

# Patentable Discovery?

## INTRODUCTION

As I sipped my second cup of coffee a woman came into my office. She livened my morning with an exciting tale of her recent treasure troving in the Pacific. While exploring the depths she came upon what could only be the Lost City of Atlantis. Further exploration of Atlantis disclosed an extremely efficient and powerful, non-polluting engine that ran on sea-water.<sup>1</sup> With a background in mechanical engineering, the intrepid explorer was able to deduce the principles on which the engine operated and assured me she could reproduce the engine. My task is to obtain a patent for her discovery.

Due to a mid-morning tee-time, I was unable to pursue this matter until the following day. I had just opened Donald Chisum's treatise on patents, to do some preliminary research, when a strange little man bounded into my office chanting, "Fi fiddle dee dee, fi fiddle dee doe, my name is Rumpelstiltskin you know."<sup>2</sup> After this unique introduction, he explained that he could spin straw into gold, using an ordinary spinning wheel and a secret incantation. Rumpelstiltskin requested that I secure him a patent for his discovery. He wanted this knowledge disseminated and his name known throughout the world. I assured him that I would give it my best efforts, had him sign a retainer agreement, and sent him on his merry way.

While puzzling over this little man and his remarkable discovery I received a phone call from one of my firm's major clients, Ipso Facto Pharmaceuticals. For the past two years Ipso Facto employed agents to scour the globe collecting samples of various berries in hopes of finding a cure for cancer. One agent recently returned with berries found on an expedition to the northern reaches of Siberia. Testing revealed that the berries contain a naturally occurring chemical that does in fact cure

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1. We will assume that our explorer is the owner of the found engine and avoid a digression into maritime law.

2. This hypothetical is loosely based on the tale of Rumpelstiltskin. GRIMM'S FAIRY TALES TWENTY STORIES 39 (Viking Press 1973).

cancer.<sup>3</sup> Ipso Facto Pharmaceuticals is eager to secure a patent for their discovery, save millions of lives, and make billions of dollars. With three new patent applications, it seemed I would be canceling my weekend in Vegas.

The hypotheticals set forth above are of interest because they pertain to discoveries, rather than inventions. My new clients did not create or produce what they seek to patent; they base their patent applications on knowledge they were the first to obtain. Are such discoveries patentable? In this comment I argue that, despite some decisions and dicta to the contrary, the courts and the Patent Office should explicitly recognize the patentability of discoveries that are not inventions, subject to the same statutory constraints imposed on inventions.

## I. CONSTITUTIONAL CRITERIA

To determine whether discoveries that are not inventions should be patentable we first look to the Constitution's grant of Congressional authorization "[t]o promote the Progress of . . . useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries."<sup>4</sup> The framers of the Constitution drafted a document that would allow our new nation to prosper. They recognized the necessity of inducements and incentives to ingenuity, despite the abuses that had arisen under the English system of monopolies.<sup>5</sup> To analyze what this constitutional grant entails requires a discussion of some of its terms, specifically, "inventors," "discoveries," and "useful arts."

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3. While this hypothetical is simplistic, in fact many of today's current prescriptions contain drugs extracted from plants. Liz Hanellin, *Protecting Plant-Derived Drugs: Patents and Beyond*, 10 CARDOZO ARTS & ENT. L.J. 169, 170 (1991). Many commentators have addressed the issues involved in patenting discovered plant-based pharmaceuticals. See, e.g., *id.*

4. U.S. CONST. art. I, §8, cl. 8. The clause in full reads: "To promote the Progress of Science and useful Arts, by securing, for limited Times to Authors and Inventors, the exclusive Right to their respective Writings and Discoveries." *Id.* The balanced construction of the clause indicates that it is really two provisions merged into one. The first authorizes Congress to promote the progress of science by securing for limited times to authors the exclusive right to their writings; and the other authorizes the promotion of the progress of useful arts by securing for limited times to inventors the exclusive right to their discoveries. E.g., 1 ERNEST B. LIPSCOMB III, *LIBSCOMB'S WALKER ON PATENTS* § 2, at 73-80 n.1 (3rd ed. 1984) [hereinafter LIPSCOMB].

5. *Outline of the History of the United States Patent Office*, XVIII J. PAT. OFF. SOC'Y, Centennial Number at 66-67 (1956) [hereinafter *Outline*] (noting Thomas Jefferson's original aversion toward any monopoly grant and subsequent realization of the importance of limited monopolies to induce the advancement of society).

### A. Inventors and Discoveries

Does the Constitution's authorization to "promote the progress of useful arts" by giving "inventors" exclusive rights to their "discoveries," encompass granting "discoverers" exclusive rights to their "discoveries?" At the time of the drafting of the Constitution an inventor was both an inventor and a discoverer.<sup>6</sup> Since an inventor is also a discoverer, the patent clause authorizes granting inventors *and* discoverers exclusive rights to their discoveries.<sup>7</sup> Further, if the framers of the Constitution intended to ignore the fact that an "inventor" was also a "discoverer" the patent clause would not refer to the productions of inventors as discoveries.<sup>8</sup> The Constitution's patent clause, in referring to "inventors," does not exclude "discoverers."

The Patent Office and courts often view discovery as something less than invention.<sup>9</sup> However, it is "discoveries" that are specifically protected in the constitution.<sup>10</sup> Presently, a person can invent (create or produce for the first time) something new and obtain a patent on it, but simply to discover (find or find out) something, without creating or producing it for the first time, is unpatentable.<sup>11</sup> An invention is something new that is created. A discovery is something new. Since inventions are also "discoveries," the Constitution authorizes their protection. This Comment argues that, while discoveries may not be inventions, they are patentable, provided the conditions and requirements of the Patent Act are met.

6. At that time, the term "inventor" carried two meanings: "One who finds or finds out" and "one who created something new." Report of the Senate in 1930 relating to Plant Patents, IV Legal Phases of the Bill, *pertinent part reprinted in* LIPSCOMB, *supra* note 4, at 86-87. One who finds or finds out is a discoverer; one who creates something new is an inventor.

7. As stated in the Senate Report, despite the present prevailing meaning of the word "inventor" as a creator of something new "the meaning to be attached to the term 'inventor' as used in the Constitution must be the meaning in general use at the time [a meaning that includes discoverer]." *Id.* at 87.

8. *Id.*

9. "Quite clearly discovery is something less than invention." *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 476 (1974) (quoting *A.O. Smith Corp. v. Petroleum Iron Works Co.*, 73 F.2d 531, 538 (6th Cir. 1934)).

10. U.S. CONST. art. I, § 8, cl. 8.

11. *See supra* Section IV.

## B. Promoting Progress of Useful Arts

What did the framers mean by “useful arts,” and why is the promotion of their progress, in the words of Thomas Jefferson, “worth to the public the embarrassment of an exclusive patent?”<sup>12</sup> Although “useful arts” has been somewhat ambiguously defined, the term is generally considered synonymous with what we now think of as the technological arts, those inventions or discoveries which further innovation.<sup>13</sup> The Supreme Court paraphrased the philosophy of Thomas Jefferson on the nature and purpose of the patent monopoly, writing: “Only inventions and discoveries which furthered human knowledge, and were new and useful, justified the special inducement of a limited private monopoly.”<sup>14</sup> This earned monopoly right is consistent with Jefferson’s philosophy that a property right in an invention or discovery was not a natural right of the inventor or discoverer, but rather a creation of society.<sup>15</sup> An invention or discovery is an idea exclusively possessed only if it is withheld.<sup>16</sup> By its character, an invention or discovery, once divulged, spreads to all without lessening what was previously known to only one.<sup>17</sup> Society can give an exclusive right to the profits arising therefrom, to encourage the pursuit of useful ideas and the furtherance of technology and innovation. However, the right is society’s to give and not the inventor’s or discoverer’s to take.<sup>18</sup>

## C. Promoting the Progress of the Useful Arts Through Discovery

Under a Constitutional authorization to promote progress in useful arts, should the courts deny patentability to discoveries that are not inventions? We address this question through our hypotheticals. Recall our patent seekers’ discoveries: a propulsion machine that runs on seawater; a method of spinning straw into gold utilizing a secret incantation; and a chemical found in Siberian berries that cures cancer. The seawater engine is unique because it was originally created by another. Is it still a technological advancement? While the technology did exist and was known at some time in the past, it was lost to society. Its

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12. *Outline, supra* note 5, at 69. Jefferson was one of the administrators of the Patent Act of 1790 and influential in the drafting of the Patent Act of 1793. *Id.* at 64, 78.

13. 1 DONALD S. CHISUM, PATENTS G1-23 (1988).

14. *Graham v. John Deere Co.*, 383 U.S. 1, 9 (1966).

15. *Outline, supra* note 5, at 69.

16. *Id.* at 68.

17. *Id.*

18. *Id.*

reintroduction would further innovation by providing a starting point for others to improve upon. Perhaps its disclosure would revolutionize all the world's power sources. This appears to be precisely the type of progress in the useful arts the framers were intending to encourage and reward by authorizing the granting of patents.

The question remains, however, whether its rediscovery is worth the public embarrassment of a limited private monopoly.<sup>19</sup> Should society create a twenty-year exclusive right in the discoverer in exchange for the knowledge she has obtained? Since treasure trovers seek treasures, whether patentable or not, an incentive to treasure trove is unnecessary. We seek to provide an incentive to disclose the discovery. While it is possible another explorer would make this discovery within the next twenty years, it seems unlikely.<sup>20</sup> Would this discovery be disclosed without the incentive of a patent? Our explorer could practice her newfound discovery in secret and the world might never obtain the benefit of this technology. More likely, she would sell to the highest bidder, who would endeavor to protect the discovery as a trade secret.<sup>21</sup> Our skies would become more polluted and our dependence on foreign

19. The Patent Act provides the right to exclude others from making, using, or selling the invention or discovery for a term of seventeen years. 35 U.S.C. § 154 (West 1988). Note that the term of patent protection has been amended as part of the United States' adherence to GATT to provide: "[S]uch grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application is filed . . ." Uruguay Round Agreements Act, Pub. L. No. 103-465, § 532, 108 Stat. 4809, 4984 (1994).

20. Note that the Supreme Court has stated: "If something is to be discovered at all very likely it will be discovered by more than one person." *Kewanee Oil v. Bicron Corp.*, 416 U.S. 470, 490 (1974) (citing *Singletons and Multiples in Science* (1961), in R. MERTON, *THE SOCIOLOGY OF SCIENCE* 343 (1973); J. COLE & S. COLE, *SOCIAL STRATIFICATION IN SCIENCE* 12-13, 229-230 (1973); Ogburn & Thomas, *Are Inventions Inevitable?*, 37 *POL. SCI. Q.* 83 (1922)). However, while some discoveries may be made by others within the term of a patent grant others discoveries may not. Further, without the incentive of a patent, a later discoverer will be no more likely to disclose his find than the first discoverer.

