Patent Law: Doctrinal Stability - A Research and Development Definition of Invention is Key

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PATENT LAW: DOCTRINAL STABILITY—
A RESEARCH AND DEVELOPMENT DEFINITION OF
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INTRODUCTION

In 1982, the Congress of the United States created the Court of Appeals for the Federal Circuit (CAFC) primarily as a single and expert court for the appeal of patent cases. In addition, Congress issued this new court a mandate to develop and increase doctrinal stability in the patent law area. The creation of this court with such a mandate was a direct response to continued uncertainty and instability in patent law. Such uncertainty and instability meant that patent law was not effectively fulfilling its purpose in society.

The purpose of patent law is to promote progress in science and technology. The area of society that deals with progress in science

3. Id.
4. Report of Commission on Revision of the Federal Courts Appellate System, 67 F.R.D. 195, 297, 321 (1976). See also H.R. 4482, 97th Cong., 2d Sess., 128 CONG. REC. H737 (1982); S. Rep. No. 275, supra note 2, reprinted in 1982 U.S. CODE CONG. & AD. NEWS 15-16. The uncertainty and instability referred to here had existed in patent law for some time. In 1980, a major conference was held to commemorate the 30th anniversary of 35 U.S.C. § 103 and to address the uncertainty that had surrounded its application since enactment. As a result of the conference, a collection of articles attempting to clarify § 103 were published in BUREAU OF NATIONAL AFFAIRS, NONOBVIOUSNESS—THE ULTIMATE CONDITION OF PATENTABILITY (J. Witherspoon ed. 1980) (hereinafter cited as BNA, NONOBVIOUSNESS). The foreword to this book was by then Commissioner of Patents and Trademarks, D.W. Banner. See Id. at v. In this foreword, he points out that the hopes of many had not been realized in having § 103 serve as a clear congressional directive in patent law (emphasis added). He then indicated that inventors and businessmen would be interested in the patent system only so long as they can reasonably understand the patent laws and reasonably rely on their stability (emphasis added). He also added, that when the government grant of a patent cannot reasonably be relied upon, the patent system becomes a cruel hoax, resulting in increased secrecy and in a decrease in innovation. Id. The uncertainty and instability the Commissioner addressed here in 1980, is of course the same uncertainty and instability that two years later led to the creation of the CAFC.
5. This purpose of patent law is expressly stated in the patent and copyright clause of the Constitution of the United States. U.S. CONST. art. I, § 8, cl. 8. This clause gives Congress the power “to promote the progress of science and useful arts.” Id.
and technology involves the discovery of scientific knowledge and technical know-how, as well as the development of products and processes that are conceptually new. Today, this area is represented by organized research and development (R&D). Patent law in one respect is therefore an attempt through the use of words to influence and structure (the concepts and realities of) human behavior in R&D. In order therefore to rid patent law of uncertainty and the instability uncertainty brings, it is essential that those charged with applying patent law understand the concepts and realities that patent law attempts to structure. The same is also true of those whose behavior patent law seeks to influence. Furthermore, it is essential that the concepts and realities reflected by the words of patent law actually be from the area of society represented by R&D. Without these essentials, patent law cannot effectively accomplish its purpose of promoting progress in science and technology through R&D.

For this purpose of promoting progress in science and technology, United States patent law authorizes and directs the government to grant certain exclusive rights to inventors for their inventions. The


8. See, e.g., Stroup, Law and Language: Cardozo's Jurisprudence and Wittgenstein's Philosophy, 18 VAL. U.L. REV. 331 (1984). Stroup's comment here is in terms of law generally, thus, thus it is also true of patent law.

9. Id. at 356. Here Stroup argues that to be effective, law must be founded on actual forces. This means that its words and operative concepts must be based on and deal with the tangibles and realities of society. In addition, those applying the law must clearly understand this relationship between the words of the law and societal realities. This is necessary in order to avoid uncertainties in applying the law to such realities.

10. United States patent law is strictly federal law. It is made up of the patent and copyright clause of the Constitution, the patent act in force and judicial doctrines that have evolved over the last 195 years of patent law history.

The patent and copyright clause of the Constitution of the United States, directly incorporates the concept of invention into the Constitution. See infra note 84. However, the United States Congress in enacting patent acts pursuant to this clause, has used but never successfully defined the term invention. For unsuccessful efforts by Congress see The Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary, 85th Cong., 1st Sess., EFFORTS TO ESTABLISH A STATUTORY STANDARD OF INVENTION (Comm. Print 1958) [hereinafter cited as EFFORTS TO ESTABLISH A STATUTORY STANDARD OF INVENTION]. In fact under the current Patent Act, 35 U.S.C. §§ 1-376 (1982), the sections that deal with the question of what is and what is not patentable, use the concept of invention 115 times, but without a definition.
current Patent Act\textsuperscript{11} expressly directs the government through its agencies, to grant patents\textsuperscript{19} for inventions that are new,\textsuperscript{13} useful\textsuperscript{14} and nonobvious.\textsuperscript{15} The responsibility of determining whether an application for a patent satisfies these requirements of the Patent Act belongs to the Patent and Trademark Office (PTO).\textsuperscript{16} Final determination by the PTO is reviewable by the Federal courts,\textsuperscript{17} if necessary. Determination by the PTO and any review by the federal courts, turn principally on the concept of invention as it is used in patent law.\textsuperscript{18} Unfor-

Because Congress has never defined the term invention, defining invention has therefore been left to the courts. This note focuses only on the efforts of the Supreme Court of the United States, and those (although none so far) of the newly created Court of Appeals for the Federal Circuit. The focus is limited to these courts because their definitions currently will have precedential value. See infra notes 62, 206-208 and accompanying text.

15. Id. § 103.
16. The Patent and Trademark Office is a United States Government agency. It is headed by a commissioner and is presently part of the United States Department of Commerce. The PTO, as it is generally called, is responsible for processing applications for patents. It receives applications for patents, examines them for compliance with patent law, and decides whether or not to grant or refuse the patent sought by each application. The PTO has had the power to reject applications since its creation in 1836. See Patent Act of 1836 § 1, 5 Stat. 117 (1836-1845).
17. See infra note 62.
18. The patent and copyright clause of the Constitution requires that [patents] be granted to inventors for their discoveries. The use of the term inventor directly incorporates the concept of invention. See supra note 83. The granting of patents is therefore constitutionally tied to the concept of invention—especially when the inherent and empirical relationship between inventions and discoveries is recognized. See infra note 44.

The constitutional connection between the grant of patents and inventions was recognized in Great A. & P. v. Supermarket Equipment Corp., 340 U.S. 147, 155 (1950) (Douglas, J., concurring). Justice Douglas stated that "[t]he standard of patentability is a constitutional standard." He further stated that where the validity of a patent is in issue, the standard of invention will control, and that the question of invention actually goes back to the constitution. Id. at 156.

This reading of the constitution in Great A. & P. is still good law despite attempts under § 103 Nonobviousness to ignore, abandon or eliminate the question of invention and references to it. See, e.g., Graham v. Deere, 383 U.S. 1, 6 (1966) (decided
fortunately however, patent law has been unsuccessful in developing an objective and realistic definition of invention. This lack of a definition for so principal a concept in patent law, has been at the heart of the problems of uncertainty and instability surrounding the question of patentability, in other words, the question of what is and is not patentable. As such, any attempt if it is to be successful in bringing certainty and stability to patent law must include a resolution of the problems surrounding patentability, as well as an objective and realistic definition of invention.

The creation of the CAFC in 1982 for the purpose of bringing certainty and stability to patent law was only the latest in a series of such attempts. Previous attempts included (1) the change from an examining to a non-examining system, (2) the announcement of a “requirement of invention” in the landmark case of Hotchkiss vs. Greenwood, (3) the enactment of 35 U.S.C. section 103 and (4) the landmark decision in Graham v. Deere. Of these attempts, only the decision in Hotchkiss and the enactment of section 103, involved substantive changes to patent law. The rest of the attempts including the creation of the CAFC were merely procedural.

16 years after Great A.& P, and 14 years after the enactment of § 103). Here in Graham, the Supreme Court cited Great A.& P., and cautioned that the constitutional standard may not be ignored. Furthermore, the Court stated that cases involving the validity of patents require reference to the standard written into the constitution. Id.

For strong arguments recently recognizing the requirement of invention as good law, see Edwards, That Clumsy Word Nonobviousness, in BNA, NONOBVIOUSNESS, supra note 4, at 3:201. Judge Edwards concludes “I suggest then that the requirement of invention for patentability is alive and well in the Supreme Court of the United States, and as a consequence, in all the federal courts, and at the Patent Office.” Id. at 3:208.

Other evidence of the significance of the concept of invention to the patentability issue can be found in the language of the current Patent Act and in the practice and perspective of modern inventors. For example, the heading to the chapter of the current Patent Act (chapter 10) specifically refers to “patentability of inventions” See 35 U.S.C. §§ 100-04 (1982). Furthermore scientists and other inventors see themselves as working on inventions and seeking patents for inventions. See Brewer, The Seven Stages of an Invention, JOURNAL OF COATINGS TECHNOLOGY, Apr. 1985, at 55-57; In Virginia: A Convention for Inventions, TIME, Mar. 5, 1984, at 4; Pressman, Patent your Inventions Properly to Avoid Legal Pitfalls, EDN, Oct. 4, 1984, at 337.

19. See infra notes 129-32 and accompanying text.
20. See, e.g., Potts, Definition of Invention in Patent law, 7 MODERN L. REV. 113 (1944). The question of what is and what is not patentable is described as a subtle and intractable issue, and as being the arch-problem of patent law. Id. at 113.
21. See infra note 101 and accompanying text.
23. See infra note 166 and accompanying text.
The *Hotchkiss* decision changed patent law (as then practiced) by requiring that the determination of patentability include actual proof of invention. 25 Although this decision heightened the need for an objective and realistic definition of invention, the Supreme Court tried but was unable to develop such a definition. In fact the Supreme Court eventually concluded that the concept of invention could not be defined. 26 The enactment of section 103 purportedly also changed patent law. It did so by attempting to make unnecessary the need to prove invention as part of the determination of patentability. 27 Despite this attempt under section 103, the rest of patent law including section 103 itself contradictorily continues to expressly direct the PTO and the courts to grant patents for *inventions* that are new, useful and nonobvious. 28 Because of this inherent contradiction between the intent of section 103 and the express language of patent law, the application of section 103 raised new problems and thus proved difficult and ineffective. As a result, there was continued uncertainty and instability in patent law.

The creation of the CAFC and its mandate were primarily a response to this state of affairs surrounding the application of section 103. 29 Therefore the CAFC if it is to succeed in its mandate to bring certainty and stability to patent law, must also deal with the problems raised by the application of section 103. This means that the CAFC must develop or adopt an objective and definitive test which will enable the PTO and the federal district courts to effectively determine and agree on what is and what is not patentable. Such an objective and definitive test for patentability must include an objective and realistic definition of the concept of invention as it is currently used in patent law. In addition the CAFC must also address the inherent contradiction created by section 103. The critical questions facing the CAFC are therefore (1) whether it can judicially develop or adopt such an objective and definitive test of patentability, and (2) whether it can develop or adopt such a test as well as resolve the contradiction created by section 103 without a Congressional repeal of section 103.

This note on the one hand contends that such an objective and definitive test of patentability cannot be developed or adopted judicial-
ly without repeal of section 103. This is because the origin, text and recognized intent of section 103 are inherently contradictory and have remained sources of uncertainty and concern even under the CAFC. Furthermore, CAFC application of section 103 prevents consideration of the principal concept of patentability, the concept of invention. On the other hand, the note contends that judicial development of an objective and definitive test of patentability is currently possible. The key to such a test is the development of an objective and realistic definition of invention. Such a definition of invention will be based on knowledge about modern R&D fundamentals and knowledge about the R&D process for developing actual inventions.

To support these contentions, this note will briefly examine the history and significance of R&D to patent law. The note will then overview United States patent law and the problem surrounding the question of patentability. Next the note will review historically the attempts to solve this problem (the problem of patentability) and the difficulties and ineffectiveness of each attempt. The note then proposes an effective solution which includes (1) a recommendation for the repeal of section 103 because of its questionable intent and its ineffectiveness, and (2) an adoption of a research and development-based definition for the concept of invention.

II. RESEARCH AND DEVELOPMENT—THE SOCIETAL CONTEXT OF PATENT LAW

The purpose of United States patent law is to promote progress in science and technology.30 The scientific and technological progress sought to be promoted is achieved through the continued discovery of new scientific principles and technical know-how, as well as through the continued development of new products and processes employing such discoveries.31 In American society, the making of such discoveries and the developing of these types of new products and processes have been and continue to be the functions of R&D.32 Hence patent law which is designed to promote progress in science and technology actually does so in part by promoting R&D. As such, R&D represents

30. See supra note 5 and accompanying text.
31. See L. Silk, supra note 7, at 51.
32. See, e.g., D. Hertz, The Theory and Practice of Industrial Research 2-4 (1950). See also L. Silk, supra note 7, at 51. This statement of course stresses the nature of the relationship between R&D and progress in science and technology. This relationship is written about quite often, but it is usually never stated. See, e.g., J. Kenneth Galbraith, The New Industrial State 12-13, 19-20 (1978).
a good part of the societal context of patent law. The implication of this relationship is that the realities and concepts reflected by the words of patent law, can and should be found in the purpose, essence and structure of R&D, as well as in the requirements and methods of R&D. For example, patent law should reflect the primary purpose and essence of R&D which is solving problems. Solving problems in R&D involves the discovery of the knowledge necessary to satisfy a need or want in society, and a successful and systematic application of that knowledge to the particular need or want. Solving problems as such is so essential to R&D, there actually can be no research where there is no problem.

