3d Cir. 1954), and *Ansonia Brass*, 144 U.S. 11 (1892), both of which were decided before the Patent Act of 1952 partitioned patent eligibility and novelty, and before there was statutory provision for non-obviousness.

³²⁰ *United Mattress*, 207 F.2d at 4 n.5.

³²¹ Riesenfeld, *supra* note 312, at 300.

³²² Commentary, *supra* note 298, at 180, 182. As recited above, Federico made the point that: “The Committee Report states, in the general part, that one of the two ‘major changes or innovations’ in the new statute consisted in ‘incorporating a requirement for invention in section 103.’ *** ‘The opening clause of old R.S. 4886 which specified the classes of patentable subject matter (see section 101), began ‘Any person who has invented or discovered any new and useful art, machine, etc.’ Two requirements may be found here: novelty (...), and utility (...). The use of the word ‘invented’ in this phrase has been asserted as the source of the third requirement under discussion.”

³²³ Riesenfeld, *supra* note 312, at 300.

Riesenfeld, that “careful analysis” revealed the “crucial issue specifically as a ‘question of patentable novelty’ and one of ‘invention’ rather than one of patentable subject matter as such...,” as recited by Justice Brown in that case.³²⁴ Therefore, even in the absence of Federico’s Commentary, Riesenfeld’s estimation of the Supreme Court’s reasoning in *Ansonia Brass* revealed a distinction between eligibility on one hand, and the degree of “invention” sufficient to merit the grant of a patent on the other. These separate requirements, as articulated by the Court in *Ansonia Brass*, later dovetailed neatly into the statutory eligibility language of section 101 with its explicit reference to “conditions and requirements” that included novelty under section 102 and non-obviousness under new section 103.

[102] Nevertheless, confusion over the meaning of the holding and dicta in *Thuau*, and its treatment under the 1952 Patent Act continued. In *In re Ducci*, the Court of Customs and Patent Appeals affirmed a rejection of claims directed to an article and method for the manufacture of multi-cellular glass because, as stated by the Board, “this glass is analogous to the glass of the references and it is quite evident that it can be converted to multi-cellular glass by the method disclosed in the references.”³²⁵ The Board relied on *Craige* to conclude that, “[u]nder these conditions the invention does not reside in the method.”³²⁶

[103] In his defense, the appellant argued that “*Craige*, ... turned upon the doctrine of *In re Thuau*, ... which held that new use of old materials were not patentable,” but that “the Patent Act of 1952 overturned the *Thuau* doctrine, and, of course, the *Craige* decision with it.”³²⁷ In response, the court referred to arguments made by the Solicitor on behalf of the Patent Office quoting Riesenfeld’s article:

. . . With respect to Section 100(b), the latest published view on the matter is that “the background of the amendment gives reason to assume that a newly discovered use for a known substance, machine or

³²⁴ *Id.* at 298 n.45 (quoting *Ansonia Brass*, 144 U.S. at 13–14, 18).

³²⁵ *In re Ducci*, 225 F.2d 683, 687 (C.C.P.A. 1955).

³²⁶ *Id.* at 687 (citing *In re Craige, Jr.*, 189 F.2d 505, 509 (C.C.P.A. 1951) (“[P]atents for *old compositions of matter* based on new use of such compositions, without change therein, may not lend patentability to claims.” (emphasis added))).

³²⁷ *Id.* at 688.

process is still only patentable if it is not merely analogous or cognate to the uses heretofore made.” To this view the Commissioner subscribes.³²⁸

The court concluded that, “in the absence of authority to the contrary, we know of no reason to dispute the validity of the foregoing views expressed by Mr. Riesenfeld and the Commissioner of Patents,”³²⁹ and affirmed the decision of the Board invalidating the claims as being “without the exercise of the inventive faculty, only that which is obvious to any person skilled in the art.”³³⁰

[104] The appellant, apparently, misunderstood *Thuau* to mean that method claims constituting a “new use of old materials were not patentable,” and was, therefore, trying to make the argument that, because the 1952 Patent Act clearly made new uses patentable, the so-called “*Thuau* doctrine,” as well as the *Craige* decision, had been overturned. The court, for its part, correctly understood that *Thuau* had not been overturned by the 1952 Patent Act, but misunderstood *Thuau* to mean that an *analogous* method is not eligible as a “process” for patent protection under section 100(b), and supported this position by statements taken out of context from Riesenfeld’s article by the Solicitor. Moreover, throughout *Ducci*, there is no reference to any of sections 101, 102 or 103, possibly indicating difficulty by the Patent Office and the court in applying a distinction among these new statutory provisions, and potentially laying the basis for greater misunderstanding.

[105] For example, the U.S. Court of Appeals in *Elrick Rim Co. v. Reading Tire Mach. Co., Inc.* stated that, a “*different use* of a known substance, machine, or process is not ‘new’ within the meaning of this statute [35 U.S.C. § 100(b)] if it is merely analogous or cognate to the use theretofore made.”³³¹ The threshold of “invention” relied upon by the court, however, mirrored the newly minted statutory requirement of non-obviousness:

³²⁸ *Id.* (quoting Riesenfeld, *supra* note 312, at 299).

³²⁹ *Id.*

³³⁰ *In re Ducci*, 225 F.2d at 687.

³³¹ *Elrick Rim Co. v. Reading Tire Mach. Co., Inc.*, 264 F.2d 481, 486–87 (9th Cir. 1959)(emphasis added).

Invention or discovery is not present where the new use of a known apparatus is the product of the exercise of ordinary professional skill. There must be ingenuity over and above mechanical skill.³³²

This analysis suggests that lack of “invention” in a “different use” is excepted from the definition of “process” under 35 U.S.C. § 101.

[106] On the other hand, Judge Learned Hand, in *Lyon v. Bausch & Lomb Optical* in the United States Court of Appeals for the Second Circuit, specifically viewed the “definition of invention... [to be] ... now expressly embodied in § 103.”³³³ Further, courts since that time, while acknowledging that “§100(b) does not make every new use patentable,” have uniformly decided patentability of “uses” pursuant to the “conditions” for patentability, namely novelty under 35 U.S.C. §102 and non-obviousness under 35 U.S.C. § 103.³³⁴ The decision and dicta by the Court of Customs and Patent Appeals in *In re Zierden*, is one example:

Since the composition ... is not rendered patentable by the recitation of intended use, the rejection ... must be *affirmed*.

As to the method claims ... the situation is different. First of all, there is express statutory authority for a patent on a process which is a new use of a known process, composition of matter, or material, 35 U.S.C. 100(b) and 101, provided, of course, the process predicated on the new use is new and unobvious and not subject to a statutory one-year time bar.³³⁵

³³² *Id.* at 487 (citations omitted).

³³³ *Lyon v. Bausch & Lomb Optical Co.*, 224 F.2d 530, 535 (2d Cir. 1955).

³³⁴ *See Armour Pharmaceutical Co. v. Richardson-Merrell, Inc.*, 264 F. Supp. 1013, 1016 (D. Del. 1967); *see e.g., In re Zierden*, 411 F.2d 1325, 1329 (C.C.P.A. 1969).

³³⁵ *In re Zierden*, 411 F.2d at 1329.; *see also, e.g., Research Corp. v. NASCO Ind., Inc.*, 501 F.2d 358, 360 (7th Cir. 1974) (“Whether a different use for a known process is merely analogous and cognate, and thus not ‘new,’ is a question which merges in the decisional process with the question of obviousness.”); *see also, Mehl/Biophile Int’l. Corp. v. Milgraum*, 8 F. Supp. 434, 446 (D. N.J. 1998), *aff’d*, 192 F.3d 1362 (Fed. Cir. 1999) (“If a different use of a known process is analogous or cognate to the prior uses, it will have difficulty defeating an argument that the patent is obvious under Section 103.”).

[107] The Supreme Court has never rendered an opinion as to whether a process or any other statutory class under 35 U.S.C. §101 is ineligible for patent protection as a “new use.”

IV. AGGREGATION OF APPLIED PRINCIPLES

[108] “New use” doctrine in the United States closely followed the *Boulton* and *Hornblower* prohibitions against new uses of known “machines, manufactures and compositions of matter” that did not embody a “new application of principle.” “Aggregation” developed later as a doctrine that barred patent protection for combinations of known methods or devices if they did not collectively embody some new application of principle and, therefore, lacked the “something more” that was “invention” under patent law. Part IV-A describes the genesis of the aggregation doctrine and how it, like new use doctrine, came under the umbrella of “invention.” Part IV-B explains how aggregation doctrine, also like the new use doctrine, did not survive the split effected by the Patent Act of 1952 separating novelty and “non-obviousness” from consideration of subject matter eligibility.

A. “Something More than an Aggregate”

1. Cooperation and Single Purpose

[109] In 1873, the Supreme Court in *Hailes v. van Wormer* held a patent as invalid because the claimed stove was a “mere aggregate” of component parts that produced no new results and, therefore, lacked invention.³³⁶ A “combination” could stand in contrast to “a mere aggregate of several results” in that “a new combination, if it produces new and useful results, is patentable, though all the constituents of the combination were well known and in common use before the combination was made.”³³⁷ For the Court, the patent law mandated a “new and useful result” because “[m]erely bringing old devices into juxtaposition, and there allowing each to work out its own effect without the production of something novel, *is not invention.*”³³⁸

³³⁶ See *Hailes v. Van Wormer*, 87 U.S. 353, 368 (1873).

³³⁷ *Id.*

³³⁸ *Id.* (emphasis added).

Without “something more,” upholding the patent would be akin to removal of subject matter from the public domain:

No one by bringing together several old devices without producing a new and useful result[,] the joint product of the elements of the combination and *something more than an aggregate* of old results, can acquire a right to prevent others from using the same devices, either singly or in other combinations, or, even if a new and useful result is obtained, can prevent others from using some of the devices, omitting others, in combination.³³⁹

[110] In *Reckendorfer v. Faber*, the Supreme Court in 1875 decided that the combination of “the lead and india-rubber, or other erasing substance, in the holder of a drawing-pencil,”³⁴⁰ was “not invention within the patent law”³⁴¹ because it did not “embody any new device, or any combination of devices producing a new result.”³⁴² The Court stated that, because lead pencils and india-rubber erasers had been known in the art, the patentee was reliant on “the combination of the lead and india-rubber in the holder of a drawing pencil” as his “invention.”³⁴³ However, according to the Court, the “law requires more than a change of form, or juxtaposition of parts, or of the external arrangement of things, or of the order in which they are used, to give patentability,”³⁴⁴ and asserted that a “double use is not patentable, nor does its cheapness make it so.”³⁴⁵ As stated by the Court: “The combination, to be patentable, must produce a different force or effect, or result in the combined forces or processes, from that given by the separate parts. There must be a new result produced by their union: if not so, it is only an *aggregation* of separate elements.”³⁴⁶ The Court, in

³³⁹ *Id.* (emphasis added).