21. A trade secret is:

[I]nformation, including a formula, pattern, compilation, program, devise, method, technique, or process, that:

- (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and
- (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

Uniform Trade Secrets Act § 1(4), 14 U.L.A. 438 (1990).

oil would continue. With non-disclosure as the alternative, a patent grant seems appropriate. The useful arts are promoted by a new mode of propulsion that does not pollute our skies and whose fuel is abundant and cheap.

Rumpelstiltskin has also provided society with a technology that was previously unknown. He has the further advantage of being the true first discoverer. In the absence of patent protection Rumpelstiltskin would be unlikely to disclose his secret incantation and method of spinning gold. He could produce his gold in secret to protect his interests. Since state trade secret laws are not preempted by the patent laws of the United States,<sup>22</sup> Rumpelstiltskin could even contractually ensure that any employees maintained his secret. This would contravene the Patent Act policy of encouraging disclosure of trade secrets.

In *Kewanee Oil Co. v. Bicron Corp.*, the Supreme Court held that state trade secret law was not preempted by the federal patent laws.<sup>23</sup> Trade secret law was deemed inadequate competition with patent law to interfere with the disclosure of useful innovations.<sup>24</sup> In the case of those who nonetheless chose trade secret over patent protection, the Court reasoned that others would independently make the same discovery or invention soon enough.<sup>25</sup> However, as noted by the dissent, allowing trade secret protection as a substitute for patent protection creates a category that receives greater protection—those whose secrets can be maintained after commercialization.<sup>26</sup> Rumpelstiltskin's discovery would fall into this category. Whether or not trade secret protection should be eliminated with respect to his invention is another question. However, patent protection seems an appropriate incentive to promote the disclosure of Rumpelstiltskin's method and incantation. Society would gratefully exchange a limited monopoly to Rumpelstiltskin for disclosure of his previously unknown method of creating gold. The promise of inexpensive and plentiful gold in the future would be a bargain in exchange for the gamble that another would discover the method and incantation soon enough.

The naturally occurring chemical that cures cancer is perhaps the most obvious candidate for patentability under the "promotion of useful arts" criterion. Mankind's search for a cure to cancer has been both

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22. "The only limitation on the States is that in regulating in the area of patents and copyrights they do not conflict with the operation of the laws in this area passed by Congress . . . ." *Kewanee Oil*, 416 U.S. at 479.

23. *Id.*

24. *Id.*

25. *Id.* at 490-91.

26. *Id.* at 497 n.2 (Douglas, J., dissenting).

exhaustive and expensive. The discovery of a cure would advance our technology and (like the sea-water engine) perhaps lead to other beneficial uses of the chemical through further experimentation. The loss of life caused by cancer would make the exchange of a limited monopoly for the cure a bargain.

An inherent difference between discovery and invention is that we discover what previously existed. For example, the chemical in the Siberian berry always was the cure for cancer. This was simply unknown before our patent applicant discovered it. It has been argued that patenting pre-existing subject matter violates the Constitution's patent clause because it removes technology from the public domain, thereby retarding, rather than promoting, the useful arts.<sup>27</sup> While this may be true if items, existing and known, were patentable, it is not true when items, though existing, are unknown. If the public domain includes unknown subject matter then everything that may someday be invented, devised, or discovered belongs to that domain. Even the most ingenious contrivance is assembled from elements in the public domain. To grant a limited monopoly over something society did not realize it had deprives society of nothing. To say that we deprive society of a chemical that cures cancer, when society did not know of the chemical, or its curative power, is form over substance.

Discoveries can meet the constitutional purpose of promoting progress in the useful arts.<sup>28</sup> Patent protection can provide encouragement for individuals to invest time and resources in making discoveries. Finally, withholding patent protection may retard progress in the useful arts as discoverers are left with no alternative to the non-disclosure of trade secret protection.

## II. THE PATENT ACT

The Constitution authorizes Congress to promote progress in the useful arts. The mechanism of this promotion is the Patent Act. Congress

27. E. S. M. Kemeny, *Computers and Non-Patentable Matter: Rejections under Article I of the Constitution*, 74 J. PAT. TRADEMARK OFF. SOC'Y 669 (1992).

28. A discovery can meet the constitutional goal of furthering human knowledge to the same or greater extent than an invention. Note for example that the "invention" of the illuminated hula hoop, Patent Number 4,006,556, was patentable while the "discovery" that ether could be used as a surgical anesthetic was not. *Morton v. N.Y. Eye Infirmary*, 17 F. Cas. 879 (No. 9865) (1862).

implemented its constitutional authorization in the second session of the First Congress by enacting the Patent Act of 1790.<sup>29</sup> A patent system has existed in our country ever since. In 1952 Congress codified the act and that codification remains largely unchanged today.<sup>30</sup> This Comment argues that the distinction of unpatentable discoveries is a judicial doctrine. Therefore, we begin by setting aside the case law and analyzing our hypotheticals based solely on the provisions of the Patent Act and such legislative history as accompanies it.<sup>31</sup>

*A. Section 101 Criteria: Statutory Subject Matter, Inventions or Discoveries Patentable*

Section 101 of the Patent Act is entitled "Inventions Patentable."<sup>32</sup> However, section 100 states that "[t]he term 'invention' means invention or discovery."<sup>33</sup> Section 101, "Inventions [or discoveries]<sup>34</sup> patentable" provides: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."<sup>35</sup> Breaking down these criteria of section 101 of the Patent Act, (1) the applicant must have invented or discovered something, and (2) the something invented or discovered must be "any new and useful process, machine, manufacture, or composition of matter."<sup>36</sup>

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29. Patent Act of 1790, ch. 7, 1 Stat. 109 (repealed 1793).

30. 35 U.S.C. §§ 1-376 (West 1988).

31. Much of the legislative history will come from the Congressional Reports accompanying the 1952 Patent Act, United States Code Title 35, which is still in effect. S. REP. NO. 1979, 82d Cong., 2d Sess. 5 (1952); H. R. REP. No. 1923, 82d Cong., 2d Sess. 6 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394 [hereinafter 1952 Report]. The 1952 Act rearranged existing statutory provisions, codified many decisions of the courts and the PTO, and also made several changes and additions to the previous patent provision. CHISUM, *supra* note 13, OV-12.

32. 35 U.S.C. § 101 (West 1988).

33. Under the heading "Definitions," the Patent Act states: "When used in this title unless the context otherwise indicates—(a) The term 'invention' means invention or discovery." 35 U.S.C. § 100 (West 1988).

34. The section 100 paragraph, defining invention as invention or discovery, was added "only to avoid repetition of the phrase 'invention or discovery' and its derivatives throughout the revised title." 35 U.S.C. § 100. For the sake of clarity and to avoid any assumption that discovery is not included in the Patent Act's provisions, the phrase "invention or discovery" will be repeated throughout this Comment.

35. 35 U.S.C. § 101. The 1952 Report accompanying the Patent Act states that § 101 "specifies the type of material which can be the subject matter of a patent." 1952 Report, *supra* note 31, at 2398.

36. 35 U.S.C. § 101. Section 101 also allows a patent for any new and useful improvement and subjects the patent grant to the conditions and requirements of Title 35. *Id.*



Under criterion (1), have our hypothetical patent applicants invented or discovered something? To invent is "to search out or come upon: FIND, DISCOVER . . . to think up or to imagine . . . to create or produce for the first time."<sup>37</sup> As for our explorer of Atlantis, while someone from Atlantis, or elsewhere, thought up and created the engine for the first time, our explorer did come upon the engine. She discovered it. To discover is "to make known (something secret, hidden, unknown, or previously unnoticed): EXPOSE, DISCLOSE . . . to obtain for the first time sight or knowledge of . . ."<sup>38</sup> The engine was previously hidden and unknown and our explorer seeks to make known her discovery under the limited protection provided by the patent clause. She discovered<sup>39</sup> the engine.

If "patent harmonization" legislation were passed, the question of a previous Atlantis inventor would be moot. Such legislation includes provisions to change the patent system from "first to invent [or discover]" to "first to file."<sup>40</sup> The impetus for this change was to harmonize our system with the rest of the world and take advantage of a simplified examination procedure.<sup>41</sup> Since our explorer discovered the engine independently, her discovery would be patentable, provided she was the first person to file an application.

The same analysis holds for both Rumpelstiltskin and Ipso Facto Pharmaceuticals, absent the potential difficulty that they were not the first to discover. They both seek to make known that of which they were first to obtain knowledge.

The second criterion, that the something invented or discovered must be "any new and useful process, machine, manufacture, or composition of matter," could be further subdivided to require the something invented or discovered be new, be useful, and be any process, machine, manufacture, or composition of matter. However, section 102 of the Patent Act,

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37. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE UNABRIDGED 1188 (Philip B. Grove et al. eds., 1986) [hereinafter WEBSTER'S].

38. *Id.* at 647.

39. She has invented the engine as well, so far as invent is defined to include discover.

40. Edward L. MacCordy, *The Threat of Proposed Patent Law Changes to the Research University*, 20 J.C. & U.L. 295, 296 (1994) (discussing the effect of a change to "first to file" on research universities).

41. *Id.*

defining statutory novelty, amplifies and defines the requirement that something be new:<sup>42</sup>

Paragraph (a) [of section 102] defines the condition that an invention must be new in order to be patentable. The word "invent," as used in section 101, for example, does not incorporate "new" within its meaning, but novelty is a separate requirement. The novelty required is not novelty in an absolute sense, as the statute defines what is to be looked to in order to show that an invention is not new.<sup>43</sup>

Since section 102's novelty condition defines "new" as used in section 101, and section 101's term "invention" does not incorporate "new" in its meaning, the requirement that the machine, manufacture, process, or composition of matter be new, is wholly and exclusively examinable under section 102.<sup>44</sup> As for utility, while the Patent Act does not further amplify or define the requirement that the something be useful, with some notable exceptions,<sup>45</sup> this requirement is generally easily met, as it is with our hypotheticals.

Section 101 therefore requires only that the subject matter be invented or discovered and be any "process, machine, manufacture, or composition of matter."<sup>46</sup> We can classify the sea-water engine as either a machine or a manufacture. A machine is "an assemblage of parts," "a mechanical device."<sup>47</sup> The engine is a mechanical device assembled from parts, and, therefore, it is a machine. A manufacture is "something

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42. 1952 Report, *supra* note 31, at 2399.