Once a leisurely pastime of the rich, and a frustrating activity for a few basement tinkerers, solving problems through R&D is today largely an economic activity. Although this function of R&D pre-existed the enactment of the first United States Patent Act in 1790, R&D as a field was too crude then to be of much teaching value to patent law. In fact the field of R&D remained crude and unorganized until about 1901. Since then R&D has developed into a well organized industry and into a sophisticated profession for scientists and engineers. Throughout this growth and development however, solving

33. The relationship between patent law and R&D is occasionally alluded to, but is more often assumed or disregarded than not. Yet it is a critical relationship. To stress this point by analogy, no subcommittee, committee or congress can honestly expect to pass an agricultural act or a "farm bill" (under Title 7 of the U.S. Code) if it knows nothing about United States agriculture. Furthermore, such an agricultural act can not afford to ignore the relationship it must bear to agriculture. Agriculture must be the societal context of such an act. The operative terms and concepts of such an act must be agricultural terms and concepts. Such terms and concepts must be understood by the farmers or farm community whose behavior the act seeks to influence and structure. Such terms and concepts must also be understood by those charged with enforcing the act. The lesson in all of this lies in the fact that United States agriculture is to such an act, what United States R&D should be to patent law!

34. See, e.g., J. Kenneth Galbraith, supra note 32, at 19-20; D. Hertz, supra note 32, at 2, 19-25.


36. See, e.g., L. Redman & A. Mory, The Romance of Research 54 (1933) (a short illustrated history of R&D and inventions). For the economic aspect of R&D, see L. Silk, supra note 7, at 2-4; In Virginia: A Convention for Inventions, Time, Mar. 5, 1984, at 4 (independent inventors admit dreaming to be millionaires; some have actually become millionaires); D. Karger & R. Murdick, Managing Engineering and Research 12 (1980).


38. See, e.g., L. Silk, supra note 7, at 54.

39. Id. at 2-4, 161; see also J. Kenneth Galbraith, supra note 32, at 33n.

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problems has remained the primary purpose and essence of R&D.

To achieve this primary purpose, R&D is currently structured into two related stages, basic research and applied research. Basic research has been defined as an exploration of the unknown with the intent to discover new knowledge. It is at this stage that R&D makes discoveries of new knowledge in the form of scientific principles and technical know-how. Applied research on the other hand, uses these discoveries to develop new products and processes that satisfy the needs and wants of society. This use by applied research of the discoveries of basic research represents a critical and inherent relationship between the two stages. The relationship and its order are necessary for achieving technological progress. It is the embodiment of a discovery in a product or process that makes that product or process conceptually new. This empirical relationship between the discoveries of basic research and the products and processes of applied research is strong evidence of a relationship between discoveries and inventions. In fact a key element in the sophistication of R&D (and an important factor in R&D success) was the development of a systematic and repeatable process for developing inventions based on discoveries. The inventions developed by this process are clearly what patent law and patent policy seek to encourage.

III. UNITED STATES PATENT LAW AND THE PROBLEM OF PATENTABILITY—OVERVIEW

United States patent law and policy stem from the Constitution

40. See, e.g., L. Silk, supra note 7, at 51. See also 15 The New Encyclopaedia Britannica 739, 742 (1974).
41. See, e.g., L. Silk, supra note 7, at 51. Basic research is the same as pure research.
42. Id.
43. Normally basic research precedes applied research. This is because applied research utilizes discoveries by basic research in the development of inventions. Early on when this relationship between discoveries and inventions was not well understood, one writer commented as follows. "[I]t is possible that careful analysis might establish the thesis that the process of invention is a development out of the process of discovery, and that in the early stages we are dealing only with discoveries and not with inventions." A. Usher, A History of Mechanical Invention 11 (1929) (emphasis added).
44. This is a critical relationship between discoveries and inventions. Unfortunately current patent law confuses it by equating discoveries and inventions. See 35 U.S.C. § 100 (1982). Here, the term invention is said to mean the same thing as discovery. It is clear however, that the empirical relationship between basic and applied research does not support this equating of the two concepts; nor does a fair and accurate interpretation of the patent and copyright clause of the Constitution. See infra notes 83-84 and accompanying text.
45. See infra notes 263-69 and accompanying text.
DEFINITION OF INVENTION

The Constitution in what is called the patent and copyright clause, authorizes the Congress of the United States to make laws granting inventors exclusive rights for their discoveries. Policywise, this clause limits such grants by expressly requiring that the grants be for the purpose of promoting progress in science and technology. Pursuant to this authority and policy limitation, Congress has at different times, enacted patent acts that have each expressly required patents to be granted for inventions that satisfied certain conditions. The first Patent Act enacted in 1790 required patents to be granted for inventions that were new, useful and sufficiently important. Subsequent patent acts retained these requirements until 1952. The current Patent Act enacted in 1952, requires patents to be granted for inventions that are new, useful and nonobvious.

In addition to enacting patent acts, Congress created the Patent and Trademark Office (PTO) and assigned to it the initial and primary responsibility for determining which applications for patents meet the requirements of the patent act and which do not. Based on the express language of the current Patent Act, discharging this respon-

46. U.S. CONST. art. I, § 8, cl. 8. "Congress shall have the power...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."

47. Id.

48. Id. Although the actual language refers to "science and useful arts," nothing is lost conceptually by updating this language to "science and technology." Technology has been defined by one modern writer as the art of systematically applying scientific or other organized knowledge to practical tasks. See J. KENNETH GALBRAITH, supra note 32, at 12.


51. Id. §§ 1-3.


53. Id. §§ 101-03. See also Graham v. Deere, 383 U.S. 1, 12-14 (1966). It should be noted that the courts have attempted since 1952 to avoid the use of the term invention by use of phrases like "the subject matter sought to be patented" or "subject matter as a whole." Despite these attempts the express language of the Patent Act and its context indicate that these phrases are just other ways of characterizing invention. In any case, even if the concept of "subject matter as a whole" is broader than that of "invention," it certainly must include "invention" as a subconcept. Other attempts to avoid reference to invention by using the abstract nouns "novelty," "utility" and "nonobviousness" merely beg the question "of what?" See infra note 286 and accompanying text. The answer to be found expressly in the language of the statute is that the reference is to the utility, novelty and nonobviousness of invention.

54. See infra notes 59-62 and accompanying text.
sibility would appear to require the PTO to make at least two determinations. First the PTO has to determine that the subject matter of the patent application is an invention and second, it must determine whether the invention is new, useful and nonobvious.

A. The Patent System - How It Works and Why

The current Patent Act enacted in 1952 contains specific provisions regarding the patenting of inventions. For obtaining a patent, the Act provides that an individual who invents a product or process may apply to the Patent and Trademark Office for a patent to cover the invention. The application must state at least one claim that defines and measures the invention sought to be patented. The PTO is required to examine the individual's application for compliance with patent law as currently construed by the federal courts. The PTO then issues or refuses to issue a patent on the subject matter of the application depending on the results of its examination. If the applicant is not satisfied with final PTO determination, he may seek review in the federal court system. A patent, issued either on PTO

55. The actual language in the text refers to "process, machine, manufacture or composition of matter, or any... improvement thereof." 35 U.S.C. § 101 (1982). The term "process" was used for the first time in 1952 replacing the old term "art," in order to conform the text to current usage. See Federico, Commentary on the New Patent Act, 35 U.S.C.A. §§ 1-110, at 1, 15 (West 1954) (hereinafter cited as Federico, Commentary). Using the phrase "product or process" here similarly conforms and simplifies the meaning of the text without changing it. It should be noted that "machines, manufactures, compositions of matter as well as improvements to them" are basically all products. See A. MILLER & M. DAVIS, INTELLECTUAL PROPERTY PATENTS, TRADEMARKS AND COPYRIGHTS IN A NUTSHELL 18 (1983) (hereinafter cited as MILLER-DAVIS).


57. Claims are statements by the applicant describing his invention, usually as a means or series of steps for performing a specified function. 35 U.S.C. § 112 (1982). Claims may or may not include the physical or structural specifications of the product or process that represent the invention. Id.

58. Id.

59. See Manual of Patent Examining Procedure § 706 (1982). The manual clearly states that examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court is applied in each and every case. Subsections of § 706 also contain numerous citations to appellate and district court decisions as precedents to be followed by examiners. Id. at § 706.03.


61. Final PTO determination of whether or not a patent issues on an application is made by a PTO Board of Appeals. The Board of Appeals is made up of the Commissioner of Patents and Trademarks, his assistants and chief examiners or examiners-in-chief. Currently, Board of Appeals members are all required to be competent in legal and scientific matters. Id. at § 7.

62. The applicant currently has two alternatives for appealing a final PTO decision. He can appeal directly to the newly created Court of Appeals for the Federal
determination or by court order, is good for 17 years. By issuing the patent, the government gives a patentee the right to exclude others for 17 years, from making, using or selling the patented invention anywhere within the United States.

This right to exclude others from making, using or selling the invention for 17 years offers valuable protection to inventors. The protection offered is valuable because it gives inventors an opportunity to recoup their investments in the development of the invention. Without this protection, the new knowledge or technical know-how represented by an invention can be pirated or appropriated by others without compensating the inventor. Inventors are therefore very interested in obtaining patent protection for their inventions. Fortunately for inventors, the Government is also very interested on the other hand, in granting the patent protection sought by inventors. The government grants patent protection because of government interest in the early disclosure of the new knowledge and technical know-how represented by inventions. The government interest is


64. Id. Also see id. at § 100(c), where the term United States has been construed to include United States territories and possessions. But see 1984 Patent Law Amendment Law of 1984, Pub. L. No. 98-622, § 101, 98 Stat. 3383 (1984) (amends § 271 of 35 U.S.C.). The amendments extend patent right protection beyond the United States by prohibiting unauthorized importation or exportation of products or components made by United States patented processes.

65. This assurance is necessary because inventing today is largely an economic activity pursued for gain. See, e.g., D. Karger & R. Murdick, supra note 36, at 12.

66. For a full discussion of this point with particular emphasis on the need for patent protection, see L. Silk, supra note 7, at 4.

67. See, e.g., E. Mansfield, The Economics of Technological Change 208 (1968).

68. See 35 U.S.C. § 112 (1982). The Constitutional and ultimate purpose of the patent system is to promote progress in science and technology. U.S. Const. art. I, § 8, cl. 8. This is accomplished by encouraging early disclosure of new knowledge to the public. In stating this purpose, the Court of Appeals for the Federal Circuit has said, "the basic public policy underlying the patent system is to encourage the disclosure of inventions through issuance of patents." Rohm & Haas Co. v. Crystal Chemical Co., 722 F.2d 1556, 1571 (Fed. Cir. 1983). For this reason, the patent system is generally seen as an "incentive-to-disclosure" system. Caterpillar Tractor Co. v. Berco S.A., 714 F.2d 1110, 1115 n.2 (Fed. Cir. 1983). Patent protection, of course, is what
based on its recognition that early disclosure of such knowledge and technical know-how facilitates the development of new and even greater knowledge and technical know-how. This in turn assures continued technological progress as well as continued investment in the economy.

To insure such full disclosure and the technological progress and economic investment it brings, patent rights granted by the government must be protected against possible violations. Under the current Patent Act, the process for protecting patent rights is based heavily in the judgment and enforcement powers of the federal courts. As part of the protection process, all patentees are required to clearly mark their patent numbers on their inventions. It is also up to each patentee to discover and allege violations or infringements of his or her patent rights. The Act then provides for a patentee who discovers an infringement of his or her patent rights to sue the violator for patent infringement.

As a defense in a patent infringement suit, the Act allows the alleged infringer to challenge the validity of the patent allegedly infringed. In effect, the infringer is allowed to challenge the initial is offered as the incentive for the desired disclosure. A contractual analogy has even been drawn in this situation as between the government and the patentee. See D. KARGER & R. MURDICK, supra note 36, at 489. Contractually, the patentee's disclosure is viewed as consideration for the patent rights and protection the patentee receives from the government. Id. at 490. Disclosure is therefore essential to the determination of patentability.

9. One unique characteristic of the results of scientific research is that they grow by feeding on themselves. See, e.g., L. SILK, supra note 7, at 163. Discovery by feeding on discovery, breeds new discoveries; and innovation by feeding on innovation breeds different innovations. Id. This, of course, is exactly the situation patent law seeks to encourage by authorizing the grant of special privileges for the full disclosure of the discoveries of inventors.

10. See, e.g., E. MANSFIELD, supra note 67, at 207 (the patent system is a major instrument of government policy to encourage technological progress). See also D. KARGER & R. MURDICK, supra note 36, at 511 (patents are the backbone of inventions); Note, Patent Policy and Invention, 46 ILL. L. REV. 609, 626 (1951) (the patent system is noted as being essential to the survival of small businesses).

71. The violation of the patent rights of one individual by another is a civil matter involving patents. The PTO has no enforcement powers in this regard. Furthermore, the United States Congress has granted the federal courts exclusive jurisdiction in civil matters involving patents. 28 U.S.C. § 1338 (1982). The role of the federal courts in protecting patent rights is therefore very significant.


73. Any unauthorized making, using or selling of another's patented product or process is an infringement. 35 U.S.C. § 271 (1982). The suit brought by a patentee for infringement of his patent rights is an infringement action. The suit is authorized by statute. Id. § 281.

74. Id. § 282(2)-(3).
PTO determination on the application for that particular patent. As a consequence of this defense, the federal courts are required to reexamine the initial PTO grant of that patent.75 If the federal court comes to the same conclusion as did the PTO, the court upholds the validity of the patent thus entitling the patentee to a judicial remedy against the infringer.76 If the court comes to the opposite conclusion, the patent is declared invalid. When the patent is declared invalid, anyone is then free to make use or sell the product or process once protected by the invalidated patent.77 In other words, the patent system has failed to protect PTO-granted patent rights on which an inventor and other businessmen in reliance had already invested money. This failure serves neither the interests of inventors and businessmen, nor those of the government. The failure is thus evidence of instability in the patent system.78 Overall, the failure or success of the process for obtaining a patent and the process for protecting patent rights, depend squarely on PTO and court determinations of what is and is not patentable (patentability) under United States Patent law. As such, the effectiveness of the patent system in protecting both government and private interests in it, also depends on the determination of patentability.