³⁴⁰ *Reckendorfer v. Faber*, 92 U.S. 347, 348 (1875).

³⁴¹ *Id.* at 358.

³⁴² *Id.* at 355.

³⁴³ *Id.*

³⁴⁴ *Id.* at 356.

³⁴⁵ *Reckendorfer*, 92 U.S. at 356.

³⁴⁶ *Id.* at 357. (emphasis added).

effect, drew a parallel between a “double use,” or “dual use,” and “aggregation” by mandating cooperation among component parts to obtain a new result:

A double effect is produced or a double duty performed by the combined result. In these and numerous like cases the parts co-operate in producing the final effect, sometimes simultaneously, sometimes successively. The result comes from the combined effect of the several parts, not simply from the separate action of each, and is, therefore, patentable.³⁴⁷

[111] In other words, while a single component of a device may have multiple functions, it did not violate the maxim against “double use” of a known device if it was claimed in combination with other components that acted cooperatively to produce a new result. An “aggregation,” on the other hand, by definition, included no such cooperation among component parts and in effect, was prohibited as a “double use” of those component parts that produced no new result.³⁴⁸

[112] Thereafter, the notion of “aggregation” was expressed in many different forms by the courts.³⁴⁹ In 1931, for example, Judge Learned Hand, in *Sachs v. Hartford Elec. Supply*, dissected the cooperation among component parts thought to be necessary to constitute “invention.” For Judge Hand, cooperation among parts could

³⁴⁷ *Id.*

³⁴⁸ *Id.*

³⁴⁹ See generally H. Berman, *Digest of Decisions on Combination and Aggregation*, 17 J. PAT. OFF. SOC’Y., no. 1, 1935, at 29; H. Berman, *Digest of Decisions on Combination and Aggregation*, 17 J. PAT. OFF. SOC’Y., no. 2, 1935, at 143; H. Berman, *Digest of Decisions on Combination and Aggregation*, 17 J. PAT. OFF. SOC’Y., no. 3, 1935, at 202; H. Berman, *Digest of Decisions on Combination and Aggregation*, 17 J. PAT. OFF. SOC’Y., no. 4, 1935, at 311; H. Berman, *Digest of Decisions on Combination and Aggregation*, 18 J. PAT. OFF. SOC’Y., no. 4, 1936, at 285; H. Berman, *Digest of Decisions on Combination and Aggregation*, 21 J. PAT. OFF. SOC’Y., no. 9, 1939, at 685; H. Berman, *Digest of Decisions on Combination and Aggregation*, 24 J. PAT. OFF. SOC’Y., no. 10, 1943, at 718. (Supporting that between 1935 and 1942, Herman Berman, a patent examiner, authored a digest of judicial decisions distinguishing between permissible “combinations” and impermissible “aggregations.” The digest was published as a series of articles in the Journal of the Patent Office Society); see also C.W. Dawson, *Some Notes on the Doctrine of Aggregation*, 26 J. PAT. OFF. SOC’Y., no. 12, 1944, at 838 (supporting that C.W. Dawson, also a patent examiner, published a similar summary of cases addressing aggregation).

consist in “no more than their necessary presence in a unit which shall answer a single purpose.”³⁵⁰ Moreover, Hand considered “aggregation” as a term to be a “false lead”³⁵¹ in that “inventions depend upon whether more was required to fill the need than the routine ingenuity of the ordinary craftsman” and, therefore, any consequent “attempt to define it in general terms,” such as that of “aggregation,” is “illusory” and, accordingly, “it is best to abandon it.”³⁵² Again, “invention,” as a threshold for patent protection mandated “*something more*” than novelty, making the idea of “aggregation,” at least for Judge Hand, not useful.

2. Invention as the “Vital Spark”

[113] Despite Judge Hand’s disapproval of the term, “aggregation” continued as a legal doctrine delineating eligible subject matter, albeit with considerable confusion. In *Skinner Bros. Belting Co. v. Oil Well Improvements*, decided by the Circuit Court of Appeals for the 10th Circuit, Judge McDermott acknowledged, as had Judge Hand in *Sachs*, that the “distinction between combination and aggregation is one difficult to put in words that really define.”³⁵³ Judge McDermott, unlike Judge Hand, however, relied upon the understanding that a “combination discloses a co-operation or a co-ordination of the elements which, working together as a unit, although mayhap not simultaneously, produces a new or better result.”³⁵⁴ An “aggregation,” for Judge McDermott was like a track team, where all the members of the team “work for a common general end, to amass points for the alma mater; but there is lacking the vital spark of co-operation or co-ordination.”³⁵⁵ Invocation of a “vital spark” suggests association with some minimal requirement of inventiveness, which the court clearly did not exclude from patentable “combinations”:

Is this a patentable combination?

³⁵⁰ *Sachs v. Hartford Elec. Supply*, 47 F.2d 743, 748 (2d Cir. 1931).

³⁵¹ *Id.*

³⁵² *Id.*

³⁵³ *Skinner Bros. Belting Co. v. Oil Well Improvements*, 54 F.2d 896, 898 (10th Cir. 1931).

³⁵⁴ *Id.*

³⁵⁵ *Id.* at 898–99.

The patent in suit meets this test [of a patentable combination]. It is said that no inventive genius, but only mechanical ingenuity, was needed to think of this device. No formula has been prescribed which affords a solution of the vexed question, Has inventive genius been exercised? We know that the simplicity of the device does not belie inventive genius.³⁵⁶

[114] *Funk Bros.*, discussed *supra*,³⁵⁷ was the last Supreme Court case addressing eligibility for patent protection prior to enactment of the Patent Act of 1952. Relying on *Leroy I*, the Court reiterated that “patents cannot issue for the discovery of the phenomena of nature,” but, rather, “must come from the application of the law of nature to a new and useful end.”³⁵⁸ The claimed “combination of species” at issue in *Funk Bros.* was an “aggregation of select strains of the several species into one product,”³⁵⁹ which amounted to “hardly more than an advance in the packaging of the inoculants,” because “[e]ach species has the same effect it always had.”³⁶⁰ The Court stated that the “aggregation of species fell short of invention within the meaning of the patent statutes.”³⁶¹

B. The Demise of Aggregation Doctrine

[115] After enactment of the Patent Act of 1952, the lower courts continued to rely upon “aggregation,” but with increasing disfavor after some initial confusion around the split of 35 U.S.C. § 31 into new sections 101 and 102, and the newly-enacted statutory provision for non-obviousness under section 103.³⁶²

[116] In *In re Worrest*, for example, the Court of Customs and Patent Appeals found that “strict adherence to the requirement of co-action between elements in order to

³⁵⁶ *Id.* at 898.

³⁵⁷ See *supra* text accompanying note 258.

³⁵⁸ *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

³⁵⁹ *Id.* at 131.

³⁶⁰ *Id.*

³⁶¹ *Id.*

³⁶² See *supra* text accompanying notes 292-311.

have a patentable combination is unrealistic and illogical.”³⁶³ Rather, where the court saw *no invention* “because no new or unexpected result was produced by the combination, ...such a device should, in our opinion, properly be regarded as an unpatentable combination, and not as an aggregation.”³⁶⁴ However, the following year, the same court affirmed, in *In re Carter*, a decision by the Board of Appeals rejecting claims as an unpatentable *aggregation precisely because there was a lack of “exercise of the inventive faculty”*:

Under these circumstances there is no novel combination but only an aggregation of old elements which constitutes no patentable invention.... The question here is not what Fischer did, but whether any person skilled in the art, with the references of record before him, could, without the exercise of inventive faculty, make the combination of elements here claimed.... We are convinced that he could.³⁶⁵

[117] The suggestion here being that an “aggregation of old elements” could rise to the level of a “novel combination” if a person skilled in the art could not, in fact, make the combination of elements claimed without the “exercise of the inventive faculty.”

[118] The patentability of combinations themselves were at issue in the 1963 case of *In re Menough*.³⁶⁶ There, the Court of Customs and Patent Appeals affirmed a rejection of claims, but made a point of separating its affirmation from the Patent Office’s reasoning that “each of the refused claims sets forth a combination of old elements whose function as a combination is merely the sum of old functions of the individual elements, and that therefore the combination must be presumed to be obvious to one skilled in the art.”³⁶⁷ The court stated that it could find no support for this proposition because “[m]echanical elements can do no more than contribute to the combination of mechanical functions of which they are inherently capable,” and,

³⁶³*In re Worrest*, 201 F.2d 930, 935 (C.C.P.A. 1953).

³⁶⁴ *Id.*

³⁶⁵ *In re Carter*, 212 F.2d 189, 193 (C.C.P.A. 1954).

³⁶⁶ *See In re Menough*, 323 F.2d 1011, 1011 (C.C.P.A. 1963).

³⁶⁷ *Id.* at 1014.

therefore, the “patentability of combinations has always depended on the unobviousness of the combination per se.”³⁶⁸

[119] Shortly thereafter, Judge Rich, who wrote the opinion in *Menough*, concluded in *In re Gustafson* that use of the term “aggregation,” as well as distinctions between a “combination,” and an “unpatentable combination” for lack of “invention,” were made moot by imposition of the statutory requirement of non-obviousness under 35 U.S.C. § 103 of the Patent Act of 1952:

On January 1, 1953, all of this mental anguish ceased to be necessary. The test of the presence or absence of “invention,” and along with it the subsidiary question of whether a device or process was or was not an “aggregation,” or a “combination,” or an “unpatentable combination” for want of “invention,” was replaced by the statutory test of 35 U.S.C. [§] 103.³⁶⁹

The Patent Office did not contest the novelty of the invention, nor its utility,³⁷⁰ and the solicitor’s brief noted that the Board did not reject the claims in view of references, but simply relied upon common knowledge.³⁷¹ According to the solicitor’s brief, the “essential relationship of cooperation being missing, the claims must fall as merely reciting an unpatentable aggregation,” and that “the advantages argued by the appellant *** result merely from the use of mechanical skill in juxtaposing separate old elements, or from an obvious combination of such old elements.”³⁷²

[120] For Judge Rich, however, the explanation for rejecting the claims lay more properly within the realm of indefiniteness, under the second paragraph of 35 U.S.C. § 112. As stated by Judge Rich:

³⁶⁸ *Id.* at 1015.

