Patentability of Compounds Which Are Structurally Similar: What's "New"

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PATENTABILITY OF COMPOUNDS WHICH ARE STRUCTURALLY SIMILAR; WHAT'S "NEW"

INTRODUCTION

The power to issue patents is derived from the United States Constitution. Article I, section 8 of the Constitution grants Congress the power to "promote the progress of science and the useful arts, by securing for limited times to Authors and Inventors the exclusive right to their respective writings and inventions." Congress has thus seen fit to pass Title 35 of the United States Code for the purpose of securing the exclusive right of an inventor to his invention for a term of seventeen years on inventions which are a "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." This note examines the issue of patentability focusing on recent developments in the patentability of compounds which are structurally similar. Part I is a general discussion of patentability; Part II examines the elements of novelty, utility and non-obviousness which are required to obtain a patent; Part III discusses the patentability of chemical com-

2. Id.
4. 35 U.S.C. § 101 (1988). The grant of exclusivity persists for a term of 14 years when applied to a design patent. Design patents fall outside the scope of this article and are mentioned only for the purpose of avoiding confusion. See also 35 U.S.C. § 173 (1988).
pounds which are known or are structurally similar; and Part IV examines the impact the creation of the Court of Appeals for the Federal Circuit had on patentability.

I. A GENERAL DISCUSSION OF PATENTABILITY

A. Patents are Intellectual Properties

Patents have the attributes of personal property. A patent is owned by the person or persons who, having applied for the patent under the laws of Title 35 of the United States Code, have been issued a patent by the Patent and Trademark Office of the United States Department of Commerce.

A patent may be assigned, conveyed or granted by an instrument in writing. Such an assignment, conveyance or grant must be recorded within three months of the transfer of rights, or prior to the date of a subsequent purchase or mortgage or that assignment, conveyance or grant will be held void as against the subsequent purchase or mortgage.

Ownership of a patent gives the owner the right to exclude others from making, using or selling his invention. This right allows a patent owner the same protection of his patent as any property owner would have over his personal property. In such an action, the court in determining the "nature and quantum" of any property rights of the patentee, may look to the personal property laws of the state where the transaction took place. A consequence of this is that a patent owner who assigns his patent to another divests himself of any further rights as though the invention were a chattel. The inventor is then bound to leave the assignee free to deal with the invention as he wishes.

8. Id.
9. United Shoe Mach. Corp. v. United States, 258 U.S. 451, 463 (1922). However, this right does not "confer[] [a] privilege to make contracts in themselves illegal, and certainly not to make those directly violative of valid statutes of the United States." Id. at 463; see also Special Equip. Co. v. Coe, 324 U.S. 370 (1945).
legal title may be in one person and equitable title in another.\textsuperscript{13}

The property rights in a patent may be owned by a corporation,\textsuperscript{14} a partnership,\textsuperscript{15} or may be held as joint property.\textsuperscript{16} The body of law on the subject of ownership of patent rights is quite extensive and dates back to the early decisions of our courts.

According to the U.S. Supreme Court, "[a] patent for an invention is as much property as a patent for land. The right rests on the same foundation and is surrounded and protected by the same sanctions."\textsuperscript{17} In another decision it was held that patents are property and therefore subject to the principles of eminent domain.\textsuperscript{18} The premise that patents are property was restated by the Seventh Circuit when the court held that "[t]he seventeen-year exclusion is a right and not a matter of grace or favor . . . [i]t is a property right of which the patentee cannot be deprived without due process of law."\textsuperscript{19}

In 1985, in \textit{Patlex Corp. v. Mossinghoff},\textsuperscript{20} the U.S. Court of Appeals for the Federal Circuit held that it was "beyond reasonable debate that patents are property."\textsuperscript{21} The court defined property as a "collection of rules" which allow people to maintain certain expectations with regard to the relationship which they have with others concerning the use and enjoyment of resources. These "rules" form the basis for the expectations which permit people to enjoy the fruits of their labor. In doing so they promote the investment of such labor. Scholarly writings have also pointed to the relationship between property rights in patents and motivation to invest labor and money in research and development.\textsuperscript{22}

As previously stated, patents give exclusive rights to make, use and sell inventions.\textsuperscript{23} These rights grant the patent owners the power