43. P. J. Federico, Commentary on the New Patent Act, 35 U.S.C.A. §§ 1-291 (West 1954), reprinted in 75 J. PAT. OFF. SOC'Y 161, 178 (omissions in original). Mr. Federico was the chief examiner of the Patent Office and a principal draftsman of the 1952 recodification. His statements regarding the 1952 act have been cited with approval by the Supreme Court. See *Diamond v. Chakrabarty*, 447 U.S. 303, 309 n.6 (1980).

44. While this analysis stands alone on the statute and legislative history it has also been upheld by the courts. "Of the three requirements stated in § 101, only two, utility and statutory subject matter, are applied under § 101. [I]n 1952 Congress voiced its intent to consider the novelty of an invention under § 102 where it is first made clear what the statute means by 'new,' notwithstanding the fact that this requirement is first named in § 101." *In re Bergy*, 596 F.2d 952, 961 (C.C. P.A. 1979). "The question therefore of whether a particular invention is novel is 'wholly apart from whether a particular invention falls into a category of statutory subject matter.'" *Diamond v. Diehr*, 450 U.S. 175, 190 (1981) (quoting *In re Bergy*, 596 F.2d at 961).

45. See Salim A. Hasan, *A Call for Reconsideration of the Strict Utility Standard in Chemical Patent Practice*, 9 HIGH TECH L.J. 245 (1994) (addressing the difficulties of meeting the utility requirement in chemical research claims and arguing for a more liberal interpretation of chemical utility); and Tim R. Howe, *Patentability of Pioneering Pharmaceuticals: What's the Use?*, 32 SAN DIEGO L. REV. 819 (1995) (arguing that the utility requirement makes patenting of research discoveries difficult).

46. 35 U.S.C. § 101.

47. WEBSTER'S, *supra* note 37, at 1353.

made from raw materials by hand or by machinery."<sup>48</sup> The engine is made from raw materials by hand or machinery, and, therefore, it is a manufacture. The engine meets the criteria of section 101 and is patentable, "subject to the conditions and requirements of [the Patent Act]."<sup>49</sup>

Rumpelstiltskin's discovery is a "process" of spinning straw into gold utilizing a secret incantation. The Patent Act defines process as "process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material."<sup>50</sup> Rumpelstiltskin seeks to patent a new use (creating gold from straw) by means of a known process (spinning). This is explicitly defined as a process under the Patent Act.<sup>51</sup>

The naturally occurring chemical is not a "process, art or method" since it is the chemical itself that we desire to patent. Is it made from raw materials by hand or machinery and, therefore, a manufacture? "Made" is defined as "artificially produced"<sup>52</sup> and "to produce" is "to bring forward."<sup>53</sup> Since the chemical is artificially brought forward from raw materials (the berry) by hand or machinery it is a manufacture.

The chemical could also be classified as a composition of matter. A composition is "an aggregate, mixture, mass, or body formed by combining two or more elements or ingredients."<sup>54</sup> The question is what "combining" requires. If the combining must be accomplished by the inventor/discoverer, then the naturally occurring chemical is not a composition of matter. However, if "combining" does not require action by the inventor/discoverer, then the chemical is a composition of matter since it is an aggregate, mixture, mass, or body formed by the combining of elements (molecules combined by nature). To determine whether the

48. *Id.* at 1378.

49. 35 U.S.C. § 101.

50. 35 U.S.C. § 100(b).

51. *Id.* The new use does not make the spinning wheel itself patentable, rather the process that utilizes the incantation and the spinning wheel to create straw from gold is patentable, provided the conditions of patentability are satisfied. See Federico, *supra* note 43, at 176-177. "[A process] claim is not vulnerable to attack, on the ground of not being within the field of patentable subject matter, merely because it may recite steps conventional from a procedural standpoint and the novelty resides in the recitation of a particular substance, which is old as such, used in the process." *Id.* at 177.

52. WEBSTER'S, *supra* note 37, at 1356.

53. *Id.* at 1810.

54. *Id.* at 466.

naturally occurring chemical can be classified as a composition of matter, we must determine whether the legislature intended this term to be construed narrowly or broadly.<sup>55</sup>

In 1790, the first patent act listed patentable subject matter as “any useful art, manufacture, engine, machine, or device . . . [deemed] sufficiently useful and important.”<sup>56</sup> The 1793 Patent Act changed the categories of patentable subject matter to “any art, machine, manufacture, or composition of matter” and deleted the importance requirement.<sup>57</sup> Composition of matter replaced engine or device. The legislative history surrounding this change is scarce. A logical assumption is that engine and device were deleted since they were encompassed within the machine and manufacture categories; composition of matter was inserted as an additional category of patentable subject matter.

The categories of patentable subject matter have remained unchanged, with the exception of replacing the word “art” with “process” in the 1952 codification.<sup>58</sup> To determine the proper scope to be given “composition of matter” we look to the framer’s patentability statements.

The framers of the acts stressed the importance of the invention or discovery, rather than the categories of patentable subject matter. Jefferson’s concern was with a high standard of invention or discovery; he did not believe in granting patents for small details, obvious improvements, or frivolous devices.<sup>59</sup> Jefferson wrote: “Being an instrument in granting the patents, I am acquainted with their discoveries. Many of them indeed are trifling, but there are some of great consequence . . . .”<sup>60</sup> The framers were not concerned with whether the invention or discovery fit into a narrow statutory class of subject matter. They sought to provide monopoly protection for those inventions and

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55. An argument could be made that the categories of patentable subject matter (machine, manufacture, process, and composition of matter) were not meant to be exclusive at all, but were rather a “laundry list” of possible categories of patentable subject matter. While this has been overwhelmingly rejected by the courts, CHISUM, *supra* note 13, § 1.01, it has at least been argued that adoption of a system of non-exclusive classes of patentable subject matter would further the constitutional objective of furthering the progress of useful arts. Margaret E. Anderson, *Statutory Subject Matter in Intellectual Property: Application of the Copyright Scheme to the Patent System*, 20 S. TEX. L.J. 161 (1979).

56. Patent Act of 1790, ch. 7, 1 Stat. 109, 110 (repealed 1793).

57. Patent Act of 1793, 1 Stat. 318 (repealed 1794).

58. 35 U.S.C. § 101. The term “art” as previously used in the Patent Act was interpreted as practically synonymous with process or method. 1952 Report, *supra* note 31, at 2398. Therefore “process” (defined to mean process, art, or method in § 100) is used to avoid confusion with the different meanings of the word “art” elsewhere in the statute and the words “useful art” in the Constitution. *Id.*

59. *Outline*, *supra* note 5, at 67.

60. *Id.*

discoveries that met the constitutional purpose of the Patent Act.<sup>61</sup> In 1790, the requirement that the invention or discovery be “sufficiently useful and important”<sup>62</sup> met the framers concern. Today, the Patent Act’s requirements of utility, novelty, and non-obviousness ensure that the constitutional purpose is met. A narrow reading of the statutory classes of subject matter is unnecessary to meet this constitutional purpose.

That the “composition of matter” category should be interpreted broadly is also evidenced by the Congressional Report accompanying the 1952 Patent Act. That Report stated: “A person may have ‘invented’ a machine or manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.”<sup>63</sup> The report refers to invented machines and manufactures, and defines their patentability broadly to include “anything under the sun that is made by man.”<sup>64</sup> Since the report defines two of the four classes of statutory subject matter broadly, the indication is that the other two should be broadly defined as well.

Further, since compositions of matter and processes are not mentioned in the report, they should not be restricted by the “made by man” criterion. The report refers to invented machines and manufactures. While machines and manufactures are typically both man-made and invented, the same is not true for processes and compositions of matter. A process need not be made; it can be a means to an end.<sup>65</sup> We grow

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61. Information about the subject matter of early patents is sketchy because the records of the patent office were destroyed in the fire of 1836. *Outline, supra* note 5, at 71. However, some of the patents granted under the 1790 act evidence that the subject matter of patents was not constrained by rigid categorization. The first patent was granted to Samuel Hopkins in 1790 for “Making Pot and Pearl Ashes.” *Id.* at 71. Another 1790 patent was granted to Oliver Evans for use of an Archimedian screw for conveying grain or meal, despite the fact that the Archimedian screw had been used for centuries to convey water. *Id.* at 73.

62. Patent Act of 1790, 1 Stat. 109, 110 (repealed 1793). The sufficiently useful and important requirement was deleted in the 1793 draft. This made the granting of a patent merely a clerical matter. *Outline, supra* note 5, at 81. The 1836 Patent Act, on which the patent laws of today are based, required the application show novelty and utility.

63. 1952 Report, *supra* note 31, at 2399.

64. *Id.*

65. ARTHUR A. MILLER & MICHAEL A. DAVIS, *INTELLECTUAL PROPERTY: PATENTS, TRADEMARKS, AND COPYRIGHT IN A NUTSHELL* § 2.3 (2nd ed. 1990).

old via the aging process. Also, unlike machines and manufactures, processes are as likely to be discovered as they are to be invented.<sup>66</sup> Similarly, a composition of matter may be composed without the aid of a person. All but the tiniest subatomic particles are compositions of matter. Many such compositions are discovered and not invented. If the 1952 Report is to be accepted as a basis for interpreting patentable subject matter, then its “anything under the sun that is made by man” language does not stand as a bar to patenting naturally occurring processes or compositions of matter. Since a composition of matter need not be made by a person, the naturally occurring chemical that cures cancer may be properly classified as a composition of matter as well as a manufacture. The broad definitions of patentable subject matter set forth in section 101 of the Patent Act are constrained only by the conditions and requirements of patentability set forth in the rest of the Patent Act.

### *B. Conditions and Requirements for Patentability*

Section 101 specifies patentable subject matter. Sections 102 and 103 impose conditions and requirements for patentability.<sup>67</sup> Both sections

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66. Deviating from the premise that case law will not be used in this Section, it nonetheless seems important to include a quotation from *Diamond v. Diehr*: “A new process is usually the result of discovery; a machine, of invention.” 450 U.S. 175, 182 n.7 (1981) (quoting *Corning v. Burden*, 15 How. 252, 267-68 (1854)).