³⁶⁹ *In re Gustafson*, 331 F.2d 905, 909 (C.C.P.A. 1964).

³⁷⁰ *See id.* at 906 (“Novelty is not questioned, nor utility.”).

³⁷¹ *But see id.* at 910 (“However, the Board did not cite references on the issue of obviousness but relied on common knowledge...”).

³⁷² *Id.*

[I]t becomes reasonably clear to us that the real objection to the claims here, never clearly stated or used as a ground for rejection, is that the claims fail to define the invention disclosed by appellant with sufficient particularity and distinctiveness to comply with the second paragraph of section 112.³⁷³

Judge Rich also questioned the relevance of 35 U.S.C. § 101, given the availability of provisions for non-obviousness and particularity under sections 103 and 112, second paragraph, respectively.³⁷⁴ Regardless, according to Judge Rich, the appellant should be provided with a statutory basis for any rejection made by the Patent Office:

Appellant was entitled to know whether his claims were rejected under section 101, or 103, or 112. Admittedly he was given a rejection which the solicitor says could be based on any or all of those sections but not told this until the solicitor filed his brief in this court.³⁷⁵

[121] Finally, in *In re Collier*, Judge Rich dismissed allegations by an appellant that a rejection by the examiner of a claim as a “mere catalogue of elements was an aggregation rejection.”³⁷⁶ Instead, Judge Rich agreed with the Board that since there was “no positive recitation of any structural cooperation among the elements listed,” the appropriate ground for rejection was indefiniteness under 35 USC § 112, second paragraph, for lack of definiteness.³⁷⁷ The appellant’s arguments that the claim’s statements of intended use should be considered “positive limitations” were also dismissed in that language describing “things which may be done [but] are not

³⁷³ *Id.*; see also 35 U.S.C. § 112, which read, at the time: “The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”. See also text at note 18, *supra*.

³⁷⁴ See *In re Gustafson*, 331 F.2d 905, 911 (C.C.P.A. 1964) (“Even now we are unable to see what bearing section 101 has on the question. There remain the possibilities that the claims do not define the invention claimed at [sic] with the particularity required by section 112, that what the claims do define is obvious, and that the invention sought to be claimed is obvious. Possibly there is relevant art.”).

³⁷⁵ *Id.*

³⁷⁶ *In re Collier*, 397 F.2d 1003, 1006 (C.C.P.A. 1968).

³⁷⁷ *Id.* at 1005.

required to be done,”³⁷⁸ was considered to be indefinite. Judge Rich also agreed with the Board that the subject matter of the claim at issue was obvious under 35 U.S.C. § 103 in view of a prior art reference.³⁷⁹

[122] In sum, “aggregation,” as well as statements of intended use, also commonly associated with “dual use,” were addressed by the Board and by the Court of Customs and Patent Appeals as matters of indefiniteness and obviousness under the Patent Act of 1952. The last word on the topic appears in the Manual of Patent Examining Procedure (MPEP) at section 2173.05(k),³⁸⁰ which simply relies on *Gustafson* and *Collier* for the dual propositions that “[a] claim should not be rejected on the ground of aggregation,” and that a “rejection for ‘aggregation’ is nonstatutory.”³⁸¹

V. PREEMPTION OF LAWS OF NATURE, NATURAL PHENOMENA AND ABSTRACT IDEAS

[123] It has always been presumed that principles, and their discovery, are not subject to the exclusionary right of patent protection. However, there also has been general agreement that it is *application* of such principles that constitutes invention. Basing patent eligibility on “preemption” became popular with the Supreme Court decision in 1972 of *Gottschalk v. Benson*, after the doctrines of “new use” and “aggregation” had largely been assimilated into the “conditions for patentability” of statutory novelty (35 U.S.C. § 102) and non-obviousness (35 U.S.C. § 103).³⁸² “Preemption,” unlike the new use and aggregation doctrines, was directly linked by courts to eligibility under 35 U.S.C. § 101 as an issue that is distinct from the “conditions for patentability,” and doing so has led to the current “two-part” test of

³⁷⁸ *Id.* at 1006.

³⁷⁹ *See id.* at 1006 (“We agree with that reading of claim 17 and consequently with the holding that its subject matter is obvious in view of prior art.”).

³⁸⁰ MPEP § 2173.05(k) (9th ed. Rev. 7, Nov. 2015).

³⁸¹ *Id.* This section of the MPEP also refers the reader to section 2172.01 in the event that a claim omits essential matter. Section 2172.01, in turn, calls for a rejection on the basis of lack of enablement in such a case.

³⁸² *See Gottschalk v. Benson*, 409 U.S. 63 (1972); *see also* 35 U.S.C. § 102 (listing statutory novelty as a condition for patentability); *see also* 35 U.S.C. § 103 (conditions for patentability of non-obviousness subject matter).

Mayo v. Prometheus and *Alice v. CLS Bank Int'l*.³⁸³ Part V-A summarizes the development of the dichotomy between “principles” and their application under patent law, as established by *Boulton* and *Hornblower*, and under the now-anachronistic doctrines of “new use” and “aggregation.” Part V-B explains how the nineteenth century Supreme Court cases of *LeRoy v. Tatham* (“*LeRoy I*” and “*LeRoy II*”) and *O’Reilly v. Morse* foreshadowed “preemption” as a doctrine by barring overly broad claims directed to applications of principle that were viewed as discouraging innovation. Part V-C describes the two-part test of eligibility and the requirement that “significantly more” than an ineligible concept be present in claimed subject matter. Part V-D relates “preemption” doctrine back to the earlier doctrines of “new use” and “aggregation” as functions of “something more” than “mere principle.” Finally, Part V-E argues that current confusion over application of the “two-part” test can be eliminated by following the treatment of its predecessor doctrines and considering preemption not as an issue of patent eligibility, but rather, within the confines of the “conditions for patentability” of statutory novelty and non-obviousness.

A. **Setting the Stage**

[124] The development and fate of “new use” and “aggregation” doctrines followed that of the initial dichotomy laid out in *Boulton* and, later, in *Hornblower* over whether the word “manufacture” in the sixth section of the Statute of Monopolies extended to methods of use. The dichotomy, in turn, hinged on whether an application of principle was inherent in an article of manufacture. Under one interpretation, eligibility could extend to methods if manufactures employed by those methods were *not* considered to inherently embody all applications of principle to which they could be put. Under the other interpretation, where manufactures *were* considered to inherently embody all applications of principle to which they could be put, no new method of use of a known manufacture would be patentable, thereby barring patent protection to any method of use, *per se*, as a prohibited “dual,” “double,” or “new use” of the known “manufacture.” This latter view restricted patent protection to only those uses that entailed employment of a manufacture that was itself novel. Under both interpretations, a new application of principle was understood to be an “invention.” Similarly, “aggregation” was contingent upon whether a novel combination of known elements invoked a new application of principle not present in separate use of the components of the combination. Judge Learned Hand’s view that

³⁸³ See *Mayo Collaborative Serv. v. Prometheus Lab., Inc.*, 566 U.S. 66 (2012); see also *Alice Corp. Pty. Ltd. v. CLS Bank Int’l* 134 S.Ct. 2347 (2014).

the term “aggregation” was a “false lead”³⁸⁴ notwithstanding, failure to identify some cooperation or single purpose among component parts to obtain a new result was indicative of an absence of “invention,” thereby rendering the combination of those components ineligible for patent protection.³⁸⁵

[125] Both “new use” and “aggregation” died away as legal doctrines after enactment of the Patent Act of 1952. “New use” was subsumed under the definition of “process” in 35 U.S.C. § 100. The patentability of “new uses” became an issue of novelty under 35 U.S.C. § 102, which had been newly-carved from prior section 35 U.S.C. § 31, and of the new statutory requirement of non-obviousness of 35 U.S.C. § 103, which defined patentable “invention.” Similarly, rejections under the doctrine of “aggregation” were ultimately considered to be non-statutory and impermissible as a matter of law. “Preemption,” as we shall see, was rooted in the same dichotomy that engendered “new use” and “aggregation” doctrines, and should meet the same fate.

B. “Mere Principle” and its Application

[126] It has been explicitly understood, at least since *Boulton* was decided in 1795, that “there can be no patent for a mere principle.”³⁸⁶ Instead, and as has also been understood since *Boulton*, it is only application of a principle that is entitled to an exclusionary right.³⁸⁷ Justification for barring patent protection of “mere principle” can be found in Justice Buller’s opinion in *Boulton*, where he stated:

There is one short observation arising on this part of the case, which seems to me to be unanswerable, and that is, that if the principle alone

³⁸⁴ See *Sachs*, 47 F.2d at 748.

³⁸⁵ See *supra* text at 352..

³⁸⁶ *Boulton* 126 Eng. Rep. at 667; see text *supra* at note 38; see also, for example, Justice Story’s note, “On the Patent Laws,” which appeared as an appendix to Justice Marshall’s opinion in *Evans v. Eaton*, 16 U.S. (3 Wheat.) 454 app. at 15 (1818) (“A patent cannot be for a mere principle, properly so-called; that is, for an elementary truth.”)