\begin{itemize}
  \item \textsuperscript{13} See \textit{Davis Improved Wrought Iron Wagon Wheel Co. v. Davis Wrought Iron Wagon Co.}, 20 F. 699, 700 (2d Cir. 1884).
  \item \textsuperscript{14} See \textit{Daily v. Universal Oil Prods. Co.}, 76 F. Supp. 349, 357 (N.D. Ill. 1947).
  \item \textsuperscript{16} \textit{Duke v. Graham}, 19 F. 647 (N.D. Miss. 1884).
  \item \textsuperscript{17} \textit{Consolidated Fruit-Jar Co. v. Wright}, 94 U.S. 92, 96 (1876).
  \item \textsuperscript{18} \textsuperscript{28} \textit{U.S.C. § 1498} (1988); \textit{Leesona Corp. v. United States}, 599 F.2d 958, 966-69 (Ct. Cl. 1979).
  \item \textsuperscript{19} \textit{Patlex Corp. v. Mossinghoff}, 758 F.2d 594, 599 (Fed. Cir. 1985) (quoting \textit{Johnson & Johnson, Inc. v. Wallace A. Erickson & Co.}, 627 F.2d 57, 59 (7th Cir. 1980)).
  \item \textsuperscript{20} 758 F.2d 594 (Fed. Cir. 1985).
  \item \textsuperscript{21} \textit{Id.} at 599.
  \item \textsuperscript{22} \textit{Mayer, Basic Principles of Copyright Law}, 288 PLI/PAT 7 (1990); see also \textit{Modak-Truran, § 377 and Gatt in the Akzo Controversy: A Pre-and Post-Omnibus Trade and Competitiveness Act and Analysis}, 9 N.W.J.L.B. 382, 414 (1988).
  \item \textsuperscript{23} \textsuperscript{35} \textit{U.S.C. § 154} (1988).
\end{itemize}
to license another to use, make and/or sell their inventions. A common form of license transfers all rights of the patent owner to another. This type of conveyance is typically referred to as an assignment. Once a patent has been assigned, the assignor is divested of all rights to the invention. This is analogous to the sale of personal property of any other form. Title 35 of the United States Code requires that such a transfer of ownership be in writing and be recorded.

An alternative to such a conveyance is a license to make and sell the invention under contract with the patent owner. Under such an arrangement the patent owner maintains control over the invention and may even sell a similar license to other interested parties. Licensing of a patent may allow the licensee to use the patent for a limited period for a one time fee or for a royalty on each sale.

The right of a patent owner to grant a license for his patents is a creation of the common law and has not been codified.

II. ELEMENTS OF A PATENT

To obtain a patent one must file an application with the Patent and Trademark Office of the U.S. Department of Commerce which discloses and fully describes a new, useful and non-obvious invention. A patent will not be issued if the invention is not "new," "useful," or if "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." A patent may also be denied if the disclosure of the application is insufficient to

25. Id.
27. See Note, An Economic Analysis of Royalty Terms in Patent Licenses, 67 MINN. L. REV. 1198 (1983). This article discusses some of the factors which might be considered by a patent owner in making a choice as to whether to manufacture or license his invention. Id. at 1201.
29. L.L. Brown Paper Co. v. Hydroiloid, Inc., 35 F. Supp. 857 (S.D.N.Y.), aff'd, 118 F.2d 674 (2d Cir.), cert. denied, 314 U.S. 653 (1941); Bell Intercontinental Corps. v. United States, 381 F.2d 1004 (Cl. Cl. 1967); Curtiss Aeroplane & Motor Corp. v. United Aircraft Eng'g Corp., 266 F. 71 (2d Cir. 1920).
31. Id.
allow someone skilled in the art to make and use the invention.\textsuperscript{33} The three elements of novelty, usefulness and non-obviousness are essential characteristics of a patentable invention.\textsuperscript{34} Each element stands as a unique and crucial test of the invention’s patentability.\textsuperscript{35}

**A. Novelty**

For purposes of patent validity, “novelty” means new.\textsuperscript{36} Determining whether an invention is “new” can lead to extensive litigation. In the chemical arts, an invention is “new” if it is the consequence of observation and experimentation which indicates that the invention produces a new result.\textsuperscript{37} The discovery is new if it is not directly taught by the prior art.\textsuperscript{38} The state of the prior art is determined as of the date of the invention and that date does not always coincide with the date of the application.\textsuperscript{39} The date of invention is assumed to be the date that the application was filed unless there is evidence which suggests an earlier date of invention. That evidence must be supported by someone other than the inventor alone. A standard means to support such a claim is a notebook kept by the inventor which documents his progress. Each page of the notebook is usually signed by a witness who has read and understood the contents of that page.

*Diversey Corp. v. Mertz*\textsuperscript{40} is an example of a case in which novelty was at issue. Diversey Corporation owned a patent for a chemical compound used for cleansing tin cans without causing the tin to corrode. Mertz challenged the patent on the grounds that he, not Diversey Corporation, had invented the compound. Diversey claimed that all Mertz did was contribute a theory describing the relation-


\textsuperscript{37} Diversey Corp. v. Mertz, 13 F. Supp. 410, 411 (N.D. Ill. 1936).

\textsuperscript{38} Id.; see also 35 U.S.C. § 102 (1988).

\textsuperscript{39} Deep Welding Inc. v. Sciaky Bros., 417 F.2d 1227, 1232 (7th Cir. 1967).

\textsuperscript{40} 13 F. Supp. 410 (N.D. Ill. 1936).
ship between the group of compounds known as oxidizers and the characteristic of cleansing without corroding. The court held that experimentation and observation constituted the discovery, not the expression of a theory which led to the experiment. Applying this rule, the court held that the invention was "new" despite Mertz's claim that he had theorized that the invention would not corrode tin and would be an effective cleanser.