B. Patentability - the Concept of Invention and the Constitution

The Constitution and the patent act in force control and limit the determination of what is and what is not patentable under United States Patent law. While patentees do occasionally attempt to introduce new evidence in court regarding features of the infringed product or process. See, e.g., Graham, 383 U.S. at 23 (regarding "flexing"); id. at 25 (where such efforts are characterized as "after thought"). Such attempts however are not allowed by law. See supra note 59 and accompanying text.

75. Patentees do frequently attempt to introduce new evidence in court regarding features of the infringed product or process. See, e.g., Graham, 383 U.S. at 23 (regarding "flexing"); id. at 25 (where such efforts are characterized as "after thought"). Such attempts however are not allowed by law. See supra note 59 and accompanying text.

76. Court injunctions and damages are the judicial remedies available for infringement. 35 U.S.C. §§ 281-294 (1982).

77. A patentee, who loses an infringement suit against an alleged infringer, can never again sue anyone else for infringement of the same patent. Once a patent is declared invalid in one case, it is invalid for all cases thereafter. See Blonder-Tongue Laboratories v. University of Illinois Foundation, 402 U.S. 313, 329 (1971). Because of this, differences between what the PTO thinks is patentable and what the courts will accept as patentable often have serious consequences for inventors and businessmen who invest in inventions.

78. The phrase patent system as used in this note includes all the participants and the law involved in the seeking, granting, and protection of patent rights. It also includes the functional relationships and structures of the participants as determined by United States patent law and policy. The participants include individual inventors and the businessmen who invest in the inventions, the PTO, the federal courts, and the United States Congress. A stable patent system is one in which the process for obtaining patents and that for protecting patent rights, work to serve all the interests involved. Therefore, when the process for protecting PTO-granted patent rights fails, the entire system is destabilized.
patent law. The Constitution does so through the language as well as congressional and judicial interpretation of the patent and copyright clause. This clause plainly authorizes the government to grant special privileges (patents) to inventors for their discoveries. Recognizing or interpreting this language as containing the concepts of invention and of discovery is fair and accurate. By directing patents to be granted for inventions (that in addition satisfy other statutory conditions) patent acts enacted pursuant to and interpreting this clause, represent such a recognition or interpretation by Congress. Recognizing or interpreting the clause in this manner is fair and accurate for at least 3 reasons. First, the term inventor obviously embodies the concept of invention. Secondly, the history of the development of the patent and copyright clause clearly indicates that the framers of the Constitution undoubtedly understood the difference as well as the relationship between discoveries and inventions. Thirdly, this interpretation which implies an inherent

79. This is because patent law is exclusively federal. See supra note 10 and accompanying text.
81. Id.
82. See infra note 84.
83. An inventor obviously is one who invents or one who has developed an invention. The concept of invention is therefore embodied in the use of the term inventor.
84. The plain meaning of the patent and copyright clause with regard to patents is that privileges (i.e., patent rights) are to be issued to inventors for their discoveries. See supra note 46. (The term “inventors” obviously embodies the concept of invention.) The patent and copyright clause was a committee’s version of suggestions from James Madison and Charles Pickney. See Ramsey, The Historical Background of Patents, 18 J. Pat. Off. Soc’y 6, 13 (1936). Madison had suggested that “the advancement of useful knowledge and discoveries” be encouraged by premiums and provisions. Id. Pickney, on the other hand, suggested that “patents be granted for useful inventions.” Id. Although the term “inventors” does not appear in either suggestion, the concept of invention clearly does. Recognition of two critical and logical relationships, one between inventions and inventors and the other between discoveries and inventions, is all that is necessary to reasonably explain the derivation of the clause from the two suggestions.

The first relationship requires that to be called an inventor, an individual must have already invented something or developed an invention. This is merely a logical and descriptive conclusion. Use of the term “inventors” was therefore an expression of Pickney’s suggestion. Id. The second relationship is based on the empirical and inherent fact that a “discovery” is an essential element of every invention. See supra note 43 and accompanying text.

Furthermore, there is adequate evidence to indicate that the framers of the Constitution understood the difference if not the relationship between discoveries and inventions. Although there were few major inventions in the U.S. before 1800, there

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DEFINITION OF INVENTION

and empirical relationship between inventions and discoveries is supported by actual practice in R&D. For these reasons, arguments to the contrary are therefore logically inconsistent and not persuasive.

The patent act in force also controls and limits the determination of patentability. The act does so by its express terms and judicial interpretation of any vague terms. Specifically, the first Patent Act interpreting the patent and copyright clause in 1790 directed the government to grant patents for inventions that were new, useful and sufficiently important. Subsequent patent acts retained this same requirement and its conditions until 1952. The current Patent Act enacted in 1952, changed the last condition by directing the PTO and the courts to grant patents for inventions that are new, useful and nonobvious.

The inventions being patented must have been recognized as distinct and separate from mere scientific discoveries. See, e.g., 1984 World Almanac 768-770 (1984) (hereinafter cited as 1984 Almanac). In fact by 1787 (the year of the U.S. Constitutional Convention) there were patent systems in England, Connecticut, and Massachusetts, each granting patents for inventions. See Ramsey, supra, at 10-13. South Carolina (Charles Pickney's colony) also had a patent act by 1784 granting exclusive privileges to the inventors of useful machines, etc. See Fenning, The Origin of the Patent and Copyright Clause of the Constitution, 17 Geo. L.J. 109, 115 (1929).

The inventions being patented must have been recognized as distinct and separate from mere scientific discoveries. See, e.g., 1984 Almanac, supra, at 770-71. The Almanac lists the discovery of laws of nature and of chemical elements, among other scientific discoveries made before 1787. There is, therefore, sufficient evidence to indicate that the framers of the Constitution clearly understood the difference between inventions and discoveries. The combination of Madison's and Pickney's suggestions into the single clause despite an understanding of this difference, is reasonable evidence that the framers of the Constitution also understood the empirical and inherent relationship between discoveries and inventions. Since each word in the Constitutional provision must be assumed to have an important meaning, see Ramsey, supra, at 14, interpreting the patent and copyright clause as containing a requirement of invention is reasonably fair and accurate.

85. See supra notes 40-44 and accompanying text.
86. See, Federico, Commentary, supra note 55, at 19. Federico argues that the term "invent" in § 101 of the present Act, and the term inventor in the Constitution, are used only in the sense of "authorship." This would mean that the word invent as used in § 101 of the present Act connotes no more than the word make. If so, the meaning of § 101 is best had from reading it as, "whoever makes a new and useful product or process . . . may obtain a patent thereon." If this is the meaning of § 101, then one must wonder where else in the entire patent act one finds another source for the concept of the invention as it now appears in the act!
88. Id. §§ 1-3.
89. See supra notes 13-15, 28 and accompanying text.
C. The Patentability Problem

Unfortunately, Congress has never defined the term invention or the concept of invention as it is used in the patent acts and in the patent and copyright clause of the constitution. Furthermore, the Supreme Court attempted to define invention objectively and realistically, but was unsuccessful. Because the concept of invention is central to the question of what is and is not patentable, the lack of an objective and realistic definition of invention eventually led to a conflict between the PTO and the courts. This lack of an objective and realistic definition of invention as well as the inability of inventors, the PTO, and the federal courts to effectively and predictably determine and agree on what is and is not patentable, are at the center of what is referred to as the patentability problem. The determination of patentability has been a problem as such since the first Patent Act. In fact the history of patent law in great part is a history of attempts to solve this particular problem. In other words, the history of patent law in great part is a history of attempts to resolve the uncertainty and instability caused by the inability of the patent system to effectively determine and agree on what is and is not patentable.

IV. UNSUCCESSFUL SOLUTIONS TO THE PATENTABILITY PROBLEM—HISTORY AND ANALYSIS

A. Examining to Non-examining System; Creation of the PTO

Historically, the problem surrounding the determination of what is and is not patentable started with enactment and application of

90. See infra notes 144-47 and accompanying text.
91. See, e.g., Potts, supra note 20, at 113. The problem of patentability is described as subtle and intractable and as being the arch-problem of patent law. See also, Comment, Patents - The Changing Standard of Patentable Invention: Confusion Compounded, 55 Mich. L. Rev. 985-86 (1957). In speaking of patentability or the standard of patentable invention, the writer concludes that "no problem in the law of patents has caused more confusion than the standard of patentable invention." Id.

The problem of patentability or the patentability problem includes: (1) the need for the Supreme Court or the CAFC to develop or adopt an objective and realistic definition of the concept of invention as it is required by, and as it is currently used in patent law; (2) resolution of the questionable and ineffective attempt by Congress to abandon, or eliminate the patent law Constitutional requirement of invention by enacting § 103 of the 1952 Act; (3) resolution of the apparent contradiction between the patent law practice of requiring patent claims to define invention, and assertions by the courts under § 103 that proof of invention is no longer required for determining patentability. These factors of the patentability problem are undoubtedly the underlying causes of continued uncertainty and instability in patent law.

92. See infra notes 99-249 and accompanying text.

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the first Patent Act in 1790. The 1790 Patent Act provided that anyone who invented or discovered a new and useful product or process could obtain a patent for the invention. The Act however did not define invention. This 1790 Act also created the first patent system and provided for an examination process. In addition the Act provided for a three-member team to conduct the examination. The three-member team had the authority to decide whether to issue or refuse patents. A patent was to issue only if the team found that an application was for an invention that was not only new and useful, but was also "useful and sufficiently important."

It soon became apparent under the 1790 Act that there was great difficulty in distinguishing between what was and was not an invention. This difficulty, combined with the lack of a definition of the term invention, was the beginning of the patentability problem. As a response to the difficulties faced by the three-member team, Congress decided in 1793 to enact a new act and to abolish the need for an examination.

Consequently, the Patent Act of 1793 replaced the examination process with a clerical or mere registration process. The 1793 Act also did away with the three-member team and its power to refuse to issue patents. Patents therefore were to issue on all submitted applications. The result of these changes was apparently unacceptable and in 1836 Congress reestablished an examination system.

A new Patent Act was enacted in 1836. Besides reinstating the examination process, the 1836 Act also created the Patent and Trademark Office (PTO). Instead of the three-member team, the PTO was responsible for conducting the examination. The 1836 Patent

94. Id. § 1.
95. Id.
96. Id. §§ 1-3.
97. Id.
98. Id. § 1.
99. This difficulty was noted by the Supreme Court in Graham, 383 U.S. at 9. The information was from the writings of Thomas Jefferson who as Secretary of State was a member of the three-member team.
102. Id.
104. Id. § 7, 119-20. See also S. REP. No. 1979, supra note 101, reprinted in 1953 U.S. CODE CONG. & AD. NEWS at 2397.
106. Id. § 1.
Act also reinstated the requirement that patents issue for inventions that were new, useful, and sufficiently important. Like the 1790 Act, the 1836 Act did not define invention or provide any objective criteria for deciding what was or was not an invention, or deciding when an invention was or was not sufficiently useful and important. Consequently, the PTO, like the three-member team before it, also had difficulty implementing the reinstated examination process. This difficulty, together with poor staffing conditions at the PTO, led again to unacceptable results and to public dissatisfaction over the ineffectiveness of the patent system.

B. The Requirement of Invention—Hotchkiss v. Greenwood

The unacceptable state of patent law and public dissatisfaction continued until 1850. In 1850 the United States Supreme Court responded. In the landmark case of Hotchkiss v. Greenwood, the Court formulated and announced what has come to be called the requirement of invention. In this landmark case, the Court invalidated a patent initially issued by the PTO for an improved method of forming doorknobs out of clay rather than out of metal. The Court held that the substitution of clay for metal was not an invention because the substitution did not require any more ingenuity and skill than that possessed by an ordinary mechanic acquainted with the business.

107. Id. § 6.

108. The staff of the Patent Office grew from 4 employees in 1836, id. §§ 1-2, to 182 employees in 1870. See Patent Act of 1870, 16 Stat. 198, 198-200 (1869-1871). Little or no expertise was required of examiners until 1870. Staffing was by political appointment. Id. at 198. The Commissioner of Patents was also authorized to augment the staff with temporaries. See Patent Act of 1837 § 11, 5 Stat. 194 (1836-1845).

109. A good illustration of the unacceptable results that led to public dissatisfaction is the number of patents that issued on the simple idea of a campaign torch. See H. COLLINS, POLITICAL CAMPAIGN TORCHES, U.S. NATIONAL MUSEUM BULLETIN NO. 241 (1964). Between 1837 and 1900 more than 55 patents were issued on the campaign torch idea of “a wick in a bowl of oil, on a handle.” See id. at 3. There was a patent for every shade and shape of the bowl; for every height and form of the handle; and for every tilt and combination of wicks. See id. at 18-44.

110. 52 U.S. (11 How.) 248 (1850).

111. Id. at 267. This announcement by the Supreme Court is generally accepted as a judicial creation. See, e.g., Hartung, Prior Art: The Undefined Key to Section 103 of the 1952 Patent Act, 32 DRAKE L. REV. 703, 708 (1982). However, it is more reasonable to consider it merely as a judicial recognition of the Constitutional and statutory requirement that patents issue for inventions. See supra notes 18 and 84 and accompanying text. The requirement of invention was therefore only a recognition of the need to define and to look for invention as a prerequisite to patentability.


113. Id. at 265.
The Court also held that to be patentable, the claims of an application for a patent must reflect a certain degree of ingenuity and skill. The significance of the Court's announcements in Hotchkiss was that for the first time, the PTO and the courts had to define as well as require proof of invention as a prerequisite to patentability. Although the Supreme Court in this case did not directly define invention, it clearly indicated its view of invention. The Court did so when it further stated that ingenuity and skill are essential elements of invention.