³⁸⁷ See *id.* (“[B]ut for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent.”); see text *supra* at note 60.

be the foundation of the patent, it cannot possibly stand, with that knowledge and discovery which the world were in possession of before.³⁸⁸

[127] This reasoning is echoed in later decisions by the Supreme Court, such as *Leroy I* in 1853, which linked application of principle to patent eligibility and justified that link against an alternative that would “discourage arts and manufactures:”

A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws.³⁸⁹

[128] The patent at issue in *Leroy I* was again addressed a few years later in *Leroy II*,³⁹⁰ but this time the Court held that the claimed combination of the machinery and its use was sufficient to support the result obtained and, was “within the patent law” because it was based on the presence of a “new and operative” agency:

If it be admitted that the machinery, or part of it, was not new when used to produce the new product, still it was so combined and modified as to produce new results, within the patent law. *One new and operative agency* in the production of the desired result would give novelty to the entire combination.³⁹¹

Although there was no discussion as to why the Court arrived at a holding different from that of *LeRoy I*, it is clear that articulation of the claimed combination and its nexus to the result obtained, was decisive in the latter case:

It is rare that so clear and satisfactory an explanation is given to the machinery which performs the important functions above specified.

³⁸⁸ *Id.* at 662.

³⁸⁹ *Le Roy I*, 55 U.S. at 175.

³⁹⁰ *See Le Roy v. Tatham*, 63 U.S. 132 (1860) [hereinafter *Le Roy II*].

³⁹¹ *Id.* at 139 (emphasis added).

We are satisfied that the patent is sustainable, and that the complainants are entitled to the relief claimed by them.³⁹²

Therefore, the Court in *LeRoy II* upheld the patent because it found both a novel combination of machinery and use, and a link between that combination and a “new and operative agency” that produced a new result.³⁹³

[129] Likewise, but more famously, in *O’Reilly v. Morse*, the Supreme Court struck down Morse’s eighth claim to “every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance,”³⁹⁴ because “he shuts the door against inventions of other persons ...”³⁹⁵ The Court explained:

It is impossible to misunderstand the extent of this claim. He claims the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance.

If this claim be maintained, it matters not by what process or machinery the result is accomplished. . . . For he says he does not confine his claim to the machinery or parts of machinery, which he specifies; but claims for himself a monopoly in its use, however developed, for the purpose of printing at a distance.³⁹⁶

Because no novel combination of claim components could be associated with the benefit obtained, the Court concluded that “the claim is too broad, and not warranted by law.”³⁹⁷ In effect, for the Court, the patentee “claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and

³⁹² *Id.* at 141.

³⁹³ *See id.* at 139

³⁹⁴ *O’Reilly v. Morse*, 56 U.S. 62, 112.

³⁹⁵ *Id.* at 112-13.

³⁹⁶ *Id.* at 112-113.

³⁹⁷ *Id.* at 113.

therefore could not describe when he obtained this patent.”³⁹⁸ Here, then, eligibility for patent protection hinged on “invention.”

[130] As discussed above, prior to the Patent Act of 1952, the modern notions of patent eligibility and novelty were embraced within a single statutory provision. *O’Reilly*, for example, was decided in 1854, when the relevant statute was section 6 of the Patent Act of 1836, which read, in part, as follows:

And be it further enacted, That any person or persons having discovered or 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, not known or used by others before his or their discovery or invention thereof*, and not, at the time of his application for a patent, in public use or on sale, . . . may make application in writing to the Commissioner of Patents, . . . and the Commissioner . . . may grant a patent therefor.³⁹⁹

Nevertheless, a clear distinction was maintained between the ineligibility of “mere principle” and eligibility for patent protection of an application of that same principle. This distinction was often incorporated into ultimate decisions fundamentally based on novelty, or on the predecessor to modern non-obviousness of “substantial” novelty. For example, as stated by the Court in *Leroy I*:

In all such cases, the processes used to extract, modify, and concentrate natural agencies, constitute the invention. The elements of the power exist; the *invention* is not in discovering them, but *in applying them to useful objects*. Whether the machinery used be novel, or consist of a new combination of parts known, the right of the inventor is secured *against all who use the same mechanical power, or one that shall be substantially the same*.⁴⁰⁰

³⁹⁸ *Id* at 113.

³⁹⁹ Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119 (reprinted 1870) (current version at 35 U.S.C. §§ 101, 102, 103 & 112 (2011)) (emphasis added).

⁴⁰⁰ *Le Roy v. Tatham*, 55 U.S. 156, 175 (1853) (emphasis added).

C. The Two-Part Eligibility Test

[131] The Supreme Court in *LeRoy* foreshadowed the modern notion of “preemption” by stating 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.”⁴⁰¹ The Court explained that a “[P]atent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever.”⁴⁰² However, the notion of “preemption” only became known as such after the doctrines of “new use” and “aggregation” were abandoned. When viewed in the context of those earlier doctrines, preemption can be seen as the source of confusion in the current two-part eligibility test applied by the Supreme Court in *Mayo v. Prometheus* and *Alice v. CLS Bank*.⁴⁰³

[132] The two-part test asks, quite simply, whether a claim to a process, machine, manufacture, or composition of matter is directed to a law of nature, a natural phenomenon, or an abstract idea and, if so, whether the claim recites additional elements that amount to “significantly more” than the judicial exception.⁴⁰⁴ The Court in *Alice* stated:

In *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, we set forth a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts. First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, “[w]hat else is there in the claims before us?” To answer that question, we consider the elements of each claim both individually and “as an ordered combination” to determine whether the additional elements transform the nature of the claim” into a patent-eligible application. We have described step two of this analysis as a search for an “inventive concept,”—*i.e.*, an element or combination of elements that is “sufficient to ensure that the patent

⁴⁰¹ *Id.*

⁴⁰² *Id.*

⁴⁰³ See *Mayo*, 566 U.S. at 70; *Alice Corp. v. CLS Bank, Int’l.*, 1345 S. Ct. 2347, 2355, 2357 (2014).

⁴⁰⁴ *Alice Corp.*, 1345 S. Ct. at 2353.

in practice amounts to *significantly more* than a patent upon the [ineligible concept] itself.”⁴⁰⁵

The fundamental issue, of course, is the meaning of “significantly more” in the second step of the two-part test. Moreover, analysis of U.S. Supreme Court decisions directed to patent eligibility suggests that the two-part test is not entirely new. Contribution of “something more” was applied as a threshold test, for example, by the Supreme Court in *Hailes v. van Wormer* in 1873 to negate the charge of “aggregation,”⁴⁰⁶ and again in *American Food Growers* in 1931 to establish eligibility as a “manufacture.”⁴⁰⁷ In both instances, the issue was one of “invention” that originated in the question of whether or not a “manufacture” under the Statute of Monopolies inherently embodied all principles employed in any application to which that manufacture could be put. Eligibility, regardless, hung upon the presence of applied principle. Novel application of that principle, either as an inherent feature of a novel device or as a process, was often the “something more” that constituted a protectable “invention.”

D. “Preemption” in the Absence of Something “Significantly More” than “Mere Principle”

[133] The legal doctrine of “preemption” was born from the same considerations that stranded the doctrines of “new use” and “aggregation” in the wake of the Patent Act of 1952. Not having been *explicitly* limited to sections 102 and 103, “invention” became manifest under “preemption” as a threshold requirement under section 101 against claims to “mere principle.” The first step, however, was to identify the presence of principle in one of the statutory categories of “process, machine, manufacture, or composition of matter.” As in *Boulton and Hornblower*, this could be done for processes by linking them to the “manufacture” employed. Alternatively, the process could be linked to a product resulting from the process.

[134] For example, the Supreme Court in *Gottschalk v. Bensen* held that a computer program converting binary-coded decimal numerals to pure binary numerals was not

⁴⁰⁵ *Id.* at 2355 (citations omitted) (emphasis added).

⁴⁰⁶ *See supra* text accompanying notes 336–339.

⁴⁰⁷ *See supra* text accompanying note 214.

a “process” under 35 U.S.C. § 101 of the Patent Act of 1952.⁴⁰⁸ While stopping short of mandating that a “process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing,’”⁴⁰⁹ the Court characterized the claimed computer program as an “algorithm” for solving a mathematical problem.⁴¹⁰ The “practical effect,” in the absence of “substantial practical application except in connection with a digital computer,” would, amount to the patenting of an “idea,” whereby “the patent would wholly *pre-empt* the mathematical formula and in practical effect would be a patent on the algorithm itself.”⁴¹¹

[135] In *Parker v. Flook*, the Supreme Court took up the eligibility of claims directed to a method for computing an updated alarm limit and, as in *Gottschalk*, began with the maxim that a principle, in and of itself, is not patentable.⁴¹² The Court in *Parker*, however, invoked a threshold requirement of “invention” that barred eligibility for protection when the only point of novelty was a newly discovered law of nature, natural phenomenon or abstract idea.⁴¹³ “Conventional or obvious” application of “unpatentable principle” was considered mere “post-solution activity,” that was inadequate under section 101:

The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any

⁴⁰⁸ See Patent Act of 1952, Pub. L. No. 82-593, § 101, 66 Stat. 792, 797; see also *Gottschalk v. Bensen*, 409 U.S. 63 (1972).

⁴⁰⁹ *Gottschalk*, 409 U.S. at 71 (“It is argued that a process patent must either be tied to a particular machine or apparatus or must operate to change articles or materials to a ‘different state or thing.’ We do not hold that no process patent could ever qualify if it did not meet the requirements of our prior precedents.”).

⁴¹⁰ See *id.* at 65. (“The patent sought is on a method of programming a general-purpose digital computer to convert signals from binary-coded decimal form into pure binary form. A procedure for solving a given type of mathematical problem is known as an ‘algorithm.’”).

⁴¹¹ *Id.* at 71-72 (emphasis added).

⁴¹² *Parker v. Flook*, 437 U.S. 584, 589 (1978).

⁴¹³ See *id.* at 593-594.

mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques. The concept of patentable subject matter under § 101 is not “like a nose of wax which can be turned and twisted in any direction...”⁴¹⁴

The Court, further, explicitly linked patent eligibility with “inventive application of the principle”:

Respondent’s process is unpatentable under § 101, not because it contains a mathematical algorithm as one component, but because *once that algorithm is assumed to be within the prior art*, the application, considered as a whole, contains no patentable invention. Even though a phenomenon of nature or mathematical formula may be well known, *an inventive application of the principle* may be patented. Conversely, the discovery of such a phenomenon cannot support a patent unless there is some other *inventive concept* in its application.⁴¹⁵

The Court laid out the distinction between an “inventive application of the principle,” and an ineligible “post-solution activity,” merely to state that the “rule that the discovery of a law of nature cannot be patented rests, not on the notion that natural phenomena are not processes, but rather on the more fundamental understanding that they are not the *kind* of “discoveries” that the statute was enacted to protect.”⁴¹⁶

[136] Two years later, the Supreme Court in *Diamond v. Chakrabarty* held that a genetically engineered bacterium capable of breaking down crude oil *was* eligible subject matter under 35 U.S.C. § 101.⁴¹⁷ Although a living organism, the bacterium was found to possess “markedly different characteristics from any found in nature and one having the potential for significant utility.”⁴¹⁸ As such, it was “patentable subject

⁴¹⁴ *Id.* at 590 (quoting *White v. Dunbar*, 119 U.S. 47, 51 (1886)) (emphasis added).