In determining the validity of a patent, courts have held that the question of novelty is a distinct issue unrelated to whether the invention falls into a statutory category of patentable subject matter. An invention is novel only if it was not made or conceived of previously. The inventor must be the first person to have substantially achieved the results the way he did. Patenable novelty requires the production of a new device or process by the exercise of invention. If a patent or a patent application is challenged, the challenger must show that all the elements claimed in that patent or patent application were previously disclosed by a single reference in the prior art. Each element of the patent claim must be identified in the prior art and must perform in the same fashion to accomplish an identical function as the element in the prior art reference.

L. Schreiber & Sons Co. v. Grimm is an example of a case in which the invention was held not to be new. The invention was intended to hold large heavy barrels or casks. It could be adjusted to the various sizes of the casks by a racket style locking mechanism which locked two opposing supports in place. A ball and socket joint allowed the face of the support (called the saddle) to swivel to a position to accommodate the variety of surface angles created by barrels of various sizes. The court held that a ball and socket joint between the saddle and seat of a cask support was a mere application of mechanical skill and did not rise to the dignity of invention. The court held that such a contrivance had been used in numerous cases.

41. Id. at 411.
42. Id. at 414.
44. The exact date at which conception and reduction to practice occurs for purposes of determining who first invented is grounded in a somewhat complicated, even arcane, section of the patent statutes. See 35 U.S.C. § 102(g).
46. Popeil Bros. v. Schick Elec., Inc., 494 F.2d 162, 164 (7th Cir. 1974).
47. Id.
48. 72 F. 671 (6th Cir. 1896).
other devices and mechanisms and therefore was not new.49

Although no such scheme for holding barrels was previously used, the claim which the patent made was for a cask support. The cask support is the shoe provided with a concave seat in combination with the self-adjusting saddle, supported in the seat.50 The invention which would be protected would be the concave seat of the shoe in combination with the saddle. This shoe and saddle were mere ball and socket according to the opinion and not worthy of being protected as an invention.51 The fact that the use of the ball and socket was new did not suffice to make the claimed invention new. The contribution to the art was not significant enough to qualify for protection.52

In order to qualify for a product patent, an invention must introduce a novel application of an idea and not simply a new use for an old invention to solve a different problem.53 However, a new use for an invention has been held to qualify for a process patent, a quite different and usually far less valuable form of protection, if the new use is in a branch of industry which is significantly distinct from that in which the invention was previously used.54

The element of novelty is important in patents because an invention which is merely an application of known principles and concepts creates no advance to the particular art. Congress was empowered only to grant patents for the purpose of advancing the art. Grants for any other purpose would be unsupported by article I, section 8, clause 8 of the U.S. Constitution, which authorizes Congress to make such grants.55

B. Utility

The second element of patentability is utility. For an invention to provide any benefit to the useful arts the invention must have some utility. It is for this reason that Congress56 and the courts57

49. Id. at 672.
50. Id. at 673.
51. Id. at 675.
52. Id.
53. L. Schreiber & Sons Co. v. Grimm, 72 F. 671 (6th Cir. 1896).
have held that an invention must be "useful". Utility has also been used to aid in the determination of novelty. Although novelty and utility are distinct and separate as elements of patentability, a showing of utility can yield evidence of novelty. A need for a product or invention will usually spur someone to produce the product. The fact that no one has filled the need is evidence that means to do so was lacking. Utility is not diminished by another product which may achieve a similar result. Other benefits may come from use of the invention. Some cases have even held that demonstrating a similarity between the properties of a new chemical composition and the properties of a class of compounds which have known utility is a valid means to prove utility in the chemical arts.

Commercial success is also a valid means to demonstrate the utility of an invention. By showing that a product is successful in the marketplace, an inventor may demonstrate that people are interested in that product. The interest will be attributed to its utility. Commercial marketability is not required for a determination that a product is useful. Such a determination, however, is evidence of a product's usefulness.

It should be noted that both commercial success and utility are classic examples of what the Supreme Court held were "secondary considerations" which should be used to aid in the determination of obviousness.

The degree of usefulness which must exist is not so high that the inventor must show unfailing operation under all conditions. A mere advance in efficiency and utility is not enough to convert a non-inventive aggregation into a patentable combination. But, if the invention shows the necessary inventiveness (that is, the invention is non-obvious) it need not be of greater use than other devices or inventions which are used for the same purposes. One court held that the standard was simply whether the invention has shown itself to be

60. 143 U.S. at 587.
61. Id. at 595.
64. Consolidated Trimming Corp. v. Loudon, 239 F.2d 33 (D.C. Cir. 1956).
65. In re Holmes, 63 F.2d 642 (C.C.P.A. 1933); Lamb Knit Goods v. Lamb Glove and Mitten Co., 120 F. 267 (6th Cir. 1902).
at least partially capable of accomplishing its claimed function.\textsuperscript{66} The United States District Court for Illinois held that if the use of the invention in industry is prohibitive due to cost concerns, inefficiency or unreliability, then the invention is not useful and will not meet the requirements of section 101.\textsuperscript{67}