67. § 102 states: “A person shall be entitled to a patent unless [the patent is not novel or the person is barred from patenting the subject matter by having made public use of it for over one year].” 35 U.S.C. § 102. § 103 states: “A patent may not be obtained . . . if [what is sought to be patented is obvious from what existed before].” 35 U.S.C. § 103. The text of sections 102 and 103 is as follows:

§ 102 Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless—

(a) the invention [or discovery] was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention [or discovery] thereof by the applicant for patent, or

(b) the invention [or discovery] was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or

(c) he has abandoned the invention [or discovery], or

(d) the invention [or discovery] was first patented or caused to be patented, or was the subject of an inventor’s certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor’s certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention [or discovery] was described in a patent granted on an application for patent by another filed in the United States before the

are exclusionary as they set forth conditions that preclude patentability.<sup>68</sup>

### 1. *The Novelty Condition*

Section 102(a) denies a patent if "the invention [or discovery] was known or used by others in this country, or patented or described in a printed publication . . ."<sup>69</sup> Since our hypothetical discoveries were neither known or used by others in this country, nor previously patented or described in a publication before their discovery, section 102(a) does not require rejection of the patent application.<sup>70</sup> Since they were not in public use or on sale in this country more than one year prior to the date of the patent application, section 102(b) is not a statutory bar.<sup>71</sup> The only section 102 criterion that may be problematic to patentability is section 102(f). Section 102(f) requires rejection of a patent application if the applicant "did not himself invent the subject matter sought to

invention [or discovery] thereof by the applicant for patent, or an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent [or discover] the subject matter sought to be patented, or

(g) before the applicant's invention [or discovery] thereof the invention [or discovery] was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention [or discovery] there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

#### § 103 Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention [or discovery] is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought 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 [or discovery] was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35 U.S.C. §§ 102, 103.

68. *Id.*

69. 35 U.S.C. § 102(a).

70. Rumpelstistskin's process is not the old process of spinning which would obviously be non-novel. The patentable process is the application of the incantation to the spinning of straw in order to create gold.

71. 35 U.S.C. § 102(b).

be patented.”<sup>72</sup> However, section 100 states the term “invention” means “invention or discovery” throughout the Patent Act; and this abbreviation also applies to derivatives of the word “invention.”<sup>73</sup> The patent applicants in the hypotheticals did discover the subject matter sought to be patented so the patent application cannot be rejected under section 102(f). The hypotheticals meet the novelty requirements of section 102 and, *a fortiori*, the “new” requirement of section 101.<sup>74</sup>

## 2. *The Non-Obvious Condition*

The non-obvious condition of section 103 requires rejection of a patent if the differences between it and prior art would have been obvious to a person of ordinary skill in the art.<sup>75</sup> Prior art refers both to documentary sources (patents and publications) and non-documentary sources (things known, used or invented in the United States).<sup>76</sup> The Patent Act of 1952 added section 103 to codify decisions holding patents invalid, on grounds of lack of invention or lack of patentable discovery.<sup>77</sup> Section 103 requires denial of a patent for an invention (or discovery) that is new, in the sense that the same thing has not been made before, if the difference between the new thing and what was known before it is not sufficiently great to warrant a patent.<sup>78</sup>

In the first hypothetical, the secrets of propulsion disclosed by the seawater engine were not obvious to those skilled in the art (engineers, mechanics) in view of any prior art. Likewise, prior art in pharmaceuticals or botany would not lead a skilled person to the curative properties of the naturally occurring chemical. Similarly, Rumpelstiltskin must establish that his process of spinning straw into gold is not obvious to those skilled in the art of spinning. The fact that Rumpelstiltskin introduces straw and the secret incantation to the process, whereby a new result is achieved, makes the process non-obvious.

## C. *The Patent Application*

Having met the conditions of patentability for invention or discovery, the patent application must be addressed. A patent application requires

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72. 35 U.S.C. § 102(f).

73. 35 U.S.C. § 100.

74. See *supra* text accompanying notes 42-44 for discussion of why the § 101 “new” requirement is fully addressed under § 102.

75. 35 U.S.C. § 103.

76. CHISUM, *supra* note 13, at GI-18.

77. 1952 Report, *supra* note 31, at 2399; 35 U.S.C. § 103, Historical and Revision notes.

78. 1952 Report, *supra* note 31, at 2399.



a specification, a drawing, and an oath by the applicant stating his or her belief that he or she is the original and first inventor or discoverer.<sup>79</sup> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same . . ." <sup>80</sup> Since a patent is an inventor's or discoverer's reward for disclosing his or her invention or discovery to the public, he or she must provide the public with the means to make use of the invention or discovery after the patent expires.

The specification concludes with one or more claims that particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.<sup>81</sup> The claims define the invention or discovery for the purposes of applying the conditions of patentability and the breadth and limits of the patent.<sup>82</sup>

The engine application in the first hypothetical would specify the secret of propulsion and instructions for harnessing that power in an engine. The claims would cover the engine as a whole, as well as any subassemblies or parts that also met the requirements of utility, novelty, non-obviousness, and statutory subject matter. Rumpelstiltskin would specify the process of spinning straw into gold by use of a spinning wheel and the secret incantation (which he must disclose). He would claim a method of producing straw from gold comprising a spinning wheel (or other like machine) and the incantation. This claim would not give Rumpelstiltskin exclusive rights to spinning wheels, straw, or gold. He would only be able to enforce his patent against someone who used a spinning wheel and the incantation to produce gold from straw.

Ipso Facto Pharmaceuticals would claim the chemical, when used as a cancer cure as the subject matter of the invention or discovery.<sup>83</sup> The patent would give it an exclusive right to produce, market, and sell the chemical for this purpose. The patent application would therefore

79. 35 U.S.C. § 111 (West 1988). A model of the patented subject matter may also be required. 35 U.S.C. § 114 (West 1988). While the discoverer of the sea-water engine is not technically the first discoverer—the original inventor also discovered the engine—in terms of our civilization he would be first.

80. 35 U.S.C. § 116 (West 1988).

81. *Id.*

82. CHISUM, *supra* note 13, § 8.01.

83. While Ipso Facto is not the inventor/discoverer of the cancer cure we assume that it is the beneficiary of an assignment agreement with its employee discoverer. Such agreements are authorized under 35 U.S.C. § 261 (West 1988).

specify the genus and species of the plant that produces the berry, the berry that contains the chemical, and the molecular structure of the chemical which cures cancer.<sup>84</sup> It should be noted that the claim would not preempt others from using the plant or its berries for other purposes. Only the claimed use of the berry's naturally occurring chemical for the purpose of curing cancer would be protected. After setting forth the claims, specifications, and drawings, the Patent Trade Office would examine the applications, and in view of the utility, novelty and non-obviousness of the discoveries, issue the patents.

### III. THE "REQUIREMENT OF INVENTION"

The analysis above referred only to the Constitution, the Patent Act, and their legislative histories. My clients (and my malpractice insurer) would surely be disappointed if I did not examine the case law of patentable discoveries as well. The relevant case law begins with an early Supreme Court case that made discoveries subservient to inventions by creating a "requirement of invention."<sup>85</sup> The "requirement of invention" was originally announced in *Hotchkiss v. Greenwood*.<sup>86</sup> The novelty of the *Hotchkiss* patent involved the substitution of materials—porcelain or clay for wood or metal in doorknobs.<sup>87</sup> In the majority opinion, Justice Nelson acknowledged that the patented doorknob was better and cheaper than its predecessors; but the improvement did not result from any new mechanical device or contrivance.<sup>88</sup> The Court then laid down the rule that 120 years later became the essence of section 103: "[U]nless more ingenuity and skill . . . were required [in making the invention] 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."<sup>89</sup> In *Graham v. John Deere Co.*,<sup>90</sup> the Court addressed the *Hotchkiss* "requirement of invention" and section 103. The *Graham* Court noted that *Hotchkiss* "gave birth to 'invention' as a word of legal art signifying patentable inventions."<sup>91</sup> The application of this "word

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84. *Id.*

85. *Hotchkiss v. Greenwood*, 11 How. 248 (1850).

86. *Id.*

87. *Id.* at 265. In *Graham v. John Deere Co.*, the Court noted that one of the rules of the original patent board of Commissioners was that "a change of material should not give title to a patent." 383 U.S. 1, 10 n.3 (1966) (quoting from a Thomas Jefferson letter to Oliver Evans).

88. *Hotchkiss*, 11 How. at 266.

89. *Id.* at 267. Compare this quotation to 35 U.S.C. § 103.

90. 383 U.S. 1 (1966).

91. *Id.* at 11.

of legal art," however, had brought about varied opinions of its meaning.<sup>92</sup> The "requirement of invention" was used to hold patents to an "exacting" standard of invention.<sup>93</sup> Post *Hotchkiss* patents were invalidated if they did not result from "a flash of creative genius,"<sup>94</sup> or did not produce "unusual or suprising consequences from the unification of elements . . . ."<sup>95</sup> The "requirement of invention" invalidated patents for many discoveries that were not inventions.<sup>96</sup> However, as clarified by the *Deere* Court, the *Hotchkiss* test, codified under section 103, is not a test of whether the subject matter was invented rather than discovered but merely focuses the inquiry on the non-obviousness of the subject matter.<sup>97</sup>

#### IV. THE CASE LAW OF PATENTABLE DISCOVERIES

The statutory subject matter of utility patents<sup>98</sup> consists of product claims (machine, manufacture, composition of matter) and process claims.<sup>99</sup> In the hypotheticals set forth above, Rumpelstiltskin's method of spinning straw into gold utilizing a secret incantation is a process claim, while the propulsion machine that runs on sea-water and the chemical found in Siberian berries that cures cancer are product claims.<sup>100</sup> This Section looks at the treatment of discoveries by the courts and the Patent Trade Office and analyzes the hypotheticals under these precedents.

92. *Id.* at 12.

93. *See, e.g.,* *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 154 (1950).

94. *Cuno Engineering Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941).

95. *Great Atlantic & Pacific Tea Co.*, 340 U.S. at 152.

96. *Cuno Engineering Corp.*, 314 U.S. 84; *Great Atlantic & Pacific Tea Co.*, 340 U.S. 147; *see also* cases *infra* Section IV.

97. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). The Court did not believe § 103 changed the general level of patentable invention—only that it properly focused the inquiry on the non-obviousness of the subject matter. *Id.*

98. Utility patents are patents for machines, manufactures, process, compositions of matter, or any improvement thereon. The Patent Act also provides patent protection for designs and for plant varieties. CHISUM, *supra* note 13, § 1.01 at 1-7. This Comment focuses exclusively on utility patents.

99. *Id.* § 1.02 at 1-8.

100. "A 'process' can be defined as a means to an end. The remaining three categories (machine, manufacture, or composition of matter) can be defined as ends in themselves—'products.'" MILLER & DAVIS, *supra* note 65, at 21.

### A. Discovered Processes

The first set of cases deal with the discovery of processes. The patentee seeks to patent a process that utilizes a discovered property or principle to produce a desired result. The cases are analogous to Rumpelstiltskin's discovery.