⁴¹⁵ *Id.* at 594 (emphasis added).

⁴¹⁶ *Id.* at 593 (emphasis added).

⁴¹⁷ *See* *Diamond v. Chakrabarty*, 447 U.S. 303, 310 (1980).

⁴¹⁸ *Id.*

matter under § 101.”⁴¹⁹ While no explicit definition of “markedly different characteristics” was given, the fact that it had “potential for significant utility”⁴²⁰ provided at least a clue that the bacterium of the claimed invention was different *in-kind* from its naturally-occurring counterpart. That difference seemed to be more than “post-solution activity,” consequent to discovery of a law of nature, natural phenomenon, or abstract idea. Instead, the difference was a novel combination of the discovery of the necessary genetic modification with a naturally-occurring bacterium, to thereby obtain a beneficial result. The invention was a process for stably transferring and maintaining a cooperative relationship between plasmids capable of degrading components of crude oil and a bacterium of the genus *Pseudomonas* to obtain a benefit not exhibited by either the plasmids, or the bacterium, alone.⁴²¹ This process and cooperative relationship distinguished the invention from earlier man-made combinations, such as the application of preservatives to fruit in *American Fruit Growers*,⁴²² or the non-mutually inhibitive combinations of root-nodule bacteria in *Funk Bros.*⁴²³ Although the Court did not provide justification for analyzing the claimed subject matter as a function of eligibility rather than non-obviousness, one clear distinction is that the assessment of “invention” to determine eligibility under 35 U.S.C. § 101 was relative to a law of nature, a natural phenomenon, or an abstract idea, rather than as a comparison to subject matter defined as “prior art” under 35 U.S.C. § 102.

[137] The relation of section 101 patent eligibility to section 102 novelty was directly addressed in *Diamond v. Diehr*, where the Court held that a claimed “process for molding raw, uncured synthetic rubber into cured precision products”⁴²⁴ using an Arrhenius equation to limit the curing was eligible for patent protection under 35 U.S.C. § 101.⁴²⁵ The Court noted that, according to the “Revision Notes,” the Patent

⁴¹⁹ *Id.*

⁴²⁰ *Id.*

⁴²¹ See *Chakrabarty*, 447 U.S. at 305.

⁴²² See *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11-12 (1931).

⁴²³ See *Funk Bros.*, 333 U.S. at 130.

⁴²⁴ *Diamond v. Diehr*, 450 U.S. 175, 177 (1981).

⁴²⁵ See *id.* at 192-93.

Act of 1952 intentionally “split into two sections, *section 101* relating to the subject matter for which patents may be obtained, and *section 102* defining statutory novelty and stating other conditions for patentability.”⁴²⁶

[138] Relying on *Flook*, the Court did not mandate a determination of novelty, either in the Arrhenius equation as the algorithm employed or its application, to decide patent eligibility:

It is argued that the procedure of dissecting the claim into old and new elements is mandated by our decision in *Flook* which noted that a mathematical algorithm must be assumed to be within the “prior art.” It is from this language that the petitioner premises his argument that if everything other than the algorithm is determined to be old in the art, then the claim cannot recite statutory subject matter. The fallacy in this argument is that we did not hold in *Flook* that the mathematical algorithm could not be considered at all in making the § 101 determination. To accept the analysis proffered by the petitioner would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious.⁴²⁷

[139] Rather, the fact that the Arrhenius equation was not, itself, novel was considered immaterial for the purpose of determining eligibility under § 101, as was the novelty of any other element or step in the process taken in isolation. Eligibility, instead, must be considered in view of the claims as a whole, independent of the novelty of any component of those claims.⁴²⁸ As stated by the Court:

In determining the eligibility of respondents’ claimed process for patent protection under § 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new

⁴²⁶ *Id.* at 191 (quoting S. Rep. No. 1979, 82d Cong. 2d Sess., 17 (1952)); *see also* *In re Benner*, 46 F.2d 382, 383 (C.C.P.A. 1931) (discussing the aspect of novelty that is required for patentability). *See supra* at note 293.

⁴²⁷ *Diehr*, 450 U.S. at 189, n.12.

⁴²⁸ *See id.* at 188-189.

elements and then to ignore the presence of the old elements in the analysis. This is particularly true in a process claim because 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. The “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.⁴²⁹

[140] The court did not invoke novelty or “invention” when it held the claimed process in *Diehr* to be eligible subject matter:

[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 requisite of § 101. Because we do not view respondent’s claims as an attempt to patent a mathematical formula, but rather to be drawn to an industrial process for molding of rubber products, we affirm the judgment of the Court of Customs and Patent Appeals.⁴³⁰

[141] As an “industrial process for molding of rubber products,” the claimed invention, when considered as a whole, was an application of a mathematical formula that met the statutory requirements of patent eligibility.⁴³¹

E. Treatment of Patent Eligibility Since *Diamond v. Diehr*, and an Alternative

[142] Eligibility under § 101 in *Diamond v. Diehr* paralleled eligibility of methods under the Statute of Monopolies in *Boulton*—both analyses relied on an application of principle. Specifically, the method in *Boulton* could only be considered eligible for

⁴²⁹ *Id.*

⁴³⁰ *Id.* at 192-93.

⁴³¹ *Id.*

patent protection under the Statute if, like a “manufacture,” it embodied a physical application of principle.⁴³² Similarly, the Court in *Diamond v. Diehr* upheld the eligibility of the claimed process, “[b]ecause we do not view respondents’ claims as an attempt to patent a mathematical formula, but rather to be drawn to an industrial process for the molding of rubber products.”⁴³³ Likewise, “aggregation” barred patent protection to combinations of known physical applications of principles that did not cooperate to obtain a specific purpose or result. The measure of a new application of principle in both cases was the presence of “invention.” Both doctrines became obsolete under the Patent Act of 1952 because estimations of “invention” were subsumed under the new distinct statutory provisions of novelty and non-obviousness.

[143] “Preemption” as a doctrine bars patent protection for subject matter that does not amount to “significantly more” than a judicial exception. This is similar to how “new uses” were barred for failing to embody new applications of principle apart from those inherent in the “manufactures” they employed, and “aggregations” were barred as known applications of principles that operated independently of each other without a “single purpose.” In both “new use” and “aggregation” doctrines, patentability mandated “something more” than the principles applied. To avoid prohibition as a “new use,” a principle must be embodied that is not inherent in the device employed. Similarly, to escape “aggregation,” a plurality of principles must be applied in a novel manner to obtain a single purpose. Collectively, satisfaction of these requirements was considered “invention,” or novelty in the application of principle beyond the “work of the skillful mechanic.” Separate statutory provisions for novelty and non-obviousness under the Patent Act of 1952 partitioned determinations of eligibility of subject matter eligibility under section 101 from novelty under section 102 and “invention” under the provision for non-obviousness of section 103. As a result, the doctrines of “new use” and “aggregation” became obsolete as tests of patent eligibility.”

[144] Like “new use” and “aggregation” doctrines, the threshold for avoiding “preemption” is the sufficiency of “invention” in an application of principle. One

⁴³² See *Boulton v. Bull* (1795) 126 Eng. Rep. 651, 667 2 H. BL. 495 (“Undoubtedly there can be no patent for a mere principle, but for a principle so far embodied and connected with corporeal substances as to be in a condition to act, and to produce effects in any art, trade, mystery, or manual occupation, I think there may be a patent.”).

⁴³³ *Diehr*, 450 U.S. at 192-193.

possibility is to treat “preemption” in the same manner as the earlier doctrines of “new use” and aggregation” by considering “invention” exclusively under the statutory provisions of novelty and non-obviousness. *Eligibility* would then be straightforward, excluding only subject matter that is not “a process, machine, manufacture, composition of matter, or any new and useful improvement thereof,” as explicitly called for under the terms of the statute. *Patentability*, of course, would still turn on satisfaction of the provisions for novelty and non-obviousness under sections 102 and 103, respectively.

[145] For example, in *Bilski v. Kappos*, the Supreme Court refused to limit eligibility for patent protection to a process that is “tied to a particular machine or apparatus,” or “transforms a particular article into a different state or thing.”⁴³⁴ Also known as the “machine or transformation test,” the Supreme Court stated that this was not the “sole test for deciding whether an invention is a patent-eligible ‘process,’”⁴³⁵ and specifically held open, as a matter of statutory interpretation, the eligibility of at least “some business method patents.”⁴³⁶ However, as “abstract ideas,” such methods—including the method of hedging commodity prices of *Bilski’s* patent application, when “reduced to a mathematical formula”—were ineligible because it would “preempt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.”⁴³⁷ The Court further stated that limiting the invention to specific applications or fields of use were “token post-solution components [that] did not make the concept patentable” because they were “well known random analysis techniques to help establish some of the inputs into the equation.”⁴³⁸ The Court held the claimed method of hedging commodity prices to be ineligible under 35 U.S.C. § 101. However, considering “invention” exclusively under the statutory provisions of novelty and non-obviousness would likewise enable consideration of the claims as a whole, despite recitation of an “abstract idea,” while also safeguarding against “preemption.” Meeting the statutory definition of

⁴³⁴ *Bilski v. Kappos*, 561 U.S. 593, 602 (2010).

⁴³⁵ *Id.* at 604.

⁴³⁶ *Id.* at 608 (“Finally, while [35 U.S.C.] § 273 appears to leave open the possibility of some business method patents, it does not support broad patentability of such claimed inventions.”).

⁴³⁷ *Id.* at 612.