C. Non-Obviousness

The third element required of a patentable invention is non-obviousness.\textsuperscript{68} As early as 1851, the common law held that inventions that were obvious to others of skill in the art were not patentable.\textsuperscript{69} Under section 103 of the U.S. Patent Statute, an invention must not be so similar to the prior art 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 pertains.”\textsuperscript{70} In a congressional report on section 103 it was stated that:

\begin{quote}
[a]n invention which has been made, and which is new in the sense that the same thing has not been made before, may still not be patentable if the difference between the new thing and what was known before is not considered sufficiently great to warrant a patent. That has been expressed in a large variety of ways in decisions of the courts and in writings. Section 103 states this requirement in the title. It refers to the difference between the subject matter sought to be patented and the prior art, meaning what was known before as described in section 102. If this difference is such that the subject matter as a whole would have been obvious at the time [of its conception] to a person skilled in the art, then the subject matter cannot be patented.\textsuperscript{71}
\end{quote}

To determine whether an invention is obvious to a person with ordinary skill in the art, a three part test must be applied. First, the court must identify the amount of skill possessed by an ordinary person working in the field.\textsuperscript{72} Second, “the scope and content of the

\textsuperscript{70} 35 U.S.C.A. § 103.
\textsuperscript{71} S. Rep. No. 1979, 82d Cong. 2d Sess. 6 (1952); H.R. Rep. No. 1923, 82d Cong. 2d Sess. 7 (1952) (quoted in Deep Welding Inc. v. Sciaky Bros., 417 F.2d 1227, 1232-33 (7th Cir. 1969)).
prior art are to be determined." Third, "differences between the prior art and the claims at issue are to be ascertained." This inquiry is then used as a background upon which to place "such secondary considerations as commercial success, long felt but unresolved needs, failure of others, etc., [which] might be utilized to give light to the circumstances."

Although there is considerable overlap in the concepts of novelty and non-obviousness, there is a significant distinction. Something may be perfectly novel, and yet perfectly obvious. Novelty implies that the invention is new and was never done before. An invention may be quite obvious to persons of ordinary skill in the art, and yet, no one has expended the time and resources to document the invention or to build a model. The Supreme Court recognized non-obviousness as a distinct test to be applied when it stated that "patentability is to depend, in addition to novelty and utility, upon the non-obvious nature of the subject matter ... ."

In one case from the Court of Appeals for the First Circuit, a patent for an electrical component known as a resistor was invalidated. The court held that sales material given to the inventor, such as brochures and charts, made the claimed invention obvious.

 Many cases have distinguished "anticipation" from obviousness. In one case, the U.S. District Court for the Northern District of Illinois held that an invention used to inflate tubeless tires was not obvious to one of ordinary skill in the art of inflating tubeless tires. The court held that questions regarding obviousness are

73. Id. at 17.
74. Id.
75. Id.
76. Id. at 14.
78. Id. at 387-88. The claim of the patent was that the invention used a new and novel material for the core of the resistor. This material, due to its high thermal conductivity and low electrical conductivity, allowed the size of the resistor to be reduced in size and so was very useful in the modern age of miniaturization. The Court of Appeals for the First Circuit affirmed the holding of the United States District Court for New Hampshire. The district court held that the use of the material in question was obvious to one of ordinary skill in the art and the characteristics of the material were well known and easily ascertainable. Many articles had been written about the characteristics of the material which made its application to resistors obvious. Id.
79. Anticipation is a term of art which indicates that the invention was created previously by another. See Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 771 n.2 (Fed. Cir. 1983).
PATENTABILITY OF COMPOUNDS

determined by inventiveness and not novelty.\textsuperscript{81} Even though the prior art does not render an invention anticipated, it may make it obvious.\textsuperscript{82}

Other cases have distinguished anticipation, which is prohibited under section 102,\textsuperscript{83} from obviousness, which is prohibited under section 103.\textsuperscript{84} The prime distinction between anticipation under section 102 and obviousness under section 103 is that under section 102 any prior art reference may be used to show that the invention was anticipated. However, under section 103, only prior art which is relevant or analogous can be relied upon to show obviousness. While the scope of the prior art which can be used to show obviousness is narrower, greater use may be made of the available art.\textsuperscript{85} Under section 103, prior art references may be combined to show that the invention is obvious. In contrast, section 102 does not allow the combination of prior art references for the purpose of showing a lack of novelty.\textsuperscript{86} The differences between section 102 and section 103 are created by the different purposes of the two sections. The obviousness test is used to insure a threshold level of inventiveness which is lower than the "flash of creative genius" standard,\textsuperscript{87} but higher than is attributable to persons having ordinary skill in the art.\textsuperscript{88}

\textsuperscript{81} Id. at 1113.

\textsuperscript{82} Id. The prior art disclosed earlier inventions for inflating tubeless tires, but none of those accomplished the task the way the patent at issue did. The difference was in the fact that the invention at issue did not require a sealed chamber prior to inflating the tire. This was an advance over the prior art. The court relied heavily on the fact that the previous means for inflating tires all had some disadvantage which made the invention at issue advantageous. Although this is not enough to prove non-obviousness, it is a factor to be considered. Witnesses for the defendant (the party attempting to invalidate the patent) testified that the contested patent "operates in a manner directly contrary to the teachings of the prior art." Id. at 1115. The court concluded that the invention was not an obvious outgrowth of the teachings of the prior art, but rather of the inventor's unprecedented approach to the problem of inflating tubeless tires. Id.