#### 1. *In re Kemper*<sup>101</sup>

The case of *In re Kemper* concerned a patent application that, in its specification, disclosed the discovery that ice could be kept longer if the pieces were stored edgewise, rather than flat.<sup>102</sup> The applicant sought to patent this method of edgewise storage.<sup>103</sup> The patent commissioner denied the patent and on appeal the circuit court affirmed. The court reasoned that ice had been placed edgewise by others and questioned whether the beneficial effect of such placement, now discovered, was patentable. The *Kemper* court began by comparing Webster's definition for both discovery and invention:

Discover differs from invent. We discover what before existed. We invent what did not before exist . . . . Invention differs from discovery. Invention is applied to the contrivance and production of something that did not before exist. Discovery brings to light that which existed before, but which was not known.<sup>104</sup>

The court then held the Constitution and patent laws did not use discovery in this broad sense, to include disclosure of things which existed previously.<sup>105</sup> Patentable discovery was synonymous with invention.<sup>106</sup> The Court stated: "No discovery will entitle the discoverer to a patent which does not in effect amount to the contrivance or production of something which did not exist before; or, in other words, to an invention."<sup>107</sup> The beneficial effect of placing ice blocks edgewise was not a patentable contrivance or production. This holding was both erroneous and unnecessary. Rather than broadly holding that

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101. *In re Kemper*, 14 F. Cas. 286 (C.C. D. of C. 1841) (No. 7,687).

102. *Id.*

103. *Id.*

104. *Id.* at 287.

105. *Id.* at 286.

106. *Id.*

107. *In re Kemper*, 14 F. Cas. 286, 288 (C.C. D. of C. 1841) (No. 7,687). The prevalence of this judicial penchant for equating patentable discovery to invention is reflected by a leading patent treatise that includes this quotation. ANTHONY W. DELLER, WALKER ON PATENTS § 10 at 36 (Deller's ed. 1937) (citing *In re Kemper*, F. Cas. No. 7,687).

discoveries that are not inventions are not patentable, the court could have denied the patent on novelty grounds, the fact that others had placed ice blocks edgewise (even without realizing the beneficial effect), meant the claimed method was not new.

## 2. *Le Roy v. Tatham*<sup>108</sup>

In *Le Roy v. Tatham*, the patentees discovered that lead could be wholly reunited after separation, and formed into pipe by introducing heat and extreme pressure.<sup>109</sup> This property of lead was never before known and had been believed impossible.<sup>110</sup> The utility of the resultant product was attested to by the fact that the "product was so much superior in quality to that made according to the old mode, that it immediately wholly superseded it in the market."<sup>111</sup> What the patentees claimed as their invention and improvement was not any of the parts of the machinery but the combination of parts, when used to form pipes of metal.<sup>112</sup> It was on this claim that the patent fell. The circuit court instructed the jury that the invention "did not consist in the novelty of the machinery, but in bringing a newly discovered principle into practical application . . ."<sup>113</sup> The Supreme Court disagreed, requiring novelty in the claimed combination of parts.<sup>114</sup> Through strict construction of the claim the court did not reach the question of whether the new property of lead might have been patented.<sup>115</sup>

108. 55 U.S. (14 How.) 156 (1852).

109. *Id.*

110. *Id.* at 178 (Nelson, J., dissenting).

111. *Id.*

112. *Id.* at 172.

113. *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 174 (1852).

114. *Id.* at 177. In dissent, Justice Nelson, joined by Justices Wayne and Grier, criticized the finding that the new property of lead had not been claimed. *Id.* at 179 (Nelson, J., dissenting). Justice Nelson concluded that "the claim, in this case, is not simply for the apparatus employed

. . . but for the [use] of the newly-discovered property in the metal, and the practical adaption of it, by these means, to the production of a new result. . . ." *Id.* at 183 (Nelson, J., dissenting). He went on to conclude that such a result should be patentable and to hold otherwise would unjustifiably grant a patent to the "mechanic" who applied a well-known principle to produce a new and practical result while denying a patent to the "inventor" who, in addition, discovered the principle. *Id.* at 179 (Nelson, J., dissenting).

115. *Id.* at 177.

The lack of novelty in *Le Roy* was much more tenuous than in *In re Kemper*. Lead had not been reunited by others who had merely failed to realize the beneficial effect. Yet the discovery of this new property was not enough, the patentee was also required to devise a novel method of implementation. As pointed out in the *Le Roy* dissent, this approach places the emphasis on the mechanic who tinkers with the process rather than the true discoverer who discloses the principle.<sup>116</sup> The patentee in *LeRoy* discovered a property in lead and utilized his discovery to achieve a new and useful result. The patent was not upheld because the method of implementation claimed a non-novel combination of parts.<sup>117</sup>

### 3. Morton v. New York Eye Infirmary<sup>118</sup>

While the claims set forth in the cases above were unpatentable on grounds other than discovery, *Kemper* for lack of novelty and *Le Roy* for an improper claim, the denial of patent protection in *Morton v. New York Eye Infirmary* rested solely on unpatentable discovery. In 1862, Dr. Morton sued for infringement of his patented discovery that ether could be used as a surgical anesthetic.<sup>119</sup> Dr. Morton's discovery was ranked among the great discoveries of modern times and he was deemed among the greatest benefactors of mankind.<sup>120</sup> Nevertheless, his discovery was deemed to be improper subject matter for a patent and the patent was held invalid.

Ethers and their intoxicating effect on the nervous system were well known at the time of Dr. Morton's discovery.<sup>121</sup> Therefore, the discovery that the inhalation of ether produced total immobility and insensibility to pain was merely "a naked discovery of a new effect, resulting from a well-known agent, working by a well-known process."<sup>122</sup> As such "[i]t was clearly not the discovery or invention of an 'art,' or 'machine,' or 'manufacture,' or 'composition of matter.' Nor

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116. *Id.* at 186 (Nelson, J., dissenting). "No Prometheus is welcome in the Patent Office." *Schering Corp. v. Gilbert*, 153 F.2d 428, 435 (2d Cir. 1946) (Frank, J., dissenting in part). "It is indeed something of a paradox, but, nevertheless, doubtless wise, that our patent law gives no reward to the discoverers of scientific principles, while it protects the discoveries and inventions of lesser minds, who find new, original and useful applications of such principles." *Id.* Note that in *Le Roy*, and *Morton*, which follows, the discoverer of the principle also found a new, original and useful application and was still denied a patent.

117. *Le Roy*, 55 U.S. at 177.

118. 17 F. Cas. 879 (C.C.S.D.N.Y. 1862) (No. 9,865).

119. *Id.*

120. *Id.* at 883.

121. *Id.* at 882.

122. *Id.* at 883.

was it an 'improvement' on any one of the last three."<sup>123</sup> In the words of the court, patentable discovery depends on invention.<sup>124</sup>

In its naked ordinary sense, a discovery is not patentable. A discovery of a new principle, force, or law operating, or which can be made to operate, on matter, will not entitle the discoverer to a patent. It is only where the explorer has gone beyond the mere domain of discovery, and has laid hold of the new principle, force, or law, and connected it with some particular medium or mechanical contrivance by which or through which, it acts on the material world, that he can secure the exclusive control of it under the patent laws.<sup>125</sup>

The patent claim in *Morton* was for an improvement in the art of surgery. The court, however, insisted upon separating the discovery from its use, and was thereby left with an old and unpatentable process of inhaling vapor.<sup>126</sup> The court went on to say "[t]hat this mere discovery, however novel and important, is not patentable, needs neither argument nor authority to prove."<sup>127</sup>

Dr. Morton claimed the application of ether as an improvement in the art of surgical operations. This application of ether had not been previously utilized. The discovery was a new, useful, and non-obvious advancement in the useful arts. As the discovery of a "practical method or means of producing a beneficial result," it was a process.<sup>128</sup> The claim, however, was bifurcated by the court. The discovery of ether's beneficial effect was not an art, machine, manufacture, or composition of matter or an improvement thereon, and the process of administering ether (inhalation) was not novel. As a result, the discovery of ether's beneficial effects in surgical procedures went unrewarded by the patent system. Presumably, should Dr. Morton (or some future "mechanic")

123. *Morton v. New York Eye Infirmary*, 17 F. Cas. 879, 882 (C.C.S.D.N.Y. 1862) (No. 9,865).

124. *Id.* at 881, 882.

125. *Id.* at 881.

126. *Id.* at 883.

127. *Id.* at 882. This Comment reminds the author of a statement made by Judge Kozinski, of the Ninth Circuit Court of Appeals, during a visit to the University of San Diego School of Law. Judge Kozinski remarked that one should beware opinions stating that their assertions are clear or obvious, as this usually indicates that they are neither and that no support for them can be found.

128. "It is for the discovery or invention of some practicable method or means of producing a beneficial result or effect, that a patent is granted, and not for the result or effect itself. It is when the term process is used to represent the means or method of producing a result that it is patentable, and it will include all methods or means which are not effected by mechanism or mechanical combination." *Corning v. Burden*, 56 U.S. (15 How.) 252, 268 (1853).

“invent” some novel contrivance for administering the ether, a patent could be issued for that method.

#### 4. Eames v. Andrews (*The Driven Well Cases*)<sup>129</sup>

In 1887, the Supreme Court decided *The Driven Well Cases*. The patent at issue was the process of constructing wells by driving the well tube through the ground and into the water below without removing the earth as was done in the dug or bored wells then in use.<sup>130</sup> This method created an air-tight seal around the well tube and allowed the atmospheric pressure acting on the surrounding water to aid gravity and bring the surrounding water to the well pit.<sup>131</sup> The other wells of the time, lacking this air-tight seal, were subject to going dry after constant use since the atmospheric pressure on the surrounding water was counter-balanced by the pressure introduced through the open well and the only remaining force to bring water to the well, gravity, was insufficient to keep up a constant supply of water.<sup>132</sup>

The utility of the process was attested to by the fact that at the time of the litigation between 500,000 and 1,000,000 driven wells were in use throughout the United States.<sup>133</sup> In upholding the patent, and granting a monopoly over this method of creating wells, the Court stated:

The novelty of the process under consideration does not lie in a mechanical device . . . . It consists in the new application of a power of nature, by which new application a new and useful result is attained. There is no new product, but an old product—water—is obtained from the earth in a new and advantageous manner.<sup>134</sup>

Under this analysis, the patent was for a process consisting of driving a tube into the earth to put to practical use the new principle of forcing water into a well-pit.<sup>135</sup> Those who bore to the water-bearing strata and then drove the tube downward to secure the airtight connection which constituted the principle of the driven-well patent were found to have infringed on the patent.<sup>136</sup>

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129. 122 U.S. 40 (1887). The attempts to enforce the rights claimed under the patent gave rise to extensive litigation over validity and infringement which was resolved by the Supreme Court.

130. *Id.* at 47.

131. *Id.* at 49-50.

132. *Id.* at 48-49.

133. *Id.* at 48.