⁴³⁸ *Id.*

“‘process,’ does not mean that the application claiming that method should be granted.”⁴³⁹ As the Court explained:

In order to receive patent protection, any claimed invention must be novel, §102, non-obvious, §103, and fully and particularly described, §112. These limitations serve a critical role in adjusting the tension, ever present in patent law, between stimulating innovation by protecting inventors and impeding progress by granting patents when not justified by the statutory design.⁴⁴⁰

Strikingly, the claimed “postsolution activity” recited by the Court was viewed in a similar manner to that of a “new use” of the abstract idea of “hedging”⁴⁴¹ and, as such, the Court could have decided against patentability under the statutory “conditions for patentability” of novelty and non-obviousness following well-worn precedent.⁴⁴²

[146] As another example, the Court in *Mayo v. Prometheus* held ineligible claims directed to a method of determining how, if at all, dosaging should be adjusted in view of measured metabolite levels of an administered drug.⁴⁴³ Relying on the much earlier English common law case of *Neilson v. Harford*, the Court distinguished the presence of “unconventional steps ... that confined the claims to a particular, useful

⁴³⁹ *Bilski*, 561 U.S. at 609.

⁴⁴⁰ *Id.*

⁴⁴¹ *See id.* at 611. (The Court stated: “Petitioners’ remaining claims are broad examples of how hedging can be used in commodities and energy markets. *Flook* established that limiting an abstract idea to one *field of use* or *adding token postsolution components* did not make the concept patentable. That is exactly what the remaining claims in petitioners’ application do. These claims attempt to patent the use of the abstract idea of hedging risk in the energy market and then instruct the *use of well-known random analysis techniques to help establish some of the inputs into the equation*. Indeed, these claims add even less to the underlying abstract idea principle than the invention in *Flook* did, for the *Flook* invention was at least directed to the narrower domain of signaling dangers in operating a catalytic converter.”) (Emphasis added).

⁴⁴² *See id.* at 612.

⁴⁴³ *See generally Mayo*, 566 U.S. 66 (2012) (determining that certain drug administrations were not patent eligible subjects).

application of principle”⁴⁴⁴ in *Neilson*, from “simply appending conventional steps,” as in *Mayo*.⁴⁴⁵ The latter was inadequate to convert an ineligible abstract idea to a patent-eligible “process” under 35 U.S.C. § 101. The Court, however, declined to specify any threshold between “conventional” and “unconventional steps,” and even seemed to shy away from convention as a test for eligibility, suggesting that eligibility might, in fact, be a function of the breadth of protection sought:

We need not, and do not, now decide whether were the steps at issue here less conventional, these [discovered natural] features [of the metabolites] of the claims would prove sufficient to invalidate them. For here, as we have said, the steps add nothing of *significance to the natural laws themselves*. Unlike, say, a typical patent on a new drug or a new way of using an existing drug, the patent claims do not confine their reach to particular applications of those laws. The presence here of the *basic underlying concern* that these patents *tie up too much future use of laws of nature* simply reinforces our conclusion that the processes described in the patents are not patent eligible, while eliminating any temptation to depart from case law precedent.⁴⁴⁶

[147] The Court’s proposal to address the “basic underlying concern” over “too much future use of laws of nature,” or “preemption,” by excluding from patent eligibility “conventional” or “mere post-solution activity” is incongruous. If preemption were the Court’s primary concern, then any narrowing limitation should suffice. Ultimately, the Court was seeking to limit applications of laws of nature, natural phenomena and abstract ideas to applications that added “significance to the natural laws themselves.”⁴⁴⁷ However, failure of the Court to provide some standard for “significance” beyond the presence of “invention” has, since *Mayo*, led to confusion.

[148] If, however, that “additional” significance were, for example, a novel step that itself embodied some additional law of nature, natural phenomenon, or abstract idea,

⁴⁴⁴ *Mayo*, 566 U.S. at 84; *see also* *Neilson v. Harford*, 151 E.R. 1266, 371 (1841).

⁴⁴⁵ *Mayo*, 566 U.S. at 82.

⁴⁴⁶ *Id.* at 87 (emphasis added).

⁴⁴⁷ *Id.*

acting cooperatively or collectively with the recited or known, natural law to obtain a beneficial result, then the subject matter of the claims taken as a whole could be seen as “inventive” and not as some prohibited “new use,” or “aggregative” or “preemptive” combination. Moreover, a determination that such a relationship exists would be better determined as a function of novelty and non-obviousness under 35 U.S.C. §§ 102 and 103, respectively, rather than some ill-defined notion of “conventionality,” “significance,” or “preemption.”

[149] The Court attempted to address this issue by asserting that reliance on sections 102 and 103 to perform a “screening function” against the “‘law of nature’ exception” would make “§ 101 patentability a dead letter.”⁴⁴⁸ The Court admitted that there may be overlap, but found that avoiding that possibility by relying entirely on statutory provisions other than section 101 would “risks creating significantly greater legal uncertainty.”⁴⁴⁹ Moreover, for the Court, “§§ 102 and 103 say nothing about treating laws of nature as if they were part of the prior art when applying those sections.”⁴⁵⁰ Interestingly, the Court failed to note that there is no such mention of “laws of nature” in section 101. Nor did the Court explain how section 101 would be a “dead letter” simply by shifting reliance on that missing language to the statutory provisions for novelty and non-obviousness, or how confusion is to be avoided by enabling, as the Court did, “overlap” of the criteria for novelty and non-obviousness with consideration of eligibility under section 101.

[150] Similarly, but as applied to product claims instead of methods, the Supreme Court in *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, held that “a naturally occurring DNA segment is a product of nature and not patent eligible merely because it has been isolated,…”⁴⁵¹ Here, however, the Court explicitly invoked “invention” as a distinguishing characteristic of eligible subject matter. Specifically, Myriad’s isolated nucleic acid was not an “act of invention” because the

⁴⁴⁸ *Id.* at 89.

⁴⁴⁹ *Id.* at 90 (The Court stated: “We recognize that, in evaluating the significance of additional steps, the § 101 patent eligibility inquiry and, say, the § 102 novelty inquiry might sometimes overlap. But that need not always be so. And to shift the patent eligibility inquiry to these later sections risks creating greater legal uncertainty, while assuming that those sections can do work that they are not equipped to do.”).

⁴⁵⁰ *Mayo*, 566 U.S. at 90.

⁴⁵¹ *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2111 (2013).

technique for isolation was conventional, despite the fact that, in isolation, it was “important and useful.”

It is undisputed that Myriad did not create or alter any of the genetic information encoded in the BRCA1 and BRCA2 genes.... Instead, Myriad’s principal contribution was uncovering the precise location and genetic sequence of the BRCA1 and BRCA2 genes within chromosomes 17 and 13. The question is whether this renders the genes patentable.

... In this case ... Myriad did not create anything. To be sure, it found an important and useful gene, but separating the gene from its surrounding genetic material is *not an act of invention*.⁴⁵²

Moreover, relying on *Funk Bros.*, the Court stated that eligibility does not hinge on the quality of the discovery: “Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.”⁴⁵³

[151] By contrast, cDNA, which constitutes only those DNA segments that actually encode a protein, and which do not generally occur in nature, was eligible for patent protection under the Court’s analysis, “except insofar as very short series of DNA may have no intervening introns to remove when creating cDNA.”⁴⁵⁴ In deciding that cDNAs were not “products of nature” and therefore eligible for patent protection under section 101, the Court made no mention of “invention” as a requirement, suggesting that, where claimed subject matter is not naturally-occurring, there is no need to consider such a requirement. Therefore, according to the Court, whereas isolated DNA having a sequence that occurs in nature is not eligible for patent protection, regardless of the “groundbreaking, innovative, or even brilliant discovery” that enabled identification of the sequence to be isolated, cDNA, having a sequence that does not occur in nature, is “patent eligible under § 101” merely *because* it is “not a ‘product of nature.’”⁴⁵⁵ Although *Chakrabarty* was discussed, the Court either

⁴⁵² *Id.* at 2116-2117 (emphasis added).

⁴⁵³ *Id.* at 2117.

⁴⁵⁴ *Id.* at 2119.

⁴⁵⁵ *Id.* at 2110, 2119.

did not include any requirement that cDNA have “markedly different characteristics” from its naturally occurring counterpart, or it presumed that the lack of introns, which are not expressed and have no known function, was “markedly different.”⁴⁵⁶ Having stated that cDNAs that are *not* “indistinguishable from natural DNA” do qualify as patent eligible subject matter, the Court nevertheless expressed “no opinion” whether other “statutory requirements of patentability” were met.⁴⁵⁷

[152] Under the Court’s reasoning in *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, therefore, “invention” was inapplicable to the “[g]roundbreaking, innovative or even brilliant discovery” of naturally-occurring DNA that, in isolation, was admittedly important and useful. Nor was “invention” applicable to the eligibility of cDNA, where naturally-occurring non-coding sequences had been removed from native DNA. Moreover, the Court admitted that isolated DNA and cDNA are novel and have distinct utilities that are not available in their naturally-occurring counterparts.⁴⁵⁸ As such, they embody principles that are not inherent in those sources from which they are derived. Contrary to the Court’s holding, as compositions of matter, both isolated DNA and cDNA should be considered *eligible* for patent protection under 35 U.S.C. §101. *Patentability* of isolated DNA and cDNA, as claimed and taken as a whole, could then be decided on the basis of statutory novelty and non-obviousness, and non-obviousness could be premised on the “invention” manifested in the utility, or benefit, made possible by their discovery, regardless of the conventionality of any particular claimed elements taken separately.

[153] In *Alice Corp. v. CLS Bank Int’l*, patent claims directed to a “method of exchanging financial obligations between two parties using a third-party intermediary to mitigate settlement risk”⁴⁵⁹ were invalidated as being “drawn to a patent-ineligible abstract idea ... under §101.”⁴⁶⁰ The Court applied the two-part test taken from the “framework”⁴⁶¹ set forth in *Mayo v. Prometheus* and found “no meaningful

⁴⁵⁶ *Ass’n for Molecular Pathology*, 133 S. Ct. at 2117.

⁴⁵⁷ *Id.* at 2119 n.9 (“We express no opinion whether cDNA satisfies the other statutory requirements of patentability.”)

⁴⁵⁸ *See id.*

⁴⁵⁹ *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2356.