\textsuperscript{86} Illinois Tool Works, 273 F. Supp. at 106.


III. Patentability of Chemical Compounds Which Are Known or Are Structurally Similar

Compositions of matter are chemical compounds of two or more ingredients forming a homogeneous whole. The challenges to the patentability of compositions of matter come in the following forms: (1) the composition of matter is anticipated by the prior art and has been previously discovered and made known; (2) the composition of matter is not significantly distinct from a known prior art compound; (3) the composition of matter is not useful; or (4) the composition of matter is obvious given the prior art.

A. Anticipation of a Chemical Compound

Anticipation is sufficient grounds to bar an invention from being patented under the provision of section 102 which requires that the invention be novel. Barring a patent under section 102 requires that the disclosure or description of the prior art be identical to that of the invention sought to be patented. For a prior reference to be identical it must "clearly and unequivocally disclose[] the claimed compound or direct[] those skilled in the art to the compound without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference." There must exist a single reference which contains all the elements of the challenged invention. Additionally, it is not anticipation where "the differences in minor matters [are] only such as would suggest [themselves] to one of ordinary skill in the art." This would be a question of obviousness and not one of anticipation. "Unless all of the same elements are found in exactly . . . the same way to perform the identical function in a single prior art ref-

89. Rumford Chem. Works v. Lauder, 20 F. Cas. 1348 (C.C.S.D.N.Y. 1872) (No. 12,135); see also Cahill v. Brown, 4 F. Cas. 1005 (C.C. Mass. 1878) (No. 2,291); Bowker v. Dows, 3 F. Cas. 1070 (C.C. Mass. 1878) (No. 1,734); Goodyear v. Berry, 10 F. Cas. 631 (C.C. Ohio 1868) (No. 5,556).
90. The law assumes that the prior art is known by anyone with ordinary skill in the art. E.W.P. Corp. v. Reliance Universal Inc., 755 F.2d 898, 907 (Fed. Cir. 1985).
93. Id. at 1082-83 (quoting In re Arkley, 455 F.2d 586, 587 (C.C.P.A. 1972)) (emphasis in original).
96. Id.
Challenges to a patent which claim that the subject matter is anticipated will typically be defended on the grounds that the prior reference did not become public until after the patent owner or applicant invented the invention and less than one year before a patent application was filed.

Another defense which can be raised against a challenge that the invention was anticipated is the "new use" doctrine. This defense is based on the provision of section 100(b) which states that new uses of a known process, machine, manufacture, composition of matter, or material may be included in the definition of a process. In section 101, the statute allows any new and useful process to be patented. However, the invention then becomes a process and not a composition of matter. The patent applicant who claims a process rather than a composition of matter is placed in a weaker position than if he could claim a patent for the composition. The inventor of a process can only claim exclusive rights to the use he has discovered. Anyone who attempts to use, make or sell the composition for a use not claimed by the inventor is free to do so. Obviously, this is much more limited than the protection which the inventor of the composition gets upon creating a new and useful composition of matter for the first time. In order for the inventor who has a patent on a process to use the process he must obtain a license for the composition if it is protected by a product patent owned by another. The use claimed in the process patent will be protected, however, from the owner of the product patent.

102. Rohm & Haas Co. v. Roberts Chems., Inc., 245 F.2d 693 (4th Cir. 1957); see also In re Riden, 318 F.2d 761 (C.C.P.A. 1963).
106. See Agrashell, 413 F.2d at 92 (a new use for a known material may only qualify for a method or process patent, if at all); see also White v. Mar-Bel Inc., 369 F. Supp. 1321 (D.C. Fla. 1973).
As applied to chemical compounds, "anticipation requires that the prior art recite means of preparation of the compound as well as a minimum of one significant useful property." 107 "Unlike the doctrine of obviousness . . . anticipation does not require that the prior references be analogous or even relevant arts to the invention." 108

B. Non-Obviousness in the Chemical Arts

Unlike anticipation, obviousness can be shown by combining any number of prior art references. However, the prior art references which are combined must suggest the disputed invention before a holding of obviousness can be rendered. 109 Obviousness is determined by considering whether all the prior art references seen collectively could cause the invention to be obvious to a person of ordinary skill in the art. 110 Therefore, the determination of obviousness not only includes what the relevant and analogous prior art teaches directly, but what is collectively suggested to a person with ordinary skill in the art. 111

Determining non-obviousness in cases involving chemical compositions can be difficult due to the wide variety of structurally similar and chemically close compounds. 112 Often, the existence of compounds which are similar to known compounds is made obvious by the rules of chemistry. Furthermore, chemical compositions which are structurally similar or chemically close tend to have similar properties and characteristics making the existence of these properties and characteristics obvious as well. However, at times, compounds which are structurally similar or chemically close to known compounds will have properties and characteristics which cannot be predicted by a person of ordinary skill in the art. In these cases, many courts have held that the compound would be patentable. 113

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111. In re Grabiak, 769 F.2d 729 (Fed. Cir. 1985).