114. Id. at 267. In essence, the Supreme Court was directing the PTO not to issue patents unless what the applicant had developed and claimed in each case constituted invention. The claims were to be examined for a reflection of ingenuity and skill, and the level reflected had to be greater than that possessed by an ordinary mechanic acquainted with the business. The federal courts were to do likewise when reviewing PTO patent grants in infringement cases.

115. Id. at 267. The term invention, however, was not defined in the 1790 Act or in any of the subsequent acts. Defining invention had therefore been left to the courts. There are basically three views of invention which cover all ordinary meanings of the concept of invention. The first, and perhaps most common view is to see invention as the thing invented. This view and the others that follow, date back to about 1500. See, e.g., 5 THE OXFORD ENGLISH DICTIONARY 453 (1933). This first view of invention, which can be described as objective, leads to a definition of invention that is in terms of the elements and characteristics of the thing invented. A typical definition of invention according to this view, describes invention as "something produced by original contrivance; a method or means of doing something previously unknown that is originated by some person." Id. at 453. The second and equally objective view is to see invention as the action or manner of inventing. Id. at 452. Accordingly, invention is defined in terms of the elements and characteristics of the method or manner of inventing. For example, invention is defined as "the original contrivance or production of a new method or means of doing something previously unknown." Id. at 452.

The third view is to see invention as a type of faculty or degree of the mental powers of an alleged inventor. Id. at 452. Based on this view, invention is defined in terms of the mental attributes of an individual. Typically, invention is defined as "the faculty of inventing; the power of mental creation; inventiveness." Id. at 453. Invention in this sense is properly used when an individual is described as being a person of great invention. Id. This is similar to also describing the person as being of great skill; as a person of many talents; or as a person of great wit. This third view of invention is clearly subjective, and inappropriate for patent law purposes. Unfortunately, it is the view that best represents the Supreme Courts view of invention in Hotchkiss.

Similar views of invention also appear in Webster's dictionaries. For example, invention is defined objectively as "purposeful experimentation leading to the development of a new product or process; origination." See WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1188 (unabr. ed. 1981). On the other hand, invention is also defined subjectively as "a mental power to conceive ideas; a faculty for creative selection. Id.

Again, this subjective view of invention as a mental attribute, best represents the Supreme Courts view of invention in Hotchkiss. Despite the obvious differences between the objective and subjective views of invention as contained in these dic-
1. The Hotchkiss View of Invention and Other Views

This language of the Supreme Court regarding ingenuity and skill being essential elements of invention appears to have been an inaccurate and inappropriate characterization of the concept of invention for patent law purposes. The language indicates that invention is to be found in the subjective state of mind (mental powers) and in the personal attributes of the applicant or patentee, as opposed to being found in the objective elements and functional characteristics of either the thing invented or the process of invention. Unfortunately, the concept of invention as contemplated by this particular view of the Supreme Court is certainly not the concept of invention that the patent acts require to be new and useful. Consequently, this Hotchkiss view of invention was undoubtedly inappropriate for patent law purposes. Because this view of invention was subjective and clearly inappropriate, it eventually frustrated subsequent Supreme Court attempts to define invention for use in patent law. This is because in such subsequent attempts to define invention, the Supreme Court unfortunately adhered to its Hotchkiss view of invention.

Occasionally however the Court did express a different and apparently objective view of invention. For example, in an 1874 case involving a patent for a piece of rubber for use as a pencil eraser,
the Supreme Court expressed what amounted to an objective view of invention. The Court stated that an idea of itself is not patentable, but that a new device by which the idea is made practically useful is patentable.122 In expressing this view, the Court did not consider or mention the skill or ingenuity of the developer of the device as being elements of invention. The Court also expressed a similar view in an 1876 case involving the substitution of celluloid for vulcanite in artificial teeth fasteners.123 The Court held that the substitution in this 1876 case as distinguished from Hotchkiss was indeed invention. In doing so, the Court stated that a substitution that involved a new mode of construction or a substitution that developed new uses and properties of the material formed could amount to an invention.124 Again the court did not consider or mention the skill and ingenuity of the applicant.

Despite the few decisions attempting to express this objective view of invention, the Supreme Court however held firmly to its view of invention as expressed in Hotchkiss.125 Typically, when the Court was confronted with the question of what was and was not an invention, the Court required that to qualify as an invention, a product or process must be the result of some exercise of the inventive faculties.126 As discussed under Hotchkiss, this was an unfortunate and an inappropriate view of the concept of invention as it is used in patent law.127 Because the Hotchkiss view of invention was subjective and inappropriate, Supreme Court efforts to define it for patent law purposes were eventually unsuccessful.

2. The Supreme Court’s Inability to Define Invention—Consequences

In 1891, the Supreme Court finally recognized the difficulty in defining its Hotchkiss view of invention for practical use in patent law. As a result, the Court in McClain v. Ortmayer128 expressly aban-

122. Rubber-Tip Pencil, 87 U.S. at 507.
123. Smith v. Goodyear Dental Vulcanite, 93 U.S. 486, 496 (1876).
124. Id. at 496.
125. 52 U.S. (11 How.) at 267. See supra notes 114-15 and accompanying text.
126. See, e.g., Wilson Packing Co. v. Chicago Packing & Provision Co., 105 U.S. 566, 571 (1881). Although it is not quite clear what the court means by a product being the result of an exercise of the inventive faculties, the real focus still appears to be on the mental power or faculties of the alleged inventor. This is, therefore, still the subjective view of invention from Hotchkiss. See, e.g., Miller -Davis, supra note 55, at 74.
127. See supra notes 114-19 and accompanying text.
128. 141 U.S. 419 (1891).
doned further efforts to define invention. In *McClain*, the Court stated that no definition of invention could prove helpful in determining "whether or not a particular product or process involved an exercise of the inventive faculty." From then on, the Court adopted a case-by-case approach in determining the issue of invention. The court thought that such determinations were best made by relying on experience with old products and processes that had been found not to be inventions. Such reliance was necessary because the Supreme Court, in abandoning further efforts to define invention, could not and had not abandoned the need or requirement to look for invention as a prerequisite to patentability. This aspect of the requirement of invention was still binding on the patent system. However, because there was no objective and realistic definition of invention, the PTO and the courts in looking for invention had to rely mostly on what have been described as negative tests of inventions.

Negative tests of invention were case-by-case characterizations of alleged inventions as involving or not involving mere changes in form, in proportion, in degree, or in materials. Under these tests, if an alleged invention could be so characterized, the conclusion was that it was not an invention and therefore was not patentable. If it could not be so characterized, then it was generally deemed to be

129. *Id.* at 427.
130. *Id.*
131. *Id.* In other words, the Court was asserting that although it could not define invention, it would recognize an invention if it found one. If this sounds familiar, it is because the dilemma inherent in this assertion was again expressed by the Court in its unsuccessful attempts to define the term "obscenity." See *Jacobellis* v. Ohio, 378 U.S. 184, 197 (1964) (Stewart, J., concurring). See also Rich, *Laying the Ghost of the Invention Requirement*, 1 A.P.L.A. Q.J. 26, 30 (1973). Here Judge Rich saw the connection between the Court's treatment of the terms invention and obscenity. The judge expressed this invention-obscenity connection by stating that the essence of being a patent lawyer, a patent examiner or a judge in a patent case was "to know an invention when you saw one." *Id.*
132. It should be noted that the requirement of invention as announced in *Hotchkiss* involved two needs: (1) the need to define invention and (2) the need to look for invention as a prerequisite to patentability. See *supra* note 111 and accompanying text. While the need to look for invention had to be satisfied on a case-by-case basis, the need to define invention could have been satisfied by a single, general definition, had one been possible. What the Supreme Court abandoned in *McClain* was simply the need to define invention generally. See *McClain*, 141 U.S. at 427. The need to look for invention therefore was retained. In fact, this need to look for invention exists even today under the CAFC in the practice of examining the claims of applications for invention. See *infra* notes 245-248 and accompanying text.
an invention and therefore was patentable. This case-by-case negative tests approach was however subjective and thus did not provide satisfactory guidance for applying the requirement of invention. Therefore, efforts to press the Supreme Court for a definition of invention continued.

In 1941, in a case which clearly involved the application of modern technology or know-how, a strong effort was made pressing the Supreme Court for a definition of invention. The case, Cuno Engineering v. Automatic Devices Corp., involved a PTO-granted patent for an improved automobile cigarette lighter. Unlike earlier automobile lighters, the lighter in Cuno employed an automatic, thermostatically controlled electrical circuit. The use of such a circuit in appliances such as electric heaters, toasters and irons was however already well-known. The issue therefore was whether extension of the same technology from the toaster or heater to a cigarette lighter amounted to an invention. In resolving this issue, however, the Court again did not define invention. Instead, it invalidated the patent because the extension of the technology of thermostatically controlled circuits to the cigarette lighter did not reveal a "flash of creative genius."

The Court's language regarding a "flash of creative genius" was interpreted as announcing a new test or measure of what the court regarded as an invention. Although the specific language of "creative genius" appears to have been nothing more than the "degree of ingenuity" language in Hotchkiss, the "flash of creative genius" test was widely criticized. Because of the criticism, the test never found much use. Consequently, the PTO and the courts were again left with a need to look for invention as a prerequisite to patentability,

135. See, e.g., MILLER-DAVIS, supra note 55, at 76-77.
136. 314 U.S. 84 (1941).
137. Id. at 86.
138. Id. at 91.
139. Id.
140. See, e.g., Invention-Flash of Genius Test, 11 GEO. WASH. L. REV. 535, 537 (1943) (Most courts considered the phrase "flash of genius" as a mere unfortunate choice of words to express what had always been the law. They believed the proper criterion for granting patents is improvement over the prior art, and not the state of the patentees mind.).
141. 52 U.S. (11 How.) at 267.
143. The second sentence of § 103 finally overruled the flash of creative genius test. See Federico, Commentary, supra note 55, at 23. The sentence in § 103 requires that patentability of an invention shall not be negatived by the manner [flash of creative genius or not] in which the invention was made (emphasis added). See infra note 166.
but without an objective and realistic definition of invention. Since the patent system requires the PTO and the courts to occasionally determine patentability in the same case but at different times, looking for invention without an objective definition of invention soon produced a conflict between the PTO and the federal courts.144

The conflict involved a difference between what the PTO and the federal courts thought was or was not invention. Because patent law essentially directed the PTO to grant patents for inventions,145 this difference between the PTO and the courts over what was an invention meant the courts were invalidating PTO-granted patents challenged in the courts. In fact, by 1949 the conflict had become so intense that it prompted Justice Jackson to remark, "I doubt that the remedy for such Patent Office passion for granting patents [indiscriminately] is an equally strong passion in [the Supreme court] for striking them down so [much so that] the only patent that is valid is one which this court has not been able to get its hands on."

Although Justice Jackson appears in this comment to side with the PTO, he nonetheless also admitted that the PTO was improperly granting patents.147 By 1949, the situation in the patent system involving the conflict between the PTO and the federal courts, the lack of an objective and realistic definition of invention, and the case-by-case negative test approach for determining invention, had already caused an unacceptable degree of indefiniteness and a general lack of uniformity. The net result was that patent law and the patent system were unstable and were not accomplishing in society what they were designed to accomplish.

Because of the government interest in a stable patent system, Congress was forced to respond to this lack of definiteness and uniformity. So in 1949, Congress decided to revise and codify the patent laws.148 The hope and the objective behind the revision and codifica-

144. This is termed a conflict not so much because PTO interests were opposed to those of the courts, but simply because they could not agree on what was an invention. Besides the language of Justice Jackson, other language reflecting the conflict also appears in a number of Supreme Court decisions. See, e.g., Graham, 383 U.S. at 18 (Supreme Court observes a notorious difference between standards applied by the PTO and the courts). See also Great A & P, 340 U.S. at 156 (Douglas, J., concurring) (The PTO is criticized for discretionarily issuing patents on gadgets and simple devices that do not advance scientific knowledge.).
145. See supra notes 18 and 84 and accompanying text.
147. Id.
A preliminary draft of the revised patent laws was completed in 1950. This preliminary draft included a new section that was intended as a codification of the “requirement of invention.” The new section, section 23, contained language strikingly similar to the Supreme Court’s language in *Hotchkiss*. The only difference was that instead of talking about inventions reflecting a degree of ingenuity and skill greater than that of an ordinary mechanic, this new section spoke of inventions being obvious to an ordinary person skilled in the art. The idea though appears to have been the same if a mechanic is defined as a “person skilled in an art.”

During this effort of revising and codifying the patent laws, the Supreme Court decided a case which greatly influenced the actual revision and codification. The case, *Great A & P Tea Co. v. Supermarket Equipment Corp.*, involved the validity of a patent initially granted by the PTO for a manual push-pull rack used on grocery checkout counters. The Court invalidated the patent because the majority of the Court saw the device as adding nothing to the total stock of knowledge. In a strong and more specific concurring opinion, Justice Douglas saw this manual rack as nothing more than a gadget. He therefore thought the claim of invention on such a gadget was flimsy and spurious. Consequently, he criticized the PTO for

151. See Federico, supra note 148, at 90.
152. See Preliminary Draft, supra note 150, at § 23; Federico, supra note 148, at 93. See also Efforts to Establish a Statutory Standard of Invention, supra note 10, at 9-10. The text of § 23 reads as follows:

23. *Conditions for Patentability, lack of invention*

A patent may not be obtained though the invention is not identically disclosed or described in the material specified in section 22 of this title, if the differences between the subject matter sought to be patented and said material are such that the subject matter as a whole would be obvious to an ordinary person skilled in the art. Patentability as to this condition shall be determined by the nature of the contribution to the advancement of the art, and not by the nature of the mental processes by which such contribution may have been accomplished.