⁴⁶⁰ *Id.* at 2349-2350.

⁴⁶¹ *Id.* at 2355.

distinction between the concept of risk hedging in *Bilski* and the concept of intermediate settlement at issue here.”⁴⁶² According to that two-part test, eligibility under 35 U.S.C. § 101 depended upon first determining that “the claims at issue are directed to one of those patent ineligible concepts,” of “laws of nature, natural phenomena, and abstract ideas.”⁴⁶³ If the claims were directed to one of those “patent-ineligible concepts,” then, according to the second part of the test, the claims were examined to see “[w]hat else is there in the claims before us?” as recited in *Mayo*.⁴⁶⁴ For the Court in *Alice*, that “what else” must be sufficient to “transform the nature of the claim into a patent-eligible application.”⁴⁶⁵ The test for such transformation, in turn, was the presence of an “*inventive concept*,” which the Court defined as “...an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to *significantly more* than a patent upon the [ineligible concept] itself.’”⁴⁶⁶ However, nowhere is there an indication of what is meant by an “inventive concept” or “significantly more,” except as examples taken from previous decisions by the Supreme Court. For instance, with reference to *Diehr*, one of the few cases found to have met the test, the Court stated that “the claims...were patent eligible because they *improved* an existing technological process, not because they were implemented on a computer,”⁴⁶⁷ suggesting that the presence of an “inventive concept” was a matter of degree, rather than a difference in kind, as previously asserted in *Parker v. Flook*.⁴⁶⁸ Summarizing the second part of the two-part test drawn from *Mayo*, the Court concluded, with respect to the computer-implemented method of hedging risk claimed by *Alice*, that: “In light of the foregoing . . . the relevant question is whether the claims here do more than simply instruct the

⁴⁶² *Id.* at 2357.

⁴⁶³ *Alice Corp.*, 134 S. Ct. at 2355.

⁴⁶⁴ *Id.* (quoting *Mayo*, 566 U.S. at 78).

⁴⁶⁵ *Id.*

⁴⁶⁶ *Id.* (quoting *Mayo*, 566 U.S. at 73) (emphasis added).

⁴⁶⁷ *Alice Corp.*, 134 S. Ct. at 2358 (emphasis added).

⁴⁶⁸ See text *supra* at note 416.

practitioner to implement the abstract idea of intermediated settlement on a generic computer. They do not.”⁴⁶⁹

[154] An “improvement,” if taken to mean a change resulting in “benefit,” has a direct parallel to new uses of old devices that became patentable as a consequence of some improvement of the machine or some new application of principle in the use of a known machine. It also has a parallel with distinguishing “combinations” from aggregations, which were construed to be combinations of principles that operated independently of each other, but, as stated in *Sachs*, answered no “single purpose.”⁴⁷⁰ Therefore, the idea of an “inventive concept” referred to by the Court in *Alice* could mean a novel application of principle to obtain a benefit, or a combination of principles to obtain a single purpose or benefit not achieved by application of each principle alone. If so, then, as in *Diehr*, the method in *Alice* should be eligible for patent protection as a “process,” and determination of “significantly more” should be a function of the “conditions for patentability” under the statute, namely novelty under section 102 and non-obviousness under section 103, just as the doctrines of “new use” and “aggregation” were so considered shortly after enactment of the Patent Act of 1952. “Preemption” in this case would dissolve as an independent concept because, even if some minimal recitation of structure were sufficient to “transform” the abstract idea into eligible subject matter, the statutory conditions for patentability of novelty and non-obviousness would be competent to determine patentability.⁴⁷¹

⁴⁶⁹ *Alice Corp.*, 134 S. Ct. at 2359 (citation omitted).

⁴⁷⁰ See *Sachs v. Hartford Electric Supply Co.*, 47 F.2d 743, 748 (1931). See also *supra* text at note 350.

⁴⁷¹ Such an analysis, must, however, also be viewed in the context of the *kinds of* abstract ideas that, even if applied as processes, are subject to patent protection. This question, in turn, depends upon the meaning of “useful Arts” under Article I, Section 8, clause 8 of the United States Constitution, and is beyond the scope of this paper. The author, however, has briefly attempted to address this subject in *A Great Invisible Crashing: The Rise and Fall of Patent Eligibility Through Mayo v. Prometheus*.” N. Scott Pierce, *A Great Invisible Crashing: The Rise and Fall of Patent Eligibility Through Mayo v. Prometheus*, 23 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 186, 199-201, 204 (2012); The author also refers the reader to Joel Mokyr, in *THE ENLIGHTENED ECONOMY: AN ECONOMIC HISTORY OF BRITAIN, 1700-1850*, (Yale University Press) (2009), who said that “the useful arts” as they were understood during the “Industrial Enlightenment” of eighteenth century British society were embodied in “the Baconian program,” and were intended to give “people power over *nature* and not (just) over *other people*.” *Id.* at 200-201; If so, then such an interpretation might be a basis for excluding from eligibility for patent protection application of “abstract ideas” that are limited to giving power *only* over other people (and *not* nature), such as forms of government, economics, finance, religion, etiquette, etc., regardless of their physical means of manifestation.

[155] The Court of Appeals for the Federal Circuit in *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, held invalid a claimed method for detecting paternally-inherited nucleic acids in maternal plasma.⁴⁷² Applying the two-part test of *Mayo*, the court first determined that the claimed method was based on the discovery by the inventors of the presence in maternal plasma of cell-free fetal DNA (cffDNA).⁴⁷³ In conducting the second step of the analysis, the court noted that amplification of cffDNA required no more than the application of routine technology, such as polymerase chain reaction (PCR), to thereby obtain cffDNA in detectable levels:

The method at issue here amounts to a general instruction to doctors to apply routine, conventional techniques when seeking to detect cffDNA. Because the method steps were well-understood, conventional and routine, the method of detecting paternally inherited cffDNA is not new and useful. The only subject matter new and useful as of the date of the application was the discovery of the presence of cffDNA in maternal plasma or serum.⁴⁷⁴

The court concluded that “the practice of the method claims does not result in an inventive concept that transforms the natural phenomenon of cffDNA into a patentable invention.”⁴⁷⁵ Moreover, the question of whether Sequenom’s method of detecting paternally-inherited genetic material constituted legal “preemption” was “made moot” by the holding that the “patent’s claims are deemed only to disclose patent ineligible subject matter under the *Mayo* framework”:

In this case, Sequenom’s attempt to limit the breadth of the claims by showing alternative uses of cffDNA outside of the scope of the claims does not change the conclusion that the claims are directed to patent ineligible subject matter. Where a patent’s claims are deemed only to

⁴⁷² See *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1373-1375, 1380 (Fed. Cir. 2015), *cert. denied*, 2016 U.S. LEXIS 4087 (2016).

⁴⁷³ See *id.* at 1375-76.

⁴⁷⁴ *Id.* at 1377.

⁴⁷⁵ *Id.* at 1376.

disclose patent ineligible subject matter under the *Mayo* framework, as they are in this case, preemption concerns are fully addressed and made moot.⁴⁷⁶

By denying the conclusion of eligibility, the court, in effect, rendered futile any attempt to avoid the challenge of preemption.

[156] Judge Linn concurred with “the sweeping language of the test set out” in *Mayo*, but viewed the second part of the two-part test of *Mayo* to be overly broad.⁴⁷⁷ Seemingly channeling Wachsner, Judge Linn complained that the consequence of the threshold requirement of “invention” was “to refuse a patent to somebody,”⁴⁷⁸ (in this case Sequenom,) the “patent protection it deserves and should have been entitled to retain.”⁴⁷⁹ Of particular significance, Judge Linn distinguished *Mayo* by stating that Sequenom’s claimed method constituted a “*new use* of the previously discarded maternal plasma,” that obtained an “advantageous result ... deserving of patent protection.”⁴⁸⁰ In effect, Judge Linn argued that the benefit obtained consequent to the new discovery was indicative of a new application of naturally-occurring principle that was entitled to an exclusionary right.

[157] As will be recalled, new application of principle was the primary argument in favor of eligibility for patent protection of James Watt’s steam engine under the Statute of Monopolies.⁴⁸¹ While “[g]roundbreaking, innovative, or even brilliant discovery does not by itself satisfy the section 101 inquiry,” as recited by the majority in *Myriad*,⁴⁸² it is also well-understood that applications of such discoveries may, in fact, be not only *eligible* for patent protection, but *deserving* of patent protection. For example, unlike the claimed subject matter of *Mayo*, where the point of novelty was

⁴⁷⁶ *Id.* at 1379.

⁴⁷⁷ *Ariosa Diagnostics, Inc.*, 788 F.3d at 1380.

⁴⁷⁸ *See* Wachsner, *supra* note 285, at 401, 402; *see also Funk Bros.*, 333 U.S. at 132.

⁴⁷⁹ *Ariosa Diagnostics, Inc.*, 788 F.3d at 1380 (Linn, J., concurring).

⁴⁸⁰ *Id.* at 1381 (Linn, J., concurring) (emphasis added).

⁴⁸¹ *See supra* text at note 30 et seq.

⁴⁸² *Ass’n for Molecular Pathology*, 133 S. Ct. at 2117.

only the observation of whether subsequent dosages should be elevated or reduced, Sequenom's claimed subject matter included the novel step of amplifying paternally-inherited DNA derived from maternal blood serum.⁴⁸³ As such, it was not simply a discovery, but, rather, a "new use," or novel cooperative relationship among natural phenomena, namely (1) amplification by PCR of (2) cffDNA derived from maternal plasma, to obtain a beneficial result. These two natural phenomena, unlike an "aggregation," did not operate independently of each other, but, instead, operated in conjunction to provide a significant advance which, as Judge Linn mentioned, should be eligible for protection, "[b]ut for the sweeping language" of *Mayo*.⁴⁸⁴ As in the obsolete doctrines of "new use" and "aggregation," the judicial exceptions to patent eligibility of laws of nature, natural phenomena, and abstract ideas can and should be considered with other claim elements, but as conditions for patentability, and not as issues of eligibility. Employing any of those exceptions should not disqualify "processes, machines, manufactures, compositions of matter or new useful improvements thereof" from eligibility for patent protection because they will still, and will always be, "subject to the conditions and requirements of this title," as specified by 35 U.S.C. § 101.