112. Id.

113. In re May, 574 F.2d 1082 (C.C.P.A. 1978); In re Papesch, 315 F.2d 381 (C.C.P.A. 1963); In re Henze, 181 F.2d 196 (C.C.P.A. 1950); In re Hass, 141 F.2d 130 (C.C.P.A. 1944).
In re May, the Court of Customs and Patent Appeals held that a composition of matter which was claimed to be an effective non-addictive analgesic and which was structurally similar to a known analgesic was patentable since the non-addictive characteristic of the claimed compound was not predicable.

However, the court held that some of the method of use claims which claimed use of the known compound as a non-addictive analgesic, were not valid because those claims were anticipated by a previous patent which described the same drug. The court disregarded the fact that the previous patent did not claim the non-addictive characteristic. The court held that the use claimed by May was the same as the use claimed in the prior art. Use as an analgesic without mention of the non-addictive characteristic was not sufficiently distinct. The product and method claims which were allowed involved similar compounds to those disclosed earlier, but small chemical distinctions made the newly claimed drugs chemically distinct and less addictive.

The decrease in the addictive character played a major role in getting the product claims allowed. The court held that “the novelty of an optical isomer is not negated by the prior art disclosure of its racemate.”

There is a difference between chemically similar compounds and compounds which are chemically identical. In Revlon, Inc. v. Carson Products a hair relaxer was claimed which used a chemical compound that the court determined was anticipated by the prior art. The compound was not patentable subject matter because it was chemically identical to the prior art. The court quotes Judge Learned Hand’s maxim that “a new use of an old thing or an old process, quite unchanged, can under no circumstances be patentable.” This is not to be confused with the allowance of a process patent or a method claim. In a process patent or method claim, the

114. 574 F.2d 1082 (C.C.P.A. 1978).
115. A non-addictive analgesic is a drug which effectively reduces the sensation of pain without creating a physical dependency. Id. at 1084-85.
116. Id. at 1090.
117. Id.
118. Id. An optical isomer is a compound which is closely related to another compound which is called the racemate to the isomer. Id.; see also Note, Standards of Obviousness and the Patentability of Chemical Compounds, 87 Harv. L. Rev. 607, 610 n.13 (1974).
120. Id. at 1091.
invention which receives protection is not the compound, but rather the new use for the compound. Method claims, just as product claims, must overcome the Graham test of obviousness which is imposed by 35 U.S.C.A. § 103. Each method claim made for a new use of a known process, method, machine or composition of matter must be both non-analogous as well as non-obvious.

IV. THE CREATION OF THE COURT OF APPEALS FOR THE FEDERAL CIRCUIT

On October 1, 1982 the federal courts were restructured and the Court of Appeals for the Federal Circuit [hereinafter known as “CAFC”] was created. This new court of appeals was granted exclusive jurisdiction of an appeal from a decision of - (A) the Board of Patent Appeals and Interferences of the Patent and Trademark Office with respect to patent applications and interferences, at the instance of an applicant for a patent or any party to a patent interference, and any such appeal shall waive the right of such applicant or party to proceed under section 145 or 146 of title 35 [in district court or to proceed in]. . . (C) a district court to which a case was directed pursuant to section 145 or 146 of Title 35 . . .

One of the reasons that the CAFC was granted “exclusive jurisdiction” over appeals of the PTO’s decisions was to create a single unified body of law on patents which would hold for all the district courts and to create a judgeship which would be capable of handling the complex technical and scientific issues which arise in patent cases. The creation of the CAFC would be expected to have an impact on complex questions of patentability such as the question presented by the allowance or rejection of patents on chemical compounds which are similar in structure to compounds known to a per-

122. Method claims declare rights to a new use of a known process, method, machine or composition of matter.
126. Id.
son skilled in the relevant art.

In 1985, three years after its creation, the CAFC heard a case which raised the question of patentability of chemical compounds which are structurally similar to compounds which are old in the chemical art. The case involved a patent for a chemical compound having utility as an antidote for crops which might otherwise be harmed by certain herbicides. The claimed compound was distinct from the prior art by virtue of a sulfur atom which was used in place of an oxygen atom in the structure of the patent. The patent was challenged based on the teachings of a second reference which disclosed the interchangeability of oxygen and sulfur in compounds having safening properties. The prior art in this case did not specifically show that the substitution of a sulfur atom for an oxygen atom would yield a compound with good safening properties, but merely showed that in some types of compounds such substitutions might be made at the expense of the safening effectiveness.

The conclusion of the court was that if a compound is structurally similar and yields a characteristic, use or result which is predictable from the prior art, it is prima facie obvious. If, however, the use, characteristic, or result is unexpected, then the compound is patentable. The applicant could then, upon issue of the patent, prevent another from making, using or selling the compound for any purpose.