153. 52 U.S. (11 How.) at 265.
154. See supra note 152.
156. Id. at 149.
157. Id. at 153.
158. Id. at 156, 158 (Douglas, J., concurring).
having had a long history of granting patents on such gadgets.\textsuperscript{159} He also criticized the lower federal courts for having allowed this particular patent in \textit{Great A & P} to come all the way to the Supreme Court before being invalidated.\textsuperscript{160} In short, the concurring opinion saw the conduct of the PTO and the lower federal courts in \textit{Great A & P} as evidence of what was wrong with the patent system.\textsuperscript{161}

This criticism of the PTO and the lower federal courts of course was criticism of their inability to effectively apply the requirement of invention.\textsuperscript{162} Given the ongoing concerns and efforts to revise and codify patent law, the criticism was enough to influence the process, especially the Drafting Committee,\textsuperscript{163} to decide to entirely abandon or eliminate the requirement of invention from patent law.\textsuperscript{164} To this end, the committee purportedly replaced the requirement of invention with a new requirement of “nonobviousness.”\textsuperscript{165}

C. \textit{35 U.S.C. Section 103 Nonobviousness}

1. Origin and Intent - the Inherent Contradiction

The new requirement of “nonobviousness” became section 103 of the 1952 Patent Act.\textsuperscript{166} The idea and intent behind this new re-

\begin{itemize}
\item \textsuperscript{159} \textit{Id.}
\item \textsuperscript{160} \textit{Id.} at 158.
\item \textsuperscript{161} \textit{Id.}
\item \textsuperscript{162} The need to look for invention as a prerequisite to patentability under the requirement of invention, as recognized by the Supreme Court in \textit{Hotchkiss}, was still in effect. In \textit{McClain}, the Supreme Court had abandoned only the need to define invention. \textit{See supra} note 132 and accompanying text.
\item \textsuperscript{163} \textit{See Rich}, \textit{Congressional Intent or Who Wrote the Patent Act of 1952}, in \textit{BNA, NONOBSVIOUSNESS}, \textit{supra} note 4, at 1:1, 1:6 (1980) (The Drafting Committee was a two-man committee, one of whom was Judge Rich. The function of this committee was to make necessary changes in the Preliminary Draft and to come up with a final draft.).
\item \textsuperscript{164} \textit{See, e.g.}, \textit{Rich, supra} note 163, at 1:8 (stating that section 103 was added in order to get rid of the vague requirement of invention). Judge Rich, who later became a judge at the U.S. Court of Customs and Patent Appeals (now dissolved) was a key member of the Drafting Committee on the 1952 Patent Act.
\item \textsuperscript{165} \textit{See, e.g.}, \textit{Rich, supra} note 163, at 1:8; \textit{Rich, supra} note 131, at 32 (detailing how the nonobviousness requirement of § 103 was developed from the requirement of invention as drafted in § 23 of the Preliminary draft).
\item \textsuperscript{166} \textit{35 U.S.C. § 103} (1982).
\item \textit{§ 103. Conditions for patentability: nonobvious subject matter.}
A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and
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requirement was to abandon or eliminate the requirement of invention from patent law. Although section 103 supposedly represents this legislative decision and intent to abandon the requirement of invention, the express language of the 1952 Patent Act and the legislative history of section 103 reflect the contrary. On the question of patentability, the language of section 103 itself together with that of the other sections of the Act, continued to expressly require that patents be issued on inventions that are new, useful and nonobvious. Apparently, the addition of section 103 did not eliminate this express requirement of invention in the 1952 Patent Act. Furthermore, the legislative history of section 103 indicates that section 103 was enacted as a direct statutory provision of the requirement of invention. The history also indicates that the section was intended as a codification of language found in many prior court decisions, notably the Supreme Court decision in Hotchkiss. This is therefore an obvious contradiction surrounding section 103.

Section 103 at the same time cannot be a codification of the requirement of invention from Hotchkiss and a new requirement which abandons or eliminates the requirement of invention from Hotchkiss. This contradiction is significant because it obviously had to make the application of section 103 extremely difficult. Above all, it would also have meant that section 103 did not at all change patent law. In other words, section 103 merely attempted to codify the requirement of invention as it existed then in patent law. In fact, the Supreme

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Id.

167. See supra note 164 and accompanying text.
168. See supra note 164. See also Rich, Why and How § 103 Came to Be, in BNA, NONOBVIOUSNESS. supra note 4, at 1:201, 1:213.
169. See supra note 53.
171. See S. Rep. No. 1979, supra note 101, reprinted in 1953 U.S. CODE CONG. & AD. NEWS at 2397. See also Graham, 383 U.S. at 17 (Court concludes that the section was intended merely as a codification of judicial precedents embracing the Hotchkiss condition.).
172. Section 103 is generally held to have changed patent law in 1952 by making the requirement of invention unnecessary. See, e.g., Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1540 (Fed. Cir. 1983). The CAFC has unfortunately adopted this position. The position that § 103 is no longer necessary is at best questionable given the contradiction in § 103, as well as its history. See infra notes 237-44 and accompanying text.
Court came to this conclusion in 1966.\textsuperscript{173} Yet the contradiction currently persists.\textsuperscript{174}

Historically, this contradiction stems from the fact that the text of section 103 is essentially the same as that of section 23 of the 1950 preliminary draft which of course was drafted as a statutory requirement of invention.\textsuperscript{175} In fact, section 103 was the final version of section 23.\textsuperscript{176} The only significant difference made by the legislative committee between section 23 of the preliminary draft and section 103 of the final draft was a partial change in title.\textsuperscript{177} In fact section 103 was put together essentially by partially changing the title of section 23 from "lack of invention" to "nonobvious subject matter."\textsuperscript{178} The texts were essentially the same. Consequently, it would appear that any implied differences between the "nonobviousness" requirement of section 103 and the invention requirement of section 23 came, not from any textual difference between the two sections, but merely from this change in title. Given the contrary intents of these two sections, this manner of creating section 103 was bound to be contradictory and confusing. Furthermore, the application of section 103 as a new requirement for patentability was bound to be uncertain and difficult.\textsuperscript{179}

2. Difficulty in Application—Continued Indefiniteness and Instability

This uncertainty and concern regarding the application of section 103 together with the yet unsolved problem of patentability in fact perpetuated a continued lack of definiteness and of uniformity in the patent system. Consequently, in 1966, the Supreme Court again in the hope of bringing definiteness and uniformity to the patent system,\textsuperscript{180} provided some clarification and guidance on how to apply section 103. The Court provided its clarification and guidance in the landmark case of Graham v. Deere.\textsuperscript{181} Graham involved the validity of a PTO-granted patent for an improved spring clamp for use on

\begin{enumerate}
\item[173.] See Graham, 383 U.S. at 17.
\item[174.] See infra notes 241-249 and accompanying text.
\item[175.] See, e.g., Federico, supra note 148, at 92-93 (discusses changes in section 103 from section 23).
\item[176.] Id.
\item[177.] Id.
\item[178.] Id.
\item[179.] See, e.g., Note, The Standard of Patentability—Judicial Interpretation of § 103 of the Patent Act, 63 COLUM. L. REV. 306, 313-23 (1963) (reviews problems faced by the courts in applying § 103). See also Note, supra note 91, at 986.
\item[180.] See Graham, 383 U.S. at 18 (in ruling on § 103 the Supreme Court believed that strict observance of the requirements laid down here will result in that uniformity and definiteness which Congress called for in the 1952 Act).
\item[181.] 383 U.S. 1 (1966).
\end{enumerate}
plow shanks. The improvements involved the use of a stirrup to prevent the plow shank from fishtailing, and the inversion of the hinge plate to avoid undesirable wear.\textsuperscript{182} The Court invalidated the patent on the grounds that the improved spring clamp would have been obvious to a person of ordinary skill in the particular field.\textsuperscript{183} In addition, the Court in addressing one of the concerns surrounding section 103, held that section 103 was simply a codification of the "condition" in \textit{Hotchkiss}.\textsuperscript{184} The Court then restated the \textit{Hotchkiss} condition as the requirement that patents not issue for inventions if the differences between the invention and what was already known were not sufficiently important.\textsuperscript{185} The Court then concluded that the enactment of section 103 had neither raised nor lowered the standard of patentability.\textsuperscript{186}

The Court in \textit{Graham} also established an analytical method for applying section 103.\textsuperscript{187} Under this analytical method, the PTO and the federal courts are required to consider a number of factors when applying section 103. These factors include: the subject matter of the patent application, the knowledge that had already been disclosed to the public about the subject matter, the differences between these first two factors, and then the prevailing level of skill in the particular field.\textsuperscript{188} As an analytical method intended to achieve definiteness and uniformity, this announcement in \textit{Graham} contained some serious flaws. First, the Court did not specify the type of differences which are to be considered. Consequently, the selection of what differences to consider was bound to involve discretion and therefore could not be uniform.\textsuperscript{189} The Court also did not provide a logical basis or calculus for weighing the factors to be considered.\textsuperscript{190} As a consequence, the PTO and lower courts have been forced to come up with their own
rational basis for finding obviousness or nonobviousness.\textsuperscript{191} This has made the application of section 103 very difficult. Perhaps because it recognized the difficulty in applying this no-logic-analytical-method, the Supreme Court in \textit{Graham} warned that application of section 103 was not likely to be uniform.\textsuperscript{192}

The Supreme Court itself faced the difficulty of applying section 103 only three years after \textit{Graham}. In \textit{Anderson's-Black Rock v. Pavement Salvage Co.},\textsuperscript{193} the Court faced the issue of whether a patent for a combination apparatus for laying continuous black-top paving was valid. The task under section 103 was to decide whether the combination of elements in the apparatus was obvious or nonobvious. The Court held the patent invalid on the grounds that the combination did not meet the test of invention.\textsuperscript{194} The combination of elements did not meet the test of invention because it failed to produce a new or different result from that produced by the elements uncombined.\textsuperscript{195} Since the issue before the Court was whether the combination of elements was obvious or nonobvious, the Court's reference to a test of invention illustrated the difficulty in the actual application of section 103. The difficulty was further illustrated by the Court's announcement of what was in effect a new test of patentability,\textsuperscript{196} though purportedly relying on section 103.

Applying section 103 was not only difficult for the Supreme Court, it was equally difficult for the lower federal courts and for the PTO.\textsuperscript{197} Consequently the difficulty in applying section 103 had meantime heightened the long-standing conflict between the PTO and the courts.\textsuperscript{198} In the courts themselves, the difficulty led to inconsistent decisions on the same facts and issues.\textsuperscript{199} As a consequence of

\begin{itemize}
  \item \textsuperscript{191} E.g., infra notes 213-19 and accompanying text.
  \item \textsuperscript{192} Graham, 383 U.S. at 18.
  \item \textsuperscript{193} 396 U.S. 57 (1969).
  \item \textsuperscript{194} \textit{Id.} at 61.
  \item \textsuperscript{195} \textit{Id.} at 60.
  \item \textsuperscript{198} See Gausewitz, Brief in Support of Proposed Amendment to \textsection 103 Title 35, Patents, U.S. Code, 51 J. PAT. OFF. SOCY 290, 292-99 (1969).
  \item \textsuperscript{199} See S. REP. No. 275, supra note 2, reprinted in 1982 U.S. CODE CONG. & AD. NEWS at 15-16.
\end{itemize}
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the heightened conflict and the inconsistencies, the courts had begun to invalidate a greater and greater percentage of PTO-granted patents that were challenged before them, thus discouraging desired investment in the development and commercialization of inventions.\textsuperscript{200} This discouragement of investments, together with the difficulties surrounding the application of section 103 (factors of instability), were a major impetus in 1982 for the congressional creation and grant of power to the CAFC to bring stability to patent law.\textsuperscript{201}

V. THE COURT OF APPEALS FOR THE FEDERAL CIRCUIT

A. Primary Justification and Mandate

In 1982, Congress created the Court of Appeals for the Federal Circuit (CAFC)\textsuperscript{202} primarily in response to the instability caused by the conflicts and inconsistencies in patent law decisions under section 103.\textsuperscript{203} Although the CAFC was created as part of an overall effort to improve the federal court system,\textsuperscript{204} it was primarily intended to be a single and expert appeals court for patent matters. Thus it was given exclusive jurisdiction over patent appeals. It became the thirteenth court of appeals in the federal Court system and replaced the patent jurisdiction of the other twelve geographical circuit courts of appeals and of the dissolved Court of Customs and Patent Appeals.\textsuperscript{205}

\textsuperscript{200} See Gausewitz supra note 198, at 293.
\textsuperscript{202} See supra note 4.
\textsuperscript{203} The patent law concerns cited as justification for creation of the CAFC dealt mainly with the application of § 103. These included: the issue of whether obviousness and nonobviousness determinations pursuant to § 103 are questions of fact or law; the use of a standard of ordinary skill; and lack of uniformity. See supra note 201 and accompanying text. The problem of patentability, on the other hand, was already a concern long before the enactment of § 103. See supra note 91 and accompanying text. See also Note, Patents—The Changing Standard of Patentable Invention: Confusion Compounded, 55 MICH. L. REV. 985, 986 (1957) (the controversies surrounding § 103 “merely added more uncertainty to the already vague and indefinite standard of patentability”); Sayko, supra note 197, at 826 (discussing divergence, nonuniformity and inconsistency among the courts and the PTO applying § 103). In order to bring stability or definiteness and uniformity to patent law, the particular problems associated with § 103, as well as the problem of patentability, must be resolved.
One of the primary objectives of the CAFC specified by Congress is to develop and increase "doctrinal stability" in patent law. The CAFC sees the Congressional directive to achieve this objective to be a mandate, especially because Congress gave the CAFC the powers to make accomplishment possible. The significance of this mandate is that the CAFC is not bound by past judicial doctrines concerning patent matters. Furthermore, the CAFC may reconstrue patent statutes if necessary in order to achieve its objective. However, for the CAFC to achieve its objective of bringing stability to patent law, it must solve the patentability problem. Therefore in exercising its mandate, the CAFC must develop or adopt an objective and definitive test of what is and is not patentable. To do so, the CAFC must deal also with the application problems of section 103. Furthermore, it must also develop or adopt an objective and realistic definition of invention as part of the test of patentability.