134. Eames v. Andrews, 122 U.S. 40, 54 (1887) (quoting Judge Benedict, Andrews v. Carman, 1 Fed. Cas. 868 (C.C.E.D.N.Y. 1876) (No. 371)).

135. *Id.* at 55.

136. *Id.* at 70.



Despite the Court's statement that "[t]he novelty of the process in consideration does not lie in a mechanical device,"<sup>137</sup> the novelty of the method is the distinguishing factor in the case. The edgewise placement of the ice blocks of *Kemper*, the combination of parts of *LeRoy*, and the inhalation of *Morton*, were not novel mechanisms and on this basis the patents were denied or invalidated. However, in *The Driven Well Cases*, the driving of the well-tube was novel and the patent was upheld.<sup>138</sup> This requirement of novelty in the method, separate from the discovery, recalls the exacting scrutiny that patents were subjected to under the *Hotchkiss* "requirement of invention" test.<sup>139</sup>

### 5. Algorithms<sup>140</sup>

While the cases just discussed were decided prior to enactment of section 103, which codified the "requirement of invention," the prejudice against patentable discoveries persisted beyond that time. The evidence and evolution of that prejudice is apparent from the line of cases dealing with mathematical algorithms. In *Parker v. Flook*, the Supreme Court upheld denial of a patent for a "Method for Updating Alarm Limits" that involved using a known algorithm and a computer to calculate an updated alarm-limit value.<sup>141</sup> The Court stated: "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

137. *Id.* at 54 (quoting Judge Benedict, *Andrews v. Carman*, 1 Fed. Cas. 868 (C.C.E.D.N.Y. 1876) (No. 371)).

138. *Id.* at 63-70. For an argument that a patent is allowed where the inventor claims an entire process utilizing several laws of nature but denied where the inventor claims his combined use of all the laws of nature utilized, see LIBSCOMB, *supra* note 4, § 2:14 at 154-57 (comparing the Morse telegraph case to Alexander Graham Bell's telephone patent and others).

139. See *supra* notes 93-96 and accompanying text.

140. A detailed analysis of the problems relating to patenting algorithms and computer programs is beyond the scope of this Comment. Algorithms are used in this Section simply to show the court's treatment of what might be considered discovered processes.

141. 437 U.S. 584, 585 (1978). The "alarm limits" were numbers used in a catalytic conversion process which when reached signalled the presence of an abnormal variable. The method of updating the limits involved (1) measuring the present value of the process variable, (2) using a known algorithm and a computer to calculate an updated alarm-limit value, and (3) adjusting the actual alarm limit to the updated value. *Id.*

the statute was enacted to protect.”<sup>142</sup> Prior to *Flook*, in *Gottschalk v. Benson*, the Supreme Court held that a method for converting binary-coded decimal numerals into pure binary numerals was unpatentable since it “would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.”<sup>143</sup> An algorithm was analogous to an idea, therefore, the rule that “an idea of itself is not patentable” precluded patentability.<sup>144</sup> Unlike *Benson*, *Flook* did not wholly preempt the algorithm. However, since the claim was essentially directed at calculating and using a mathematical formula the method was not within the coverage of the Patent Act.<sup>145</sup>

*Benson* and *Flook* seemed to establish that claims covering a mathematical formula or algorithm were nonstatutory attempts to patent a law of nature, natural phenomena, or abstract idea. However, in *Diamond v. Diehr*,<sup>146</sup> the Court upheld a process for curing synthetic rubber, which included in several steps the use of a mathematical formula and computer, as patentable subject matter under section 101.<sup>147</sup> After reiterating that “laws of nature, natural phenomena, and abstract ideas”<sup>148</sup> were not patentable, the Court held:

[W]hen a claim containing a mathematical formula [unpatentable subject matter] implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101.<sup>149</sup>

Since the process of curing synthetic rubber was patentable, the fact that the claim included an unpatentable algorithm did not preclude patentability.

*Diehr* expanded patentable subject matter to include processes that utilized algorithms. *In re Alappat*<sup>150</sup> found patentable, as a machine, a device that used algorithms to convert data and display the result on an oscilloscope screen.<sup>151</sup> The en banc Court of Appeals for the

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142. *Id.* at 593.

143. *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972).

144. *Id.* at 67 (quoting *Rubber-Tip Pencil Co. v. Howard*, 20 Wall. 498, 507 (1853)).

145. *Parker v. Flook*, 437 U.S. at 595. *Flook* came to stand for the principle that insignificant post-solution activity does not transform an unpatentable algorithm into a patentable process. *Diamond v. Diehr*, 450 U.S. 175, 191 (1981).

146. 450 U.S. 175 (1981).

147. *Id.* at 191.

148. *Id.* at 185.

149. *Id.* at 192.

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

151. The application claimed a rasterizer “for converting vector list data representing sample magnitudes of an input waveform into anti-aliased pixel illumination

Federal Circuit determined the *Benson*, *Flook*, *Diehr* trilogy were not intended to create an overly broad fourth category of subject matter excluded from patentability.<sup>152</sup> Rather, certain types of mathematical subject matter, standing alone and not applied to some practical application, were nothing more than abstract ideas and as such were unpatentable.<sup>153</sup> Since the *Alappat* invention, as a whole, covered a combination of interrelated elements (individually performing mathematical calculations), which formed a machine for conversion and display of data, the invention was not an abstract idea.<sup>154</sup> Rather, it was a specific machine that produced a useful, concrete, and tangible result.<sup>155</sup>

Under the algorithm line of cases patentable subject matter evolved to include claims to processes and machines that utilize the laws of nature, natural phenomena, and abstract ideas inherent in mathematical formulas and algorithms. With this evolution in mind we return to our hypothetical process, Rumpelstiltskin's method of spinning straw into gold.

#### 6. *The Hypothetical Discovered Process*

How do these cases affect Rumpelstiltskin who seeks to patent his process of spinning straw into gold?<sup>156</sup> Rumpelstiltskin's discovery relies on the effect produced when an incantation is invoked while straw is spun on an ordinary spinning wheel. Under the precedent of *The Driven Well Cases*<sup>157</sup> we can argue that the novelty of the process consists of the new application of a power of nature (transformative power by which straw becomes gold) by which a new and useful result is obtained.<sup>158</sup> However, since the method of spinning is not novel, his patent could be denied under the precedents of *Kemper*, *LeRoy*, and *Morton*.<sup>159</sup> Under *Diehr*, even if the transformative power of nature (the incantation/algorithm) is considered unpatentable, its use in a

intensity data to be displayed on a display means. . . ." *Id.* at 1541.

152. *Id.* at 1543.

153. *Id.*

154. *Id.* at 1544.

155. *Id.*

156. The other two hypotheticals, the engine and chemical, are analyzed under the next Section, addressing product claims.

157. 122 U.S. 40 (1887).

158. See *supra* text accompanying note 134.

159. See *supra* text accompanying notes 135-38.

process which, as a whole, is transforming an article into a different thing, satisfies the requirements of section 101.<sup>160</sup> This is consistent with the expanding view of patentable subject matter under the algorithm line of cases. Also, considering the claim as a whole, the novelty and non-obviousness requirements are satisfied if we consider the utilization of straw and the incantation to be sufficiently outside any prior utilization of the spinning process. It appears I can advise Rumpelstiltskin that his discovered process should be patentable.

### B. *Discovered Products*

The previous Section examined the case law of discovered processes. This Section examines the case law of discovered products. The cases in this Section are analogous to the propulsion machine that runs on seawater and the chemical found in Siberian berries that cures cancer.

#### 1. *Ex parte Latimer*<sup>161</sup>

In *Ex Parte Latimer*, the applicant claimed “as a new article of manufacture the fiber . . ., consisting of the cellular tissues of the pinus australis [tree] eliminated in full lengths from the . . . pine-needles and subdivided into long, pliant filaments adapted to be spun and woven, as described.”<sup>162</sup> The Patent Commissioner noted that plant fibers were well known and their chemical formulas were the same.<sup>163</sup> On this ground the Commissioner might have held the patent invalid for want of novelty.<sup>164</sup> However, despite acknowledging that the “alleged invention” was very valuable and of immense benefit to mankind,<sup>165</sup> the Examiner’s denial of the patent was affirmed on the grounds that the fiber, freed from its surroundings, was not changed or different from its natural form.<sup>166</sup>

The reference to the “alleged invention” presumes that it is an invention and not a discovery that is patentable, whether the discovery is new or not. In a statement showing the confusion of invention and discovery, the Patent Commissioner stated: “It cannot be said that the applicant in this case has made any discovery, . . . because the mere

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160. *Diamond v. Diehr*, 450 U.S. 175, 192 (1981).

161. 1889 Dec. Comm’r Pat. 123 (1889).

162. *Id.* at 123. A patent was allowed for the process for extracting the fibers. *Id.* at 125.

163. *Id.*

164. Since plant fibers of the same chemical formula had been “known and used by others” the claimed discovery was not novel under § 102(a).

165. *Ex Parte Latimer*, 1889 Dec. Comm’r Pat. 123, 127 (1889).

166. *Id.* at 126.

ascertaining of the character or quality of trees that grow in the forest and the construction of the woody fiber and tissue of which they are composed is not a patentable invention."<sup>167</sup> The Commissioner went on to state that even if this were the first time that man had discovered plant fiber it would still be old since it was produced by a natural process.<sup>168</sup> While prefaced as a lack of novelty, the denial rested more on a concern over granting monopolies to natural products, as evidenced by the following statement:

Otherwise it would be possible for an element or a principle to be secured by patent, and the patentee would obtain the right, to the exclusion of all other men, of securing by his new process from the trees of the forest . . . the fiber which nature has produced and which nature has intended to be equally for the use of all men. The result would be that an alleged inventor in Germany would acquire a patent which would give him the exclusive use of the *Pinus sylvestris*, the applicant in this case would secure a patent for the fiber of the *Pinus australis*, and thus, successively, patents might be obtained upon the trees of the forest and the plants of the earth, which of course would be unreasonable and impossible.<sup>169</sup>

Whatever nature's intent for the element, it is the discoverer who discloses its benefits to society. In the situation where something was not known or used, the discoverer deprives society only of that which it did not possess, and only for the limited time of the patent grant. If the constitutional purpose of patent protection is to promote the progress of useful arts, this purpose is facilitated by disclosure of such discoveries. Technology and innovation are furthered by disclosures of unknown natural products. The Patent Commissioner's concern over unrestrained patenting of the trees of the forest was unfounded. The patent applicant had not claimed ownership of the trees. The multitude of other uses (i.e. lumber or firewood) for trees would not be disturbed by granting a patent on their fibers when used for spinning or weaving. The Patent Commissioner stated that if the applicant's process had, as a final step, changed the natural state of the fiber, producing a new or different form, it could be patented.<sup>170</sup> This requirement, however, does not make the discovery any more novel or non-obvious in terms of the Patent Act. As

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167. *Id.* at 125.