The court held that the PTO did not establish a prima facie case of obviousness under 35 U.S.C., section 103 against the application. The court further held that "when chemical compounds have 'very close' structural similarities and similar utilities, without more a prima facie case may be made. ... When such 'close' structural similarity to prior art compounds is shown, the burden of going forward shifts to the applicant, and evidence affirmatively supporting non-obviousness is required." However, the court also stated that

130. A compound which acts as an antidote for crops which might otherwise be harmed by certain herbicides is called a safener. The characteristic is called safening.
131. Grabiak, 769 F.2d at 732.
132. Id. at 731-32.
133. Id. at 732.
134. Id.
135. Id. at 731. The court relied upon In re Wilder, 563 F.2d 457 (C.C.P.A. 1977) (adjacent homologues and structural isomers); In re May, 574 F.2d 1082 (C.C.P.A. 1978) (stereoisomers); In re Hoch, 428 F.2d 1341 (C.C.P.A. 1970) (acid and ethyl ester).
"generalization should be avoided insofar as specific chemical structures are alleged to be *prima facie* obvious one from the other."

The court concluded that in the case before them, "there must be adequate support in the prior art for the ester/thioester change in structure, in order to complete the PTO's *prima facie* case and shift the burden of going forward to the applicant."

The court's statement that "generalization should be avoided" leaves the patent attorney in a difficult position when giving opinions on the patentability of compounds which are structurally similar to prior art compounds. The avoidance of generalization will also mean the avoidance of predictability. The PTO and the district courts will have latitude to find patentability on a case by case basis with little guidance.

The series of cases which were decided before 1988 have given little guidance to the inventor whose invention involves a composition of matter which is either structurally close or chemically similar to the prior art which will be used to determine obviousness. While some of these decisions have pointed out the differences between the utility of the invention and the prior art, only evidentiary weight was given to such differences. Some of these cases relied on the fact that the prior art supplied no motivation to make the modification which the inventor claims. In *In re Lalu*, the Court of Appeals for the Federal Circuit held that "[i]n determining whether a case of *prima facie* obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient . . . to suggest making the claimed substitution or other modification."

These cases make it difficult to predict whether compositions which are chemically similar or structurally close to prior art compositions would be allowed under product claims. Nor was there any definitive answer as to whether method claims would be allowed. Some scholars were left with the impression that differences in the use for which a compound was developed was not sufficient to over-

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136. *Grabiak*, 769 F.2d at 731 (emphasis in original).
137. *Id.* at 731-32 (emphasis in original).
138. *Id.* at 731.
139. *In re Lalu*, 747 F.2d 703 (Fed. Cir. 1984); *In re Naber*, 494 F.2d 1405 (C.C.P.A. 1974); *In re Stemniski*, 444 F.2d 581 (C.C.P.A. 1971); *In re Ruschig*, 343 F.2d 965 (C.C.P.A. 1965); *In re De LaJarte*, 337 F.2d 870 (C.C.P.A. 1940); *In re Elpern*, 326 F.2d 762 (C.C.P.A. 1964); *In re Mills*, 281 F.2d 218 (C.C.P.A. 1960).
141. 747 F.2d 703 (Fed. Cir. 1984).
142. *Id.* at 705.
come a prima facie case of obviousness created by the similarity of the compound to the prior art.\textsuperscript{143}

The Patent and Trademark Office rejected the claims of Japp Naber and Fritz Dantzenberg for a patent on a process for regeneration of sulfur oxide acceptors on grounds of obviousness.\textsuperscript{144} The Patent and Trademark Office contended that the invention was obvious in light of a prior art reference to a process which was similar to the Naber process. The United States Court of Customs and Patent Appeals, held that whether persons of ordinary skill in the art were aware of the problem which Naber's invention had solved was relevant to the obviousness.\textsuperscript{145}

In an attempt to clarify its position on the weight to be given to new uses for known compounds, the Court of Appeals for the Federal Circuit held in \textit{In re Dillion}\textsuperscript{146} that

when the claimed subject matter is a new chemical compound or composition, a prima facie case of obviousness is not deemed made unless both (1) the new compound or composition is structurally similar to the reference compound or composition and (2) there is some suggestion or expectation in the prior art that the new compound or composition will have the same or a similar utility as that discovered by the applicant.\textsuperscript{147}

This decision seems to clarify the CAFC's stand on the patentability of structurally similar and chemically close compounds. A compound or composition which is chemically close or structurally similar to a prior art composition or compound is patentable subject matter if it claims a utility which is not suggested by the prior art.\textsuperscript{148}

Although some will see this case as a change in the state of the law of obviousness in the area of chemical compounds, it is simply the clear and unambiguous statement of the state of the precedent which has been controlling for some time.

Three decisions on the subject of patentability of chemically close or structurally similar compounds are often cited: \textit{In re}

\textsuperscript{143} See Rollins, \textit{PTO Practice: Was Wright Wrong?}, 71 J. Pat. Off. Soc'y 39 (1989) (Wright "diverges from prior precedent in a manner which, if intentional, represents a rather substantial change in the law.") \textit{Id.} at 39; see also \textit{BRADLEY, PATENT LAW HANDBOOK}, 231-35 (1989-90) (Wright provides a "new approach" to determining obviousness of chemical compounds).

\textsuperscript{144} \textit{In re Naber}, 494 F.2d at 1407.

\textsuperscript{145} \textit{Id.} at 1407.