[158] "Preemption" should follow the fate of the doctrines of "new use" and "aggregation." There is no reason to separately analyze claimed subject matter for eligibility simply because the basis for patentability is alleged to be a discovery of a law of nature, natural phenomenon or abstract idea, or because that law of nature, natural phenomenon, or abstract idea is explicitly recited in the claim. Doing so unhinges decisions concerning patent protection from the literal language of the statute and causes endless confusion.

⁴⁸³ See *Ariosa Diagnostics, Inc.*, 788 F.3d at 1373.

⁴⁸⁴ *Id.* at 1381.

[159] The Intellectual Property Owners Association (IPO), the American Bar Association (ABA), and the American Intellectual Property Association (AIPLA) have all recently proposed revisions to 35 U.S.C. § 101.⁴⁸⁵ The difficulty, however,

⁴⁸⁵ The revisions proposed by the IPO and the ABA are as follows:
IPO proposal:

101 (a) ELIGIBLE SUBJECT MATTER

Whoever invents or discovers, and claims as an invention, any new and useful process, machine, manufacture, composition of matter, or any new and useful improvement thereof, may thereto, shall be entitled to obtain a patent therefor for a claimed invention thereof, subject only to the exceptions, conditions, and or requirements set forth in of this Title.

101(b) SOLE EXCEPTION TO SUBJECT MATTER ELIGIBILITY

A claimed invention is ineligible under subsection (a) if and only if the claimed invention as a whole, as understood by a person having ordinary skill in the art to which the claimed invention pertains, exists in nature independently of and prior to any human activity, or exists solely in the human mind.

101(c) SOLE ELIGIBILITY STANDARD

The eligibility of a claimed invention under subsections (a) and (b) shall be determined without regard as to the requirements or conditions of sections 102, 103, and 112 of this Title, the manner in which the claimed invention was made or discovered, or the claimed invention's inventive concept.

Proposed Amendments to Patent Eligible Subject Matter Under 35 U.S.C. § 101, Intellectual Property Owners Assoc., Section 101 Legislation Task Force, February 7, 2017 (alterations emphasized);

ABA proposal:

101. ~~Inventions patentable:~~ Conditions for patentability: eligible subject matter.

(a) Eligible Subject Matter.- Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may shall be entitled to obtain a patent thereof, subject to the on such invention or discovery, absent a finding that one or more conditions and or requirements under of this title have not been met.

(b) Exception.- A claim for a useful process, machine, manufacture, or composition of matter, or any useful improvement thereof, may be denied eligibility under this section 101 on the ground that the scope of the exclusive rights under such a claim would preempt the use by others of all practical applications of a law of nature,

with almost any proposed revision of a statute is how it will be interpreted by courts. In the amendment proposed by the IPO, for example, the “sole exception to subject matter eligibility” hinges on what is “understood by a person having ordinary skill in the art.” A person having “ordinary skill in the art” is a threshold also found in the non-obviousness standard of 35 U.S.C. § 103, which itself has been contentious since it was introduced under the Patent Act of 1952,⁴⁸⁶ and poses the same problem of “overlap.” The ABA proposal has the problem of codifying the same language from recent Supreme Court decisions that is causing the current controversy, such as “preempt,” “practical application,” “law of nature,” “natural phenomenon,” and “abstract idea.” Further, while “inventive concept” is specifically excluded as a

natural phenomenon, or abstract idea. Patent eligibility under this section shall not be negated when a practical application of a law of nature, natural phenomenon, or abstract idea is the subject matter of the claims upon consideration of those claims as a whole, whereby each and every limitation of the claims shall be fully considered and none ignored. Eligibility under this section 101 shall not be negated based on considerations of patentability as defined in Sections 102, 103 and 112, including whether the claims in whole or in part define an inventive concept.

Letter to The Honorable Michelle K. Lee from the American Bar Association, March 28, 2017 (alterations emphasized).

The text of section 101 as proposed by the AIPLA is as follows:

(a) Eligible Subject Matter. Whoever invents or discovers any new and useful process, machine, manufacture, ~~or~~ composition of matter, or any ~~new and~~ useful improvement thereof, ~~may obtain~~ shall be entitled to a patent therefor, subject only to the conditions and requirements ~~of~~ set forth in this title.

(b) Sole Exceptions to Subject Matter Eligibility. A claimed invention is ineligible under subsection (a) only if the claimed invention as a whole exists in nature independent of and prior to any human activity, or can be performed solely in the human mind.

(c) Sole Eligibility Standard. The eligibility of a claimed invention under subsections (a) and (b) shall be determined without regard to the requirements or conditions of sections 102, 103, and 112 of this title, the manner in which the claimed invention was made or discovered, or whether the claimed invention includes an inventive concept.

AIPLA Proposal on Patent Eligibility, May 12, 2017.

⁴⁸⁶ See, e.g., Pierce, N.S., *Common Sense: Treating Statutory Non-Obviousness as a Novelty Issue*, 25 SANTA CLARA COMPUTER HIGH TECH. L.J. No. 3, 541 (2009).

consideration under this proposal, its recitation alone makes it a potential subject of litigation. In the AIPLA proposal, questions may possibly arise as to how courts will interpret the phrase, “claimed invention as a whole,” or even the phrase, “can be performed solely in the human mind,” in part (b) of the proposal.

[160] At this time there is no generally recognized meaning of “significantly more” or “invention,” the lack of which constitutes the threshold for “preemption” under the current two-part test articulated by the Court in *Alice*, nor does the language recited above in the proposed revisions to section 101 clarify patent eligibility. The policy concern of “preemption,” like that of “new use” and “aggregation,” should be easily absorbed by other portions of the statute without digressing into or codifying inherently vague terms that cannot be found in the existing provision for patent eligibility under 35 U.S.C. § 101.

[161] A premise of this paper is that the language of current 35 U.S.C. § 101 does not pose a problem; it is straightforward on its face. The difficulty lies in confusion resulting from failure to recognize the evolution of what have now become three statutorily distinct doctrines, namely eligibility (§ 101), novelty (§ 102) and non-obviousness (§ 103). An understanding of the relationships and common roots among these provisions is critical to their separate application, and it has so far proven folly to interpose inherently vague language as a substitute.

VI. CONCLUSION

[162] Courts, lawyers and commentators have been widely panned as historians of patent law.⁴⁸⁷ However, a better understanding of legal doctrines, such as those dominating the development of patent law in this country, should be possible by tracing them through court opinions and commentary over time. Preemption, as embodied in the current, so-called two-part eligibility test, is one example that can be addressed by looking for doctrinal parallels and their resolution, if any.

⁴⁸⁷ See, e.g., Kenneth J. Burchfiel, *Revising the “Original” Patent Clause; Pseudohistory in Constitutional Construction*, 2 HARV. J. L. & TECH 155, 212-13 (1989); Pamela O. Long, *Invention, “Intellectual Property,” and the Origin of Patents*, 32 TECHNOLOGY AND CULTURE 846, 875 n. 76 (Periodicals Service Company) (1991) (“Until recently, the early history of patents in continental Europe had been investigated primarily by patent lawyers interested in the antecedent of their own discipline.... Yet much of it is marred by inadequate documentation, overgeneralization, and an anecdotal quality that fails to explore patents within the context of economic history and the history of technology.”)

[163] The issue of patent eligibility, as it is currently understood, began with the analyses of *Boulton and Watt v. Bull* and *Hornblower v. Boulton* that ultimately held methods to be within the ambit of “manufactures” under the Statute of Monopolies. Interpretation of the Statute by the justices in both cases set the stage for a debate over the next two-hundred (plus) years about the limits of what kinds of subject matter are available for protection.⁴⁸⁸ The debate is far from over, and the level of attention that has been paid to this topic over the last decades, despite several attempts by the Supreme Court to make the issue clear, should give pause to consider whether we are on the right track.

[164] The link between “manufactures” and “methods” that proved a basis for invention under the Statute of Monopolies was new application of principle. To the extent that principles applied by methods were inherent in the manufactures they employed, such methods were not patentable. This reasoning underlay the prohibition against “new” or “double” uses that continued until the Patent Act of 1952 rendered “new use” doctrine unnecessary by splitting consideration of eligibility from that of invention under “non-obviousness.” The doctrine of “aggregation,” which prohibited patent protection for combinations of applied principles that did not act cooperatively or toward a “single purpose,” also became superfluous by partitioning “invention” from eligibility under the new act. In both the doctrines of “new use” and of “aggregation,” “invention” need not be addressed when determining eligibility of subject matter because “invention” was defined under “non-obviousness,” among other statutory “conditions and requirements” to which a “new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof,” was subject.

[165] “Preemption” recognizes the judicial exceptions to patent eligibility of laws of nature, natural phenomena and abstract ideas and, like “new use” and “aggregation,” prohibits patent protection where there is a lack of “invention.” Unlike “new use” and “aggregation,” however, “preemption” remains confined to estimations of eligibility, despite admitted “overlap” of criteria with novelty and non-obviousness. So long as this “overlap” remains, the scope of patent eligibility will remain confused. The

⁴⁸⁸ See, e.g., BRAD SHERMAN & LIONEL BENTLY, THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW 209 (Cambridge University Press, 1999). (“This is not to suggest that the 1624 Statute of Monopolies or the 1710 Statute of Anne played no role in the history of intellectual property, for they clearly did. Rather, it is to argue that the way in which these (and related) events were perceived changed, sometimes dramatically, with the emergence of modern intellectual property law.”)

Supreme Court said that the alternative would constitute “studiously ignoring all laws of nature when evaluating patents under “§§ 102 and 103 [that] would ‘make all inventions unpatentable...,’ and “§§ 102 and 103 say nothing about treating laws of nature as if they were . . . prior art....”⁴⁸⁹ It should be noted that § 101 also says no such thing. Far from “risking greater uncertainty,”⁴⁹⁰ as asserted by the Supreme Court, “preemption,” if limited to consideration under the “conditions for patentability” of novelty and non-obviousness, and the definition of “invention” provided therein, would cause “preemption” to follow well-worn precedent as an unnecessary and defunct doctrine.

⁴⁸⁹ *Mayo*, 566 U.S. at 90.

⁴⁹⁰ *Id.*