168. *Id.*

169. *Id.* at 125-26.

170. *Ex Parte Latimer*, 1889 Dec. Comm'r Pat. 123, 127 (1889).

for utility, a change may in fact make the discovery less useful, while nonetheless being necessary to obtain a patent.<sup>171</sup>

## 2. *Dennis v. Pitner*<sup>172</sup>

The exclusion of products of nature from patentability, though pervasive,<sup>173</sup> has not been uniformly accepted. *Dennis v. Pitner* discussed whether an insecticide in extract or powdered form, made from the root of the cube plant found in South America, was patentable.<sup>174</sup> Here, as in *Latimer*,<sup>175</sup> the patent involved a product claim to a naturally occurring substance. The *Dennis* court stated:

There would seem to be no valid reason or sound support for a position which would deny to discoveries by researchers in the field of science the protection of our patent laws when such discovery is that an old, or at least well-known chemical product, will, acting in a given state, alone, or combined with other elements or physical elements, produce new, unknown, and unexpected results, whereas one who puts together at least two old and well-known chemical substances in certain prescribed proportions and gets new results helpful to man may receive patent protection. In the latter case, patent protection is universally accorded to the discovery.<sup>176</sup>

The *Dennis* court recognized the absurdity of denying patent protection to the discoverer while rewarding the mechanic.<sup>177</sup> It saw Congressionally authorized patent protection as comprehensive, provided that inventor or discoverer made a new and useful contribution to society.<sup>178</sup> This comprehensive scope was evidenced by the Patent Act's specific inclusion of "inventions" and "discoveries," words that are

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171. See Hanellin, *supra* note 3 (discussing, in part, patent law requirements of product alteration, or manipulation of claim language, to highlight the manufactured aspects of the invention).

172. 106 F.2d 142 (7th Cir. 1939).

173. See CHISUM, *supra* note 13, § 1.02[7].

174. 106 F.2d 142 at 150. The discussion of this aspect of the case must be classified as dicta as the patent was held invalid because the court held the patentee was not the first discoverer of the natural product's use as an insecticide. *Id.*

175. 1889 Dec. Comm'r Pat. 123 (1889).

176. *Dennis v. Pitner*, 106 F.2d 142, 144 (7th Cir. 1939) (citations omitted). The court goes on to say:

It is true that an old substance with newly discovered qualities possessed those qualities before the discovery was made. But it is a refinement of distinction both illogical and unjustifiable and destructive to the laudable object of the statute to award a patent to one who puts old ingredient A with old ingredient B and produces a cure for ailment C, and deny patent protection to one who discovers that a simple and unadulterated or unmodified root or herb or a chemical has ingredients of health-giving qualities, hitherto unknown and unforeseen.

*Id.* at 145.

177. Recall Justice Nelson's dissent in *LeRoy*, *supra* note 114.

178. *Dennis*, 106 F.2d at 146.

neither synonymous nor intended to be.<sup>179</sup> To deny patentability because something possessed a property before the discovery was made is, in effect, to write "discovery" out of the Patent Act. For something to be discovered it must be present before the discovery can be made. The *Dennis* court limited such expressions of unpatentable subject matter as "laws of nature," "principles of nature," and "fundamental truths" to results or functions and not to include the discovery of a new and useful property of an old product.<sup>180</sup>

### 3. Funk Brothers Seed Co. v. Kalo Inoculant Co.<sup>181</sup>

While other courts have found natural properties to be patentable, the majority of cases have held that the discovery of a useful natural property is not patentable.<sup>182</sup> The Supreme Court addressed this issue in *Funk Brothers Seed Co. v. Kalo Inoculant Co.*<sup>183</sup> Kalo brought suit against Funk Brothers for infringement of its patented "inoculant for leguminous plants comprising a plurality of selected mutually non-inhibitive strains of different species of bacteria of the genus *Rhizobium*, said strains being unaffected by each other in respect to their ability to fix nitrogen in the leguminous plant for which they are specific."<sup>184</sup> Prior to the Kalo patent, six well-recognized species of bacteria of the genus *Rhizobium* were known and used by agriculturists to inoculate the seed of leguminous plants.<sup>185</sup> However, each species of bacteria was effective in only a well-defined group of plants.<sup>186</sup> Farmers were therefore required to use different inoculants on different crops.<sup>187</sup> Mixed cultures had been tried but proved unsuccessful because the different species of the *Rhizobia* bacteria produced an inhibitory effect on each other. The Kalo patent claimed the discovery that in each species of bacteria, strains existed that were not mutually inhibitive.

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179. *Id.* at 145.

180. *Id.* at 146.

181. 333 U.S. 127 (1948).

182. *In re Kemper*, 14 F. Cas. 286 (C.C. D. of C. 1841) (No. 7,687); *LeRoy v. Tatham*, 14 How. 156 (1852); *Morton v. N.Y. Eye Infirmary*, 17 F. Cas. 879 (C.C.S.D.N.Y. 1862) (No. 9,865); *Funk Bros.*, 333 U.S. 127.

183. 333 U.S. 127 (1948).

184. *Id.* at 128 n.1.

185. *Id.* at 129.

186. *Id.*

187. *Id.*

Testing could isolate these strains, allowing the production of a mixed non-inhibitive culture capable of inoculating all of a farmer's crops.<sup>188</sup>

There is a distinction between the claims here and those in *Ex parte Latimer*<sup>189</sup> and *Dennis v. Pitner*<sup>190</sup>. The latter claims involved only the natural product itself, freed from its surroundings. The former combined several natural products in a single culture. This distinction was sufficient for the Circuit Court of Appeals to uphold the patent on the grounds that more than a law of nature was involved—"a new and different composition of non-inhibitive strains which combined utility and economy to the manufacture and distribution of commercial inoculants" had been discovered.<sup>191</sup>

The Supreme Court invalidated the patent on the grounds that the non-inhibitive qualities were not created by the patentee, but rather were the work of nature and therefore unpatentable.<sup>192</sup> In short, the qualities of the bacteria pre-existed in nature and the discovery of their beneficial use in aggregation "fell short of invention within the meaning of the patent statutes."<sup>193</sup>

In a concurring opinion that questioned the majority reasoning, Justice Frankfurter stated:

"It only confuses the issue, however, to introduce such terms as 'the work of nature' and the 'laws of nature.' For these are vague and malleable terms infected with too much ambiguity and equivocation. Everything that happens may be deemed 'the work of nature,' and any patentable composite exemplifies in its properties 'the laws of nature.'"<sup>194</sup>

Despite Justice Frankfurter's objection to the terms "work of nature" and "laws of nature" his opinion can not be extended to allow patents on "products of nature." Justice Frankfurter's rejection of the patent was based on the fact that the claim covered "a composite culture" but failed to specify the particular composition of that culture.<sup>195</sup> The "new property of multi-service applicability" did not exist in nature until the discover/inventor made the composite. Justice Frankfurter deemed the requirement of invention met by the discovery of the "new property of multi-service applicability."<sup>196</sup>

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188. *Id.* at 130-31.

189. 1889 Dec. Comm'r Pat. 123 (1889).

190. 106 F.2d 142 (7th Cir. 1939).

191. *Funk Brothers Seed Co., v. Kalo Inoculant Co.*, 333 U.S. 127, 129 (1948).

192. *Id.* at 130.

193. *Id.* at 131.

194. *Id.* at 135 (Frankfurter, J., dissenting).

195. *Funk Brothers Seed Co.*, 333 U.S. at 135 (Frankfurter, J., dissenting).

196. *Id.*



4. *Diamond v. Chakrabarty*<sup>197</sup>

*Funk Brothers* appeared to have shut the Patent Trade Office door to claims reciting the natural properties of products of nature, at least as far as the Supreme Court was concerned.<sup>198</sup> However, in 1980, the Supreme Court again addressed the "product of nature" exclusion in the landmark decision *Diamond v. Chakrabarty*.<sup>199</sup> Dr. Ananda Chakrabarty discovered that certain engineered bacteria could be used more effectively to dissolve oil spills.<sup>200</sup> The "patent claims were of three types: first, process claims for the method of producing the bacteria; second, claims for an inoculum comprised of a carrier material floating on water, such as straw, and the new bacteria; and third, claims to the bacteria themselves."<sup>201</sup> The patent examiner had allowed the first two claims but denied the third (to the bacteria itself), on grounds that it was unpatentable as (1) a product of nature and (2) living things.<sup>202</sup>

Before determining whether the bacteria was a product of nature, the Court addressed the question of whether living things were patent-

197. 447 U.S. 303 (1980).

198. In *Merck & Co. v. Olin Mathieson Chemical Corp.*, 253 F.2d 156 (4th Cir. 1958), product claims for the naturally occurring vitamin B(12) were held valid. The court stated:

There is nothing in the language of the [Patent] Act which precludes the issuance of a patent upon a "product of nature" when it is a "new and useful composition of matter" and there is compliance with the specified conditions for patentability. All of the tangible things with which man deals and for which patent protection is granted are products of nature in the sense that nature provides the basic source materials. The "matter" of which patentable new and useful compositions are composed necessarily includes naturally existing elements and materials.

*Id.* at 161-162.

199. 447 U.S. 303.

200. *Id.* at 305.

201. *Id.* at 305-06.

202. *Id.* at 306. The Patent Office Board of Appeals affirmed the rejection on the second ground relying on the legislative history of the 1930 Plant Patent Act. The Court of Customs and Patent Appeals, by a divided vote, reversed on authority of a prior decision in *In re Bergy*, 563 F.2d 1031, 1038 (1977), which held that "the fact that microorganisms . . . are alive . . . [is] without legal significance" for purposes of the patent law.

able.<sup>203</sup> The issue posed a “narrow question of statutory interpretation” of whether the micro-organisms constituted a manufacture or composition of matter within the meaning of section 101.<sup>204</sup> Noting that “unless otherwise defined, words will be interpreted as taking their ordinary, contemporary common meaning”<sup>205</sup> and that courts “should not read into the patent laws limitations and conditions which the legislature has not expressed,”<sup>206</sup> the Court found the bacteria patentable as either a manufacture or a composition of matter.<sup>207</sup> Since the relevant legislative history accompanying the 1952 Patent Act informed the Court “that Congress intended statutory subject matter to ‘include anything under the sun that is made by man,’” the Court saw no bar to patenting living matter.<sup>208</sup>

However, immediately following the Court’s removal of discovered living organisms from unpatentable subject matter, other judicially created bars to patentable discovery were reiterated:

This is not to suggest that § 101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena, and abstract ideas have been held not patentable. Thus, a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that  $E=mc^2$ ; nor could Newton have patented the law of gravity. Such discoveries are “manifestations of . . . nature, free to all men and reserved exclusively to none”.<sup>209</sup>

The inference drawn is that unpatentable subject matter (“laws of nature,” “a new mineral discovered in the earth,” etc.) is not patentable because it is not “made by man.” However, the 1952 Report actually reads: “A person may have ‘invented’ a machine or manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.”<sup>210</sup> As noted in Section II.A. of this Comment, the Report’s language broadly defines the categories of machine and manufacture, and by inference the remaining categories, process and

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203. *Diamond v. Chakrabarty*, 447 U.S. 303, 304 (1980). For a discussion of patenting life forms, both before and after *Chakrabarty*, see Edmund J. Sease, *From Microbes, To Corn Seeds, To Oysters, To Mice: Patentability of New Life Forms*, 38 DRAKE L. REV. 551 (1989).