\textsuperscript{146} 892 F.2d 1554 (Fed. Cir. 1989).

\textsuperscript{147} \textit{Id.} at 1560.

\textsuperscript{148} \textit{Id.}.
Papesch, In re Henze and In re Hass.

In In re Hass, the Court of Customs and Patent Appeals held that absent any unexpected or non-obvious beneficial properties not possessed by the homologous compound disclosed by the prior art, the claim is obvious. The need for some unexpected benefit stems from the fact that organic chemistry is a systematic science in which it is "well recognized that in a series of organic chemical compounds the properties of the individual members change by degrees in ascending or descending the series, or in passing from one form to a structural isomeric form." This would tend to make obvious the use of a compound for the same purposes. To hold such compounds patentable over the prior art without more would dilute the value of the patent. There are many ways to alter a compound slightly to change the structure and yet maintain the properties.

A second application which was litigated on a companion case held invalid a claim which intentionally excluded one compound from the claimed class apparently because it was old. The fact that one of the homologues of the group claimed is old in the art, even if the old homologue is specifically excluded, invalidates the entire claim unless some unexpected property which is unique to the claimed group can be proved. Omission of a member of a group is allowed, however, if inclusion of the omitted member would not contaminate the claim. The Hass court recognized the fact that a claim was valid when made for a racemate of an old compound which had characteristics that could not be predicted from the prior art. In re Henze, decided in 1950, held that whether invention exists over the prior art isomers and homologues was a question to be decided in each case. Even where unexpected beneficial properties are shown, a patent may not issue upon "consideration of other factors." A mere difference in degree is not sufficient to create a patent.
entable invention from an unpatentable homologue. The most powerful statement made by Henze was that a rebuttable presumption of unpatentability exists against a composition of matter when the homologue of that composition is old to the art. The burden rests with the applicant to show that an unexpected property is present in the new composition which is not "actually possessed by the prior art homologue. It is immaterial that the prior art homologue may not be recognized or known to be useful for the same purpose or to possess the same properties as the claimed compound." Although under the Henze rule no data need be presented if the properties of the prior art homologue are known, the burden rests with the applicant in cases in which the character of the prior art homologue is unknown with regard to the claimed unexpected properties of the new compound.

The Henze ruling left open the possibility that the burden of producing data regarding the prior art might be relieved in cases in which such a requirement might be unreasonably burdensome. The court did not directly address how it would rule in such a case. The court based its decision on the conclusion that:

To those skilled in the chemical art, one homologue is not such an 'advance' over an adjacent member of the series as requires invention, unless the beneficial properties realized in the new homologue lie clearly outside of the expectations which knowledge of his science would inform the trained chemist should be inherent in the product.

The opinion of the Court of Customs and Patent Appeals could not be easily determined, however, even in the light of such apparently clear statements as were made in the decisions in Henze and Hass. This is due to the fact that the definition of a homologue has escaped the courts. Henze defined a homologue series as a "family of chemically related compounds, the composition of which varies from member to member by CH₂ (one atom of carbon and two atoms of hydrogen)." This legal definition is only half correct.

161. Id.
162. Id. (emphasis in original).
163. Id.
164. Id.
165. Id.
167. Henze, 181 F.2d at 200.
as a scientific definition. For a group to be classified as a homologous series in scientific circles it must be true that the properties of the group are the same for each member. It is this similarity which is responsible for the classification as a group and so is part of the definition of the group as a homologous series.  

In his article on the Hass-Henze doctrine, Alvin Guttag characterizes the problem as concerning the doctrine of equivalence. Guttag divides the compounds into two categories; those which are homologues and analogues, and those which are isomers. The problem of identifying homologues, analogues and isomers by a uniform definition is again brought up. There is a further problem regarding application of the Hass-Henze doctrine to a member of a homologous group which is not adjacent to a known compound of the group, but is removed by a number of CH2 groups. While some decisions have held such a compound unpatentable, others have allowed them. The court had been engrossed in a complex case by case investigation in each case brought to them.  

**CONCLUSION**

While *In re Dillion* seems to give more substance to the Henze-Hass doctrine, the best that can be said is that a patent applicant should test any chemically similar composition for the property which is being claimed. Any differences in regard to the so-called "secondary evidence" such as differences in chemical reactivity, derivatives, processes of making, etc. should be carefully noted.

Unfortunately, this gives little help to the patent applicant who comes to a patent attorney's office with the simple question of whether his compound is patentable. The one point that is made clear by this line of cases is that there is a lack of consistent thinking regarding the doctrine of obviousness. The question regarding whether the obviousness doctrine is one which can ever be made simple or if it is merely a tool used to grant broad discretionary power

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169. *Id.*
171. *Id.* at 808.
173. *See id.; see also* *Ex parte* Kosolapof, 93 U.S.P.Q. (BNA) 230 (1951); *In re* Mills, 281 F.2d 218 (C.C.P.A. 1960).
175. 892 F.2d 1554 (Fed. Cir. 1989).
176. *See Guttag, supra* note 170, at 831.
to judges to determine what inventions are deserving of protection, looms large in this context.

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