207. See Federal Courts Improvement Act § 127, 28 U.S.C. § 1296 (Supp. 1984). The CAFC is given the authority to make rules regarding the order in which applicable patent law shall be precedent before it. See also Panduit Corp. v. All States Plastic Mfg. Co., 744 F.2d 1564 (Fed. Cir. 1984). In Panduit the CAFC said: "This court was created, as contemplated by Congress, to achieve uniformity and to reduce uncertainties in [the patent area]. This court thus has a mandate to achieve uniformity in patent matters." Id. at 1574.
208. The CAFC has already rejected some key Supreme Court doctrines. In Schenck v. Nortron Corp., 713 F.2d 782, 786 n.3 (Fed. Cir. 1983), the CAFC rejected the Supreme Court’s view of patent rights as monopoly rights, holding instead that patent rights are ordinary property rights. The CAFC rejected the Supreme Court’s view because “nowhere in Patent statutes is a patent described as a monopoly.” Id. The CAFC has also rejected the Supreme Court’s classification and labeling of some patents as “combination patents.” In Medtronic, Inc. v. Cardiac Pacemakers, 721 F.2d 1563, 1566 (Fed. Cir. 1983), the CAFC stated that “it but obfuscates law to posit nonstatutory judge-created classification labeled combination patents.” And in yet one more example, the CAFC has rejected “synergism.” See generally Note, supra note 196; see, e.g., Gardner v. TEC. Systems, 725 F.2d 1338, 1349-1350 (Fed. Cir. 1984).
209. See Schenck, 713 F.2d at 786 n.3. In Schenck, the CAFC refers to Patent Statutes and not to Supreme Court prior construction. Id. Another example of CAFC exercise of power to construe a statute afresh is CAFC’s treatment of § 103. The Supreme Court in applying § 103 in Graham, 383 U.S. at 1, had read it as requiring that “differences” between subject matter sought to be patented and the prior art, be obvious. Id. at 24. The CAFC has rejected this view, and insists that proper interpretation requires that “the subject matter as a whole,” not just the “differences,” be obvious. See, e.g., Schenck, 713 F.2d at 785 (effort to limit focus of inquiry to differences from prior art and then show that differences would have been obvious is not proper under statute which requires that invention be considered as a whole).
210. See supra note 203.
211. The functional relationship of the PTO and the federal courts in the patent system, is such that a subjective test of patentability will not be effective.
B. Section 103 Nonobviousness Under the CAFC—
the Suggestion Test

Section 103 (nonobviousness) has the force of statute therefore the federal courts including the CAFC must apply it until it is repealed. The CAFC in applying section 103 has already adopted the analytical framework laid out by the Supreme Court in *Graham v. Deere*.212 Because this analytical framework provided no logical basis for reaching the conclusion of obviousness or nonobviousness,213 the CAFC has been forced to adopt a logical basis. The basis or test that the CAFC has adopted and is currently using, can be fairly described to be a *suggestion test*.214

This suggestion test involves an examination of the claims in a patent application and the knowledge that has already been disclosed on the particular subject covered by the patent application. The purpose of the examination is to reveal whether or not the knowledge in the claim215 being examined is “clearly present”216 or “clearly suggested”217 by what had already been disclosed on the particular subject covered by that claim. If the knowledge in the claim under review is “clearly present” or “clearly suggested,” the court concludes that the claim is obvious. If all the claims are obvious, the court then denies or invalidates the patent in issue. On the other hand, if the knowledge in the claim is “not clearly present” or “not clearly suggested” by what had already been disclosed, the conclusion is that the claim is nonobvious. The patent is then ruled to be valid to the extent of such nonobvious claims. Under the suggestion test, the court

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213. *See supra* note 190 and accompanying text.
214. The suggestion test is an analytical procedure, based perhaps on a literal reading of § 103. Section 103, of course, is supposed to cover inventions that are “not identically disclosed or described as set forth in section 102.” *See supra* note 166. It is an examination of the prior art (that is, prior disclosed knowledge and know-how) to see if it already includes what an application or patent at issue is seeking to disclose. Stated another way, the proper test is whether the prior art references taken as a whole would suggest the invention to one of ordinary skill in the art. *See Miliken Research Corp. v. Dan River, Inc.*, 739 F.2d 587, 602 (Fed. Cir. 1984). The suggestion test is, however, not coextensive with a complete test of patentability. The test operates to resolve only the issue of knowledge or know-how that is to be disclosed.
uses a person of ordinary skill in the art as the standard for determining what is or is not "clearly present" or "clearly suggested". On its face, the approach of this test poses no apparent problems. However, the fact that the test merely functions to reveal whether or not the knowledge in the claim under review was already disclosed, poses a real problem. By functioning as such, the suggestion test in fact operates merely as a test for disclosure.

C. The Suggestion Test Reduces Section 103 Conclusions to Mere Dicta

Since the suggestion test operates in fact as a mere test for disclosure, its use as a logical basis for section 103 is clearly problematic. The problem lies in the fact that use of such a test under section 103 in effect reduces the conclusions of obviousness or nonobviousness to nothing more than dicta. This is because the primary purpose for issuing a patent is to encourage disclosure of the new knowledge or technical know-how represented by an invention. The essence of disclosure in patent law is such that the PTO and the courts should never issue a patent if the subject matter of an application has no such new knowledge or technical know-how to disclose. Accordingly, if prior disclosure was the only patentability issue left to be decided in a particular case, applying the suggestion test (to reveal whether or not there was prior disclosure) should automatically and directly determine the issue of patentability. With patentability thus determined, subsequent conclusions are mere dicta

218. See Milliken Research, 739 F.2d at 602 (suggestion is to one of ordinary skill in the art).
219. Note that the suggestion test as applied by the CAFC has in effect altered the sense of § 103. The effect of the suggestion test on § 103 can be illustrated by restating the text of § 103 as follows:
A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been clearly suggested to a person of ordinary skill in the art, by the prior art at the time the invention was made. Compare this to the actual text of § 103, supra note 166, and it becomes clear that the suggestion test has turned § 103 into a mere subsection of § 102.
220. See supra note 68 and accompanying text.
221. The contractual view of "patent protection-for-disclosure" also tends to support this argument. See supra note 68. The lack of something new to disclose would be seen as a failure of consideration and therefore no patent should issue.
222. For other patentability issues or requirements, see 35 U.S.C. §§ 101-04 (1982).
223. 740 F.2d 1560 (Fed. Cir. 1984).
if they purport also to determine patentability. Similarly, since the objective of the CAFC is to determine patentability, deciding that there had been prior disclosure (given the disclosure essence of patent law) should be determinative. Such determination should render a subsequent conclusion of obviousness under section 103 irrelevant. Conclusions of obviousness when made following an application of the suggestion test, are subsequent to a decision finding prior disclosure, and are therefore nothing more than dicta.

This effect of the suggestion test on section 103 conclusions is illustrated in Vandenburg v. Dairy Equipment.\textsuperscript{223} The issue in Vandenburg involved the validity of a patent for a plastic arm support for milk hoses during milking operations. The arm support was designed with a ball and socket joint.\textsuperscript{224} Applying the suggestion test, the CAFC came to the conclusion that the prior art clearly suggested the application of adjustable ball and socket joints to milk hose supports.\textsuperscript{225} Given the disclosure essence of the patent system, this conclusion should have decided the patent validity issue. The patent should have been declared invalid given such prior disclosure. Instead, the CAFC proceeded to draw a further conclusion. The CAFC further concluded that given the clear suggestion in the prior art, it would have been obvious to a person of ordinary skill in the art to do what the patentee did.\textsuperscript{226} On the issue of validity, this further conclusion of obviousness was clearly unnecessary and irrelevant; it was therefore dictum.

Similarly, in White v. Jeffrey,\textsuperscript{227} the further conclusion of obviousness was dictum because it followed a decisive conclusion of prior disclosure. In White v. Jeffrey, an infringement action, the patent under review was for a helical mining machine and included several claims. In declaring claim 12 invalid, the CAFC said: "Thus the prior art clearly suggests the claimed combination."\textsuperscript{228} Then the CAFC went on to conclude, "[a]ccordingly we hold that the jury could not reasonably have concluded that the invention defined by claim 12 was nonobvious."

Another illustration of how CAFC use of the suggestion test reduces section 103 conclusions to dicta occurred in In re Sernaker.\textsuperscript{229} In this case which involved a patent application for a method of mak-

\textsuperscript{224} Id. at 1563.  
\textsuperscript{225} Id. at 1568.  
\textsuperscript{226} Id.  
\textsuperscript{227} 723 F.2d 1553, 1560 (Fed. Cir. 1983).  
\textsuperscript{228} Id.  
\textsuperscript{229} 702 F.2d 989 (Fed. Cir. 1983).
ing an embroidered emblem, the CAFC expressly stated the relationship it sees between the suggestion test and section 103 conclusions. In reversing a PTO Board of Appeals rejection of the patent application on grounds of obviousness, the CAFC said, "[i]f [the suggestion test] is not met, the invention claimed would not have been obvious from the references." The court also stated the relationship differently when it said, "[i]n the absence of [clear] suggestions, claims would not have been obvious." In other words, the conclusion of obviousness can be drawn only subsequent to and from a finding of prior disclosure.

It is difficult to see from these illustrations how the subsequent conclusion of obviousness or nonobviousness was necessary or relevant in determining the issue of patentability. Given the disclosure essence of patent law, the suggestion test decision regarding disclosure (albeit nonidentical disclosure), obviously and logically should have determined the issue of patentability. As such, subsequent conclusions of obviousness were in effect reduced to mere dicta.

The reduction of section 103 conclusions to dicta should be a significant concern because under current patent law, the question of prior disclosure is covered expressly by the provisions of section 102. These provisions existed concurrently with the requirement of invention which section 103 is held to have eliminated. Section 103 therefore should have been more than a mere disclosure provision. The legislative history and intent of section 103 also indicate that section 103 was meant to be more than merely another disclosure provision of the current Act. Yet as illustrated in these examples, CAFC's use of the suggestion test under section 103 has the unintended effect of converting section 103 into a mere disclosure provision. As such, it is difficult to see how section 103 can ever eliminate the requirement of invention from patent law.

230. Id. at 995.
231. Id.
232. Id. at 996.
233. See 35 U.S.C. § 102(a), (b), (d), (e), (g) (1976).
234. See supra note 164-79 and accompanying text.
235. See supra note 219 and accompanying text.
236. The disclosure requirements or conditions of § 102 are as old as all of patent law. See, e.g., Patent Act of 1836, 5 Stat. 117, 119-120 (1836-1845). Prior publication, prior patenting or disclosure to the public were grounds for denial of patent grant. These provisions have been part of patent law since. The requirement of invention as reiterated by the Supreme Court in Hoshkiss v. Greenwood, was necessary despite these provisions. Therefore if all § 103 (which was added in 1952) can do is restate one or more of these provisions—then it cannot by so doing obviate the need to define and look for invention as a prerequisite to patentability.
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D. The Requirement of Invention Under the CAFC Persists Despite Section 103

By relying on section 103 and the suggestion test, the CAFC apparently has had no need to define invention. In fact in a number of decisions, the CAFC has instead stated that invention is an amorphous concept. In the same decisions, the CAFC has also taken the position that invention is no longer required in deciding what is and what is not patentable. This the court claims, is because the enactment of section 103 (nonobviousness) made the requirement of invention unnecessary. The position of the CAFC in these cases of course reflects the statutory intent of section 103. However, a fair reading of the patent and copyright clause of the Constitution and of the express language of the 1952 Patent Act itself, make the position highly questionable.

Since the patent and copyright clause of the Constitution which controls and limits the determination of patentability can be recognized or fairly interpreted as containing the concept of invention, "invention", however defined, must be a requirement in determining what is and is not patentable. Therefore if section 103 (nonobviousness) is being applied not as defining the constitutional concept of invention but as making its requirement unnecessary, section 103 will in effect be attempting to alter the Constitution. Such a use of section 103 is highly questionable because Congress simply cannot alter the Constitution by legislation. In fact, Congress must legislate within the limitations of the Constitution because Congressional power to legislate derives from the Constitution.

The CAFC's position that invention is no longer required in deciding the issue of patentability is also questionable for another reason. The position is clearly contradicted when the CAFC, in accor-

237. See Stratoflex, 713 F.2d at 1540.
239. See Stratoflex, 713 F.2d at 1540.
240. See supra notes 164-79 and accompanying text.
241. See supra notes 18 and 84.
242. See supra note 168 and accompanying text.
244. Id. With specific reference to patent law, the Supreme Court has also stated that the Congress acts under restraints imposed by the Constitution. See, e.g., Great A. & P. Tea Co. v. Supermarket Equipment Corp., 340 U.S. 147, 154 (1950); Graham v. Deere, 383 U.S. 1, 6 (1966).
dance with patent practice,\textsuperscript{245} requires that the claims of each patent application define the invention.\textsuperscript{246} Furthermore, the CAFC like the Supreme Court, views the claims of a patent application as defining and measuring what the applicant regards as his invention.\textsuperscript{247} The position is also contradicted by the fact that the CAFC also recognizes the claim element of a patent application as a statutory requirement prescribed for the purpose of making the applicant define his invention.\textsuperscript{248} If patent applicants are thus required to define their inventions with the claims they draft, it is difficult to see how invention at the same time is no longer a prerequisite to patentability. Since the CAFC's position is not only contradicted by this practice but is also Constitutionally questionable, it is reasonable to conclude instead that proof of invention is still a prerequisite to determining patentability. In other words, it is reasonable to conclude that the need to define and to look for invention\textsuperscript{249} as part of the process of determining patentability has persisted despite the enactment of section 103, and despite CAFC reliance on the suggestion test. From this persistence and from the current concerns raised by section 103 it is also reasonable to conclude that the CAFC has not as yet (1) resolved the problems surrounding the application of section 103, and (2) solved the problem of patentability.