204. *Chakrabarty*, 447 U.S. at 307.

205. *Id.* at 308 (citing *Perrin v. United States*, 444 U.S. 37, 42 (1979)).

206. *Id.* (citing *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)).

207. *Id.* at 309.

208. *Id.* (quoting from 1952 Report, *supra* note 31). The man-made criteria established by this paraphrase of the Congressional language was discussed *supra*, Section II.A.

209. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citations omitted).

210. 1952 Report, *supra* note 31, at 2399.

composition of matter, should be broadly defined as well.<sup>211</sup> The constraints on patentability, as noted in the Report, are the conditions of Title 35: utility, novelty, non-obviousness, and specification. The Court distinguished the *Funk Bros.*, “handiwork of nature” rejection from Dr. Chakrabarty’s “nonnaturally occurring manufacture or composition of matter.”<sup>212</sup> “Here, by contrast, the patentee has produced a new bacterium with markedly different characteristics from any found in nature and one having the potential for significant utility. His discovery is not nature’s handiwork, but his own, accordingly it is patentable subject matter under section 101.”<sup>213</sup>

### 5. *The Hypothetical Discovered Products*

In view of these precedents and the trend toward expanding patentable subject matter illustrated in *Chakrabarty*,<sup>214</sup> how are our hypothetical discovered products’ chances at the Patent Office? As for the naturally occurring chemical, the product of nature exclusion seems to stand barring the door. While cases like *Dennis v. Pitner*<sup>215</sup> would not bar the claim since its subject matter was new and useful, *Funk Bros.*,<sup>216</sup> and even *Chakrabarty*, would preclude patent protection because the chemical was natural. The hypothetical chemical has not been purified or altered into a non-natural state or form, nor has it been combined with other pre-existing elements to create a new manufacture or composition of matter. Therefore, it does not meet the definition of manufacture or composition of matter imposed by the Patent Office and the courts. The pharmaceutical company, unless the chemical could be altered or purified and still maintain its curative properties, would not be protected. Perhaps the company could hide the chemical amid others in its drug so that its properties could not be discerned. If this were possible the curative power of the berry could be protected as a trade secret. However, as a result, the world would be deprived of the knowledge of its secret. Other scientists would not be able to experiment with the

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211. See *supra* text accompanying notes 63-66.

212. *Chakrabarty*, 447 U.S. at 309.

213. *Id.* at 310.

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

215. 106 F.2d 142 (7th Cir. 1939).

216. 333 U.S. 127 (1948).

berry's chemical to determine other beneficial uses and under trade secret protection the monopoly would be unlimited in duration.

The engine from Atlantis would fare better under the judicial precedent. It is easily classified as a machine or manufacture. It is novel and non-obvious. While its secret of propulsion might rest on a law of nature it is the engine and not the natural law that would be claimed and patented.

## CONCLUSION

The Constitution and the Patent Act authorize rewarding inventors and discoverers with a limited private monopoly. Under the Constitution the invention or discovery must promote the progress of useful arts.<sup>217</sup> The Patent Act, presumably to ensure that patentable inventions and discoveries promote the progress of useful arts, sets forth criteria for patentability. Under the Patent Act, the invention or discovery must be useful, novel, and non-obvious.<sup>218</sup> The framers of the Constitution and the original patent acts realized that an incentive to invent and discover was necessary for the country to prosper.<sup>219</sup> Advancements in the useful arts (technology, innovation, human knowledge)<sup>220</sup> were to be rewarded whether they were inventions or discoveries. As illustrated by the hypotheticals, discoveries can meet the Constitution's purpose and the Patent Act's criteria of patentability.

However, the courts and patent office have at times been less than enthusiastic in welcoming discovery patents. In *In re Kemper*<sup>221</sup> the court held that discovery was synonymous with invention, in effect construing discovery out of the Patent Act.<sup>222</sup> In *Hotchkiss v. Greenwood*, the Supreme Court announced the "requirement of invention."<sup>223</sup> This "requirement of invention" was limited when codified into the non-obvious criterion of section 103. Understandably, however, many courts had read a requirement of invention as precluding patentability for discoveries that were not inventions.<sup>224</sup> The prejudice against discoveries persisted beyond the enactment of section 103. Many of the cases

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217. U.S. CONST. art. I, § 8 cl. 8.

218. 35 U.S.C. §§ 101, 102, and 103.

219. See *supra* text accompanying note 5.

220. See *supra* Section I.B.

221. 14 F. Cas. 286 (C.C. D. of C. 1841) (No. 7,687).

222. See *supra* Section IV.A.1.

223. 52 U.S. (11 How.) 248 (1850). See *supra* Section III.

224. See *In re Kemper*, 14 F. Cas. 286 (C.C. D. of C. 1841) (No. 7,687); *Le Roy v. Tatham*, 55 U.S. (14 How.) 156 (1852); *Morton v. New York Eye Infirmary*, 17 F. Cas. 879 (C.C.S.D.N.Y. 1862) (No. 9,865); *Ex parte Latimer*, 1889 Dec. Comm'r Pat. 123 (1889).

involved subject matter unpatentable on either novelty or obviousness grounds. However, in others, patents covering novel and non-obvious discoveries were denied or invalidated.

A turning point in the Supreme Court attitude toward patentable subject matter occurred in 1980. In *Diamond v. Chakrabarty* the court held that living subject matter was patentable.<sup>225</sup> *Diamond v. Diehr* upheld a patent for a process whose novelty consisted of the use of a mathematic formula.<sup>226</sup> These decisions held patentable subject matter previously thought to be excluded from patent protection. Subject matter that could as easily be thought of as discovered as invented.<sup>227</sup> In both cases the Court stated that we "should not read into the patent laws limitations and conditions which the legislature has not expressed."<sup>228</sup>

Further, the concerns with granting patent protection to discoveries are overstated. Inventions are not granted patent protection unless they meet the stringent requirements of the Patent Act: statutory subject matter, utility, novelty, non-obviousness, and specification. The same criteria applies to discoveries. The exclusion of laws of nature, natural phenomena, and abstract ideas from patent protection<sup>229</sup> often rests on reasoning that their discoveries are "manifestations of . . . nature, free to all men and reserved exclusively to none."<sup>230</sup> However, there is a difference when a known law of nature is used to produce a new and useful result by an old method and when a newly discovered law is similarly used. In the former case, nothing has been discovered other than the new effect. In the latter, the hitherto unknown (albeit preexisting) law of nature is disclosed along with its useful effect. Where the law of nature is disclosed by the discoverer, it cannot be said that a limited exclusive monopoly takes away from what mankind previously possessed. While the law of nature is unknown, it is not possessed. A

225. 447 U.S. 303 (1980).

226. 450 U.S. 175 (1981).

227. In *Chakrabarty*, a bacteria that fought oil spills was held patentable as either a manufacture or a composition of matter. 447 U.S. at 309. *Diehr's* patent was for the process of curing synthetic rubber. 450 U.S. at 177. A composition of matter or a process may be more readily thought of as discovered than invented. See *supra* text accompanying note 66.

228. *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) (quoting *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933); *Diamond v. Diehr*, 450 U.S. 175, 182 (1981)).

229. *Diehr*, 450 U.S. at 185.

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

limited exclusive monopoly grant to the discoverer is exchanged for the knowledge disclosed by the discovery. This is indeed the purpose of our patent laws. It bears reiterating that the exclusive monopoly is limited. After the patent expires the discovery is truly free to all mankind.

Explicit recognition of discoveries that are not inventions as patentable, subject to the conditions and requirements of the Patent Act, would also preclude some detrimental effects of the present rationale. The product of nature exclusion to patentability contributes to pharmaceutical companies' reluctance to research and develop plant derived drugs.<sup>231</sup> A narrow reading of the four categories of statutory subject matter precludes a natural product from patentability and thereby requires the discoverer to substantially alter the natural product so that it may be classified a manufacture or composition of matter.<sup>232</sup> A requirement of alteration from the natural state may, however, lead a pharmaceutical company to an alteration that reduces the effectiveness of the product in order to achieve patentability. Another concern is that the pharmaceutical company will simply decide to keep its discovery a trade secret in order to protect their investment.<sup>233</sup> This alternative defeats one of the purposes of the Patent Act—to provide an incentive toward research and disclosure, so that others may build on the discovery.

While previously there might have been concern over determining who was the first discoverer, this will be alleviated should the United States patent system change from "first to invent" to "first to file." When date of filing determines who is entitled to patent protection, disputes over who first made the discovery disappear.

In summary, explicit recognition that discoveries that are not inventions are patentable, subject to the conditions and requirements of the Patent Act, is appropriate under the criteria of the Constitution and Patent Act, as well as in view of the trend toward broad interpretation of the categories of statutory subject matter. Such recognition would also provide incentive and reward for discoveries that meet the goals set

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231. Hannelin, *supra* note 3, at 173, 174.

232. See, e.g., *Farbenfabriken Co. v. Kuehmsted*, 171 F. 887 (C.C.N.D. Ill. 1909), *aff'd*, 179 F. 701 (7th Cir. 1910) (determining alteration of acetylsalicylic acid to a pure compound, aspirin, was substantial enough to allow the product to be categorized as a manufacture).

233. It costs a pharmaceutical company and estimated \$100 to \$500 million to bring a new drug to market. Kate H. Murashige, *Intellectual Property: Harmonization of Patent Laws*, 16 HOUS. J. INT'L L. 591, 593 (1994). In view of these extreme costs, protecting the discovery via trade secret law may be preferable to the risk that any alteration or purification performed will be insufficient to render the drug patentable as a manufacture or composition of matter.

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forth in the Constitution and the Patent Act.

STEPHEN MCKENNA