VI. PROPOSED SOLUTION TO THE PATENTABILITY PROBLEM

A. Repeal of Section 103 as a First Step Is Urged

As a first step towards an effective solution to the problems of uncertainty and instability surrounding the determination of patentability, Congress is urged to repeal section 103. Reasons for urging the repeal include the inherent contradictions created by section 103, the effect of the suggestion test on section 103 conclusions and the constitutionality issue raised by the application of section 103. The

\textsuperscript{245} See, e.g., White v. Dunbar, 119 U.S. 47, 52 (1886) (Supreme Court rejected claims for a canning method of preserving the color and flavor of shellfish because they did not accurately describe the invention). See also Aro Mfg. Co. v. Convertible-Top, Inc., 365 U.S. 336, 339 (1961) (claims are statutory requirement to define and measure invention).

\textsuperscript{246} See, e.g., Raytheon Co. v. Roper Corp., 724 F.2d 951, 957 (Fed. Cir. 1983).

\textsuperscript{247} See, e.g., Jones v. Hardy, 727 F.2d 1524, 1528 (Fed. Cir. 1984).

\textsuperscript{248} Raytheon, 724 F.2d at 957.

\textsuperscript{249} It is possible that when patent claims are required to define and measure invention, the term invention is not being used in the same sense as elsewhere in the patent acts. Even so, there is still a need to define both uses in order to distinguish them.
目的自1952年以保持明确定义及专利法的统一。自1982年同目的，佐证了第103条之无效性。更重地，废除第103条朝因CAFC对第103条之理解为不必要的发明要求已经作出，这项要求在专利法语言及专利法实践中被违反。进一步地，一个有效解决围绕着专利性确定的问题的方法应当注意发明的要求及故而需要明确定义，尽管在第103条中所持。应也应指出第103条之理据起源于最高法院对其在专利法中使用之发明概念的无法实然及客观定义。因此，若和当这项发明的定义被发展时，将无需第103条。

目前，对发明之定义的发展是可能的，尽管由CAFC所依据发明之概念为多形的。这些由CAFC之强词，不幸地，基于最高法院在其在McClain中所作的结论，即发明无法被定义。这一结论由最高法院所涉及

250. See supra note 4.
251. See supra notes 164-69. According to Judge Rich, it was the inability of the Supreme Court to define invention as exemplified by its decision in Great A. & P, that justified the decision to adopt "nonobviousness" instead. See Rich, supra note 163, at 1.6. The criticism of the rest of the patent system by Justice Douglas regarding the inability at properly applying the standard of invention was also a factor. See supra notes 159-68 and accompanying text.
252. The view of invention abandoned in McClain was the Hotchkiss view of invention. See supra note 129. In Kimberly-Clark Corp. v. Johnson & Johnson, 745 F.2d 1437 (Fed. Cir. 1984), the CAFC stated, "[i]nvention has been intended as a discussion of that former prerequisite to patentability known as the requirement of invention which had existed in the law since Hotchkiss v. Greenwood, 52 U.S. 248 (1850)." In McClain, 141 U.S. at 427, the Supreme Court asserted and has maintained that invention cannot be defined. But see Potts, The Definition of Invention in Patent Law, 7 MODERN L. REV. 113 (1944). In warning against absolute statements to the effect that "invention" cannot be defined, Potts stated that:

...it is very important to decide whether [this inability to define invention] is due to our failure so far to have discovered the appropriate definition of some entity which is capable of definition by further research, or to an inherent impossibility of definition. It is one thing to define a philosopher as a blind man searching in a dark room for a black cat—more delicate instruments may enable him to succeed. It is another thing to say that the black cat is not there.

Id. at 119. Modern knowledge about R&D and R&D practices may be regarded as representing the "delicate instruments" that Potts spoke of, because it can enable us to succeed.
its Hotchkiss view of invention. Besides appearing amorphous to the CAFC, this particular view of invention as argued, is subjective, inaccurate and inappropriate for patent law purposes.253 Other views of the concept of invention, that is, views that are objective, realistic and hence not amorphous, of course exist.254 Further, the current R&D practice of systematically developing actual inventions255 should also teach us that the concept of invention is not amorphous. It should be noted too that the Hotchkiss view of invention was formulated at a time when the practices of R&D were still very crude and unorganized.256 Today however the growth and sophistication of R&D has taught us much more about the invention process and about actual inventions.257 The patent system, notably the CAFC, can overcome the difficulties of understanding and defining invention simply by looking beyond patent law to the world of R&D. Developing an effective solution to the problems surrounding the determination of patentability doubtlessly requires an understanding of R&D in addition to the adoption of an objective and realistic definition of invention.

B. A Research and Development Definition of Invention Is the Key

1. The Process of Invention As a Source of Information

It is generally recognized that law in one respect is an attempt through the use of words to influence and structure the realities of human behavior in some context of society.258 As such, attempts to explain or find the real meaning of a word used in law must look beyond the law itself to the societal context in which the particular law was designed to operate.259

In the case of patent law, this societal context is represented by organized R&D.260 The development of actual inventions is part

253. See supra notes 115-19 and accompanying text.
254. See supra note 115.
255. See infra notes 264-69 and accompanying text.
256. Research and Development, or R&D, did not become a profession until about 1833. See, e.g., L. Redman & A. Mory, The Romance of Research 54 (1933). Even then, the specialized sciences from which much of the current knowledge about R&D has come, did not really begin to take root until about 1850. Id. As a result organized R&D as we know it today did not start until about 1901-02. See, e.g., L. Silk, supra note 7, at 54.
257. See supra notes 40-45; see infra notes 264-69 and accompanying text.
260. See, e.g., Diamond v. Chakrabarty, 447 U.S. 303, 307 (1980). In this case, the Supreme Court saw the patent laws as promoting research efforts. In indicating
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of the reality of human behavior in R&D. For the purpose of developing such inventions, R&D has evolved a sophisticated, systematic and repeatable process. Attempts to define invention, that is, attempts to explain or find the real meaning of the concept of invention as used in patent law, should therefore look beyond patent law to this R&D process.

Although there is no ready definition of invention in R&D that will satisfy patent law needs, this R&D process of developing inventions actually contains the basic and necessary information for such a definition. This particular R&D process is based on the scientific method, and has even been acclaimed as the greatest invention of the nineteenth century. As a process, it consists essentially of four steps.

Conceptually, the four steps can be described as follows: (1) recognizing, defining and analyzing a need or want in society; (2) overcoming a “problem” by searching, generating and evaluating necessary abstract knowledge (yet unknown to the society), or conceptualizing and verifying a yet unknown method for applying the abstract knowledge; (3) designing and developing a product or process that embodies the method of application; and (4) testing and insure reproducibility of the product or process. Each of these steps in the

its clear recognition of the R&D-patent law relationship, the Court stated: “[t]he large amount of research that has already occurred when no researcher had sure knowledge that patent protection would be available suggests...” Id. at 317; See supra notes 31-33 and accompanying text. See also Kitch, The Nature and Function of the Patent System, 20 J. LAW & ECON. 265 (1977) (recognizes patent law’s place in R&D).


262. See D. HERTZ, supra note 261, at 74. The scientific method can be defined as an exact and precise method of describing or classifying scientific subject matter so that the subject matter can be repeated and verified by others. If the description is of an object, it should be possible to reproduce or reconstruct only that particular object by applying the scientific method. The language of such description must be capable of reproducing or recalling the subject matter with precision and uniqueness. See, e.g., 12 McGRAW-HILL ENCYCLOPEDIA OF SCIENCE AND TECHNOLOGY 102-04 (1971).

263. See L. SILK, supra note 7, at 53.

264. D. HERTZ, supra note 261, at 78. See also D. KARGER & R. MURDICK, supra note 36, at 202.

265. D. HERTZ, supra note 261, at 78. Of course four steps, the steps dealing with problem recognition and abstract knowledge or method of application require some comment. The problem step is analyzed further below. See infra notes 271-75 and accompanying text. The phrase “abstract knowledge” is used in the same sense as “principle” either of nature or man-made.

To require that the abstract knowledge or principle be previously unknown is tantamount to requiring discovery. However, the step recognizes that even if the principle is not previously unknown, the technique or method of applying it could be. An
process represents an essential input or requirement of the process for developing inventions. Each such input is also an essential element of the invention that is produced by the process.

Two additional elements required for producing inventions by this process are necessary because of the economic nature of R&D. They are (1) timing as first and original developer and (2) the need to have a potential market or user for the invention being developed. Because inventions are costly to develop, it is necessary to have a user for them so that the inventor can recoup his investment. In addition, the need for patent protection imposes risks of preemption and loss of investment if the inventor is not the first to develop and apply for a patent. These two elements, although not steps in the R & D process, are nonetheless essential to the development and hence the definition of invention.

Of all the elements essential to the development of inventions by R&D, the meaning and critical significance of the element of a "problem" require careful understanding. A problem in R&D is seen as a "gap" in the societal intelligence, or as a "gap" in the knowledge or know-how that is needed to satisfy some need or want in society. The term "gap" means that the abstract knowledge or know-how necessary for the satisfaction of a need, is unknown or not yet available to the society. As such, only three possible types of problem situations can arise in R&D.

The first type of problem situation exists whenever the abstract knowledge is unknown and the method of application is also unknown.

in-depth discussion of the R&D process of inventing is however beyond the scope of this note. The fundamentals of the process are introduced merely to illustrate the empirical derivation of a realistic definition of invention.

266. Each of the steps represents an essential input in the sense that without it, the process is incomplete and the expected results cannot be obtained.

267. R&D projects can cost $14 million or more. See, e.g., E. ROBERTS, THE DYNAMICS OF RESEARCH AND DEVELOPMENT 213 (1964). Also see Marshall, Japan and the Economics of Invention, SCIENCE, Apr. 12, 1985 at 157, 158 (The Carter and Reagan administrations are reported to have invested billions of dollars in basic research in the hope it will improve national productivity. Commentators also criticized United States performance in applied science and in the commercialization of new knowledge.).

268. E. ROBERTS, supra note 267, at 216. See also supra note 36 and accompanying text.

269. See supra notes 65-70 and accompanying text.

270. The significance is best illustrated by the assertion that where there is no problem (R&D concept of problem), there can be no research. See D. HERTZ, supra note 261, at 26.

271. Id. at 25.

272. Id. at 20-30.
The second type of situation exists whenever the abstract knowledge is unknown but the method of application is known. The third exists whenever the abstract knowledge is known but the method of application is unknown. The situation in which there is an unsatisfied need in the society, despite the fact that both the abstract knowledge and the method of application are known, is not an R & D problem situation. Satisfying a need which exists in society, despite this particular situation, does not require research or development. This is because there is "no problem." In other words, there is "no lack of knowledge" and hence no need for discovery. R&D therefore cannot develop an invention under these circumstances, because one essential element is missing. And what is true of the essential element or requirement of a "problem" is equally true of all the essential R&D elements of the concept of invention.

2. Proposed Definition of Invention Using R&D Elements of Invention

One effective and practical way to define an item or concept is by combining all its essential elements. Knowing all the essential elements of a concept should be tantamount to knowing its definition. Thus, given all the essential elements of invention as derived from the R & D invention process, an effective and practical definition of invention can be formulated.

276. The concept of "an address" in the postal system is an excellent example of a concept defined by all its essential elements. The essential elements of a typical postal address are: (1) a proper name (first and last forms); (2) a house number; (3) a street name; (4) a town or city name; and (5) name of country.

277. All the essential elements of R&D inventions can then be stated as including: a need or want in society; abstract knowledge previously unknown to the
To be effective and practical, the definition of invention formulated from the R&D elements of invention, no matter how pieced together, must contain all of the elements. The definition must also reflect a recognition of the problem-solution relationships among the various elements. For example, using the elements of the process of invention derived above, an invention can be defined as follows.

An invention within a society is the first and original successful development of a reproducible product or process which embodies a discovery either of abstract knowledge previously unknown to the society or of a method of application previously unknown to the society, and which thereby can satisfy the need or want of a user in the society.  

The view of invention represented by this proposed definition is totally unlike the Supreme Court’s Hotchkiss view of invention. This proposed definition does not include the mental attributes of an individual as elements. Instead it includes only elements of the method of inventing. The proposed definition in one respect is merely an element-by-element description of the R&D method of producing inventions. Even so, it clearly incorporates the constitutional and R&D idea that to be an invention a product or process must embody a discovery. Thus it is totally unlike the attempted definitions of invention that are based on the Hotchkiss view of invention. Consequently this proposed definition is more appropriate for patent law purposes and can be applied effectively to solve the patentability problem.


Given the repeal of section 103, this proposed definition of invention can be applied effectively towards solving the patentability problem because it is a satisfactory and realistic definition of invention. Furthermore the proposed definition complies with the statutory

society or a method of application previously unknown to the society; a product or process which embodies the method of application; successful testing and reproduction; and timing as first and original developer.

278. See supra note 275.

279. This definition represents the second view of invention, see supra note 115. This proposed definition of invention is in terms of the elements and characteristics of the manner or method of inventing. A similar definition, however, is also possible even if the first view of invention is adopted. See supra note 115.

280. See supra notes 111-19 and accompanying text.

281. See supra notes 264-69 and accompanying text.

282. See supra note 84 and accompanying text.
requirements of the current Patent Act. In fact each of the elements in the proposed definition corresponds to at least a section of the Act. These sections include 101, 102, 112, 115, 282 and possibly others.\textsuperscript{283} The satisfaction of the requirements of each of these sections is necessary for determining patentability\textsuperscript{284} even though the sections are not grouped together under the patentability chapter of the Act.\textsuperscript{285} Because the requirements of these sections correspond to the R&D elements of invention, to satisfy or meet all the requirements of these sections is therefore to prove invention. And since the additional statutory requirements that must be satisfied in order for a patent to issue are merely descriptive of invention,\textsuperscript{286} proof of invention, mean-

\textsuperscript{283} See 35 U.S.C. §§ 1-293 (1982). Each element of the proposed definition corresponds to the requirements of at least one section of Title 35 U.S.C. The element of a "product or process" is required by § 101. The element of "abstract knowledge previously unknown to society" or of a "method of application previously unknown to society" is required under § 102. Section 102 also requires the element of "success." The element of "reproducibility" is required by § 112 and the element of "first and original developer" is required by §§ 115 and 282.

\textsuperscript{284} See, e.g., 35 U.S.C. § 115 (1982). Although this section is regarded merely as the oath provision of the Act, it expressly contains the element of "first and original developer". Failure to establish this element, when at issue, is grounds for denial of patent application. In fact the absence or presence of this element is what is at issue in interference proceedings. See 35 U.S.C. § 135 (1982).


\textsuperscript{286} Section 101 of the current Patent Act reads in part, "whoever invents or discovers any new and useful [product or process]...may obtain a patent..." (emphasis added). 35 U.S.C. § 101 (1982). Section 102 in part reads, "[a] person shall be entitled to a patent unless the invention was...[already] described in a..." Id. § 102. Similarly Section 103 in part reads, "[a] patent may not be obtained...if...the subject matter as a whole would have been obvious at the time the invention was made..." (emphasis added). Id. § 103. The terms "new", "useful" and "obvious" or "nonobvious" as well as the phrase "[already] described" are adjectival and merely descriptive of the express but undefined term "invention". Even where the abstract nouns of "novelty" "utility" and "nonobviousness" are used instead, they are simply that, "abstract", and cannot miraculously produce a life of their own. See, e.g., Graham v. Deere, 383 U.S. at 14, where proper use of these abstract nouns indicates that one must speak of the utility of something; the novelty of something; and the nonobviousness of something.

This something is the subject matter sought to be patented or subject matter as a whole, which from the point of view of inventors, is invention. See Brewer, supra note 18, at 55-57 (a Ford Motor Company scientist details the seven stages of an invention based on his experience as a member of the Ford R&D team.). See also Redding, On a Clear Day, You Can See the Patent Office: An Inventors View, INTECH, Oct. 1984, at 33, 36 (a scientists describes his invention of a gas detector to other inventors). These articles make it clear that scientists and inventors work on developing inventions; they do not work on developing novelty or utility or nonobviousness. These abstract nouns are merely attributes or descriptions of invention.

It should be noted that an objective and realistic definition of invention such
ing satisfaction of the requirements of these sections, should be the central and starting point in determining patentability. Therefore identifying an invention by applying this proposed definition should be the central and starting point in determining patentability.

Furthermore, applying the proposed definition will be logical and objective and should enable the PTO and the courts to effectively determine and agree on what is and is not patentable. The application should involve only a logical straight-forward examination of patent applications for the reasonable absence, presence, identity or nonidentity of elements. 287 In addition, this examination process will be objective and uniform because the PTO and the courts will examine the same elements each time and in each case. 288 Such objectivity and uniformity should make it easy for patent applicants, the PTO and the courts to agree more consistently on what is and is not patentable. 289 Agreement on this issue is of course the most critical factor to stability in patent law. The CAFC in exercising its mandate to bring stability to patent law is therefore urged to look beyond patent law to R&D. From the understanding of R&D it gains, it should either develop or adopt a definition of invention such as the one proposed in this note.

VI. CONCLUSION

United States Patent law and policy stem from and are limited by the Constitution of the United States through the patent and copyright clause. This clause requires that patents be granted inventors for their discoveries. The use of the term inventors in this clause, is significant because it clearly raises the concept of invention to a constitutional level. The history of the patent and copyright clause also supports this conclusion. The use in the patent and copyright clause of the term discoveries with reference to inventors is also very significant. Such a use is strong evidence of a recognition of the inherent relationship between the inventions of inventors, and the discoveries of inventors - namely that the inventions embody the discoveries. Additionally, Congress interpreted this clause to mean as that proposed here, already incorporates these descriptions. Their continued use as descriptions of invention may therefore be redundant and illogical, especially since by definition, an invention in this context cannot be old, useless or previously disclosed. See supra notes 115 and 279 and accompanying text.

287. This was illustrated using the element of "abstract knowledge" or method of application. See supra note 275 and accompanying text.
288. See supra notes 272-79 and accompanying text.
289. See supra note 211.
290. See supra notes 18 and 84.
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that patents are to be granted for the inventions of inventors, not the discoveries of inventors. 290

The patent and copyright clause also limits the grants of patents. It does so by requiring that the grants be for the purpose of promoting progress in science and technology. Today, the promotion of science and technology (an activity which involves the making of discoveries as well as the development of inventions) is the function of R&D. 291 The structuring of R&D into basic research which makes discoveries, and applied research which develops the discoveries into inventions, is also strong and practical evidence of the inherent relationship between invention and discoveries. 292

However, Congress has enacted patent acts which do not clearly evidence an understanding or recognition of this inherent relationship between inventions and discoveries. 293 The patent acts without defining invention, have basically required that patents be granted for certain types of inventions. 294 In addition to enacting these acts, Congress also created a system for developing and applying patent law. This system today includes inventors, the PTO, and the federal courts. 295 Inventors are interested in the system because it protects the economic interests in their inventions and discoveries. The United States Government is interested in the system because it helps ensure continued economic growth through investment and progress in science and technology. 296

These interests of the United States Government in the patent system can be served effectively only if the patent system is stable and reliable. The same is true of the interests of inventors. The reliability and stability of the patent system depends squarely on the ability of the PTO and the courts to effectively determine and agree on what is and is not patentable.

Determining what is and is not patentable has been a problem in the patent system since 1790. The efforts since then have been directed at finding a solution. In 1850 the United States Supreme

291. See supra notes 30-33 and accompanying text.
292. See supra notes 43-44 and accompanying text.
293. See, e.g., 35 U.S.C. § 100 (1982). The term invention is defined as or equated to discovery. Although it is possible to discover an invention, that is, accidentally stumble on it without going through all the steps in the invention process, invention and discovery are not identical even in this context.
294. See supra notes 18 and 286 and accompanying text.
295. See supra note 78.
296. See supra notes 68-70 and accompanying text.
Court correctly recognized that because the Constitution and the patent acts contained a requirement of invention, an effective solution required a definition and proof of invention. Unfortunately, the Court at that time adopted a view of invention that was inaccurate and inappropriate for patent law purposes. For invention, the Court instead looked to the mental powers and skill of the patent applicant and not to the elements and functional characteristics of the product or process sought to be patented. Consequently, the Court's efforts to define invention proved unsuccessful and were finally abandoned in favor of section 103 of the 1952 Patent Act.

Section 103 was enacted not only in order to obviate the need to define invention, but also to solve the problem of patentability and thus bring definiteness and uniformity to patent law. However, because of the alogical nature of section 103, its application has been difficult and nonuniform. Currently, the CAFC (which was created because of the difficulties with section 103) has been forced by the alogical nature of section 103 to adopt a "suggestion test" for use as a logical basis for applying section 103. Ironically, the CAFC's use of the suggestion test has instead reduced the obviousness and nonobviousness conclusions under section 103 to nothing more than dicta. This is significant because the net result is that patent law is consequently reduced to the state it was in before the enactment of section 103 in 1952. As such, section 103 could not have and has not satisfied the congressional intent to bring definiteness and uniformity to patent law. Furthermore, section 103 has not as questionably intended, obviated the needs to define invention and to prove invention as a prerequisite to patentability. Therefore, it is reasonable to conclude

297. See supra note 110-14 and accompanying text.
298. See supra notes 18 and 84.
299. See supra notes 115-16 and accompanying text.
300. Such elements and functional characteristics are exemplified by the objective views of invention discussed in note 115 and by the proposed definition derived from R&D practice.
301. See supra notes 180-97 and accompanying text.
302. See supra note 214.
303. The requirement of "nonobviousness" of invention was added in 1952 under § 103. The purpose was to bring uniformity and definiteness to patent law. See supra note 149. The lack of uniformity and definiteness sought to be corrected by § 103 had existed in patent law despite the existence of the disclosure provisions of § 102. See supra note 219. If § 103, under the suggestion test is nothing more than another disclosure provision, then all we have essentially is patent law as it was before enactment of § 103. The net result of course will be continued lack of uniformity and uncertainty despite the existence of these disclosure provisions.
304. See supra notes 247-49 and accompanying text.
that section 103 has not been, nor will ever be, the objective and definitive test that can enable the PTO and the courts to effectively determine and agree on what is and is not patentable. Based on this conclusion, a repeal of section 103 is necessary and is therefore urged. In addition, section 103 which was enacted only because Congress and the courts could not define invention objectively, is no longer justified because the development of an objective and realistic definition of invention is currently possible.

Recognition of the relationship between patent law and R&D as well as an understanding of the R&D process for developing inventions, has made the development of an objective and realistic definition of invention possible. This note has proposed and discussed the relevance and effectiveness of such a definition of invention. The proposed definition of invention is formulated in terms of the essential elements required in R&D to develop inventions. Unlike the Supreme Court's view of invention, this proposed definition represents an objective view of invention. Furthermore its R&D elements of invention are consistent with the statutory requirements of the current Patent Act.

Repeal of section 103 and adoption of such a definition of invention should resolve the current contradictions created by section 103, especially the contradiction between the intent of section 103 and the practice of requiring patent claims to define and measure the applicant's invention. Further, the application of such a definition of invention will involve only a straightforward examination of patent applications for the absence, presence, identity, or nonidentity of elements. Objectivity and uniformity will be insured by the fact that

305. See supra notes 162-65 and accompanying text.
306. See supra notes 30-33, 260-78 and accompanying text.
307. See supra notes 243-49 and accompanying text.
308. For example, in Graham v. Deere, 383 U.S. 1 (1966), the use of a test lacking a specified and definitive set of elements, allowed the plaintiffs to argue different factors for validity before the courts from what they argued before the PTO. Id. at 23. The patent in Graham was for improvements in a spring clamp for plow shanks. The spring clamp being improved was covered by a patent, United States patent No. 2,493,811 (the '811 patent). The user of the improvements was therefore the holder of the '811 patent. The needs that the improvements sought to satisfy were (1) to prevent the plow shank from wobbling and fishtailing and (2) to prevent undesirable wear on the upper plate of the hinge device. The abstract knowledge required to satisfy these needs consisted of the use of a stirrup as a retainer, the use of a bolt as a fastener and spatial relocation of the upper plate. Id. at 20-21.

Had the PTO applied the element by element definitional approach, it would have recognized that this abstract knowledge was not embodied in a product or process that was to be used in the '811 patent. The element of a "product or process"
in a given case, the PTO and the courts will be looking consistently for the absence or presence of the same elements, and by the additional fact that the absence, presence, identity or nonidentity of elements can be judged objectively on a reasonable person standard. Repeal of section 103 and adoption of such an objective definition of invention are therefore undoubtedly the key to a definitive test that will be understood by people in R&D, and that will enable the PTO and the courts to effectively determine and agree on what is and is not patentable. In short, only a definition of invention that satisfies the requirements of the patent act and also accurately reflects the

was not proved. In other words the "product or process" requirement under § 101, among others, was not met. A patent should therefore not have issued. Although the Supreme Court also came to the conclusion that a patent should not have issued, it too had failed to recognize that the "product or process" element or requirement was not present. The Court's conclusion was based instead on the finding that the knowledge involved in the improvements was previously known to society.

The patent system decisions in this case were as follows. The PTO granted the patent; the district court found the patent valid and infringed; the appeals court found the patent invalid and not infringed; and the Supreme Court affirmed the court of appeals. The differences in these decisions were probably due to the fact that the PTO and each of the courts looked at different factors or at different aspects of the same factors. Had each applied the same element by element definition of invention as a test of patentability, the decisions would probably have been consistent. The Supreme Court decision in *Graham* was however correct even though the Court did not use an objective element-by-element test of patentability.

However, in *Funk Brothers v. Kalo Inoculant*, 333 U.S. 127 (1948), analysis indicates strongly that use of an objective element-by-element test would have produced a different result. *Funk Brothers* involved the validity of a patent for a non-inhibitive compound inoculant for leguminous plants. The non-inhibitive compound inoculant was needed by farmers and business men. It was made from a discovered but unspecified non-inhibitive group of Rhizobia bacteria. Prior to this discovery, compound inoculants produced undesirable inhibitive results because knowledge of or about the non-inhibitive group of bacteria was yet unknown to society. *Id.* at 128-31. The PTO granted the patent. A district court in an infringement action declared it invalid. The appeals court reversed the district court. On appeal to the Supreme Court, the Court reversed the appeals court, by finding the patent invalid for lack of invention. *Id.* at 31. The Supreme Court's decision was much criticized, and would appear to have been erroneous. Had an element-by-element definition of invention as a test of patentability been available to the PTO, the district court, the appeals court and the Supreme Court, the results probably would have been different.

It would have been clear from use of the objective element by element test (1) that the non-inhibitive compound inoculant was a product; (2) that there were users for it; and (3) that the product embodied abstract knowledge previously unknown to society. *See supra* notes 277-79. The product was successful in satisfying the need and was also reproducible. The patentee was the first and original developer of the non-inhibitive compound inoculant. Had the PTO and the courts looked for the reasonable presence or absence of the same exact elements, it is more likely than not that they would have agreed on the issue of validity.
concepts and realities of the societal context of patent law, can ever represent the type of objectivity and realism needed by the CAFC, if it is to succeed in its mandate to bring certainty and stability to patent law.

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