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Basic Principles of Intellectual Property Protection

The word "patent" is derived from the Latin *patere*, to be open. Indeed, as employed in common parlance "patent" [pronounced pat'ent] signifies that which is open to view or open to public scrutiny. A written instrument which bears the seal of its author upon its face is known as an open letter, or as letters patent (from the Latin *litterae patentes*), because such can be read without breaking the seal.

Formerly, in England, royal letters patent bore an actual wax imprint of the great seal, which, being so large, was pendant from the parchment document by a silk cord.

Documents which are first folded and then sealed, so that their contents cannot be read without breaking the seal, are known as letters close (from the Latin *litterae clausae*). The latter format is appropriate for private or secret correspondence. The infamous *lettres de cachet*, an instrument of oppression of the *ancien regime*, were a species of letters close.

The salutation of letters patent is usually some variant of the Latin rubric *Pateat universis per praesentes*--"To all to whom these presents shall come." Such a format is appropriate for documents which affect the public, as those which evidence the bestowal by a sovereign authority of special rights, as for example, the creation of a body corporate, a title of nobility, a franchise, or rights in land or in an invention. Hereinafter, letters patent, unless otherwise noted, will refer to those granted for inventions.

A person upon whom the rights mentioned in letters patent are conferred, or his successors in interest, is known as the patentee or as the holder or owner of the patent.

While letters patent derive their name from the fact that the documents officially evidencing such aforementioned rights were open to view, because of the manner in which the seal was affixed thereto, with respect to letters patent for inventions, it has been the practice ever since the enactment of the Statute of Monopolies in 1623 for an official description of the invention to accompany the recitation of patent rights, thereby making both the details of the invention and the legal rights associated with it matters of public record. Every patent is thus both a scientific and legal document.

"Letters patent," often shortened to just "patent," may refer to the instrument evidencing patent rights or to the underlying rights themselves. However, the word "patent," standing alone, often refers to a copy of just the official description of the invention. Such official description is more properly referred to as the (patent) specification. Every United States patent specification concludes with one or more claims, which, while possessing a degree of descriptiveness, are intended primarily as a definition of the precise scope of the legal rights of the patentee.

In the United States and most other countries, the actual letters patent consist of a copy of the patent specification and a covering sheet which formally recites, in general terms, the patent rights of the holder of the patent. The two are securely

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attached to each other by a ribbon whose strands are fastened to the covering sheet by a gummed facsimile of the patent office seal, so that the components cannot be separated without either destroying the seal or cutting the ribbon. Such document is competent legal evidence of the patentee's rights in his invention.

The rights recited in letters patent are often spoken of as a grant. "To grant," literally means to give, bestow, or confer. Consistent with the foregoing definition, letters patent do give and confer upon the grantee certain legal rights. In legalese, the grantee of letters patent is referred to as the patentee. Patentees include not only the one to whom the patent issued, but also any successors in title.

While a grant merely recites rights passing from the party who does the giving (called the grantor) to the party who receives the grant (called the grantee), the recipient- grantee, unless the grant is a gift, gives the grantor something in exchange for and in consideration of the grant.

It is true that prior to the Statute of Monopolies, the English sovereigns all too frequently granted to their favorites, by royal letters patent, monopolies on industries to which such subjects had made no contribution.

In the United Kingdom, a grant by letters patent was, until the Patents Act 1977, deemed an exercise of the royal prerogative--an act of the sovereign's special grace and favor, which might be withheld at the pleasure of the Crown, even from one who has made a meritorious invention. In England ever since the enactment of the Statute of Monopolies, and always in the United States, whenever letters patent are granted, consideration must pass from the patentee to the public.

An inventor earns his right of exclusion by instructing practitioners of the art how to practice what he seeks to protect.

A patent simply cannot reach what it does not teach.

Thus, historically the purpose for the granting of patents was to encourage public disclosure of new scientific and technical developments.

The ultimate goal of the patent system is to bring new designs and technologies into the public domain through disclosure.

The policy of the United States patent laws is that one who has invested time and labor in developing a new product shall have the benefit of his invention, by being given the right to exclude others completely from the enjoyment of his invention.

The consideration or quid pro quo which is given the public is the prompt disclosure of a heretofore unknown invention. The purpose of disclosure to the public is to catalyze other inventors into activity and make possible additional advances in the art.

Property in "ideas" by its very nature is ephemeral. The inventor makes a truly Faustian bargain with the sovereign, exchanging secrecy, of indefinite and of possibly perpetual duration, for ephemeral patent rights.

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With respect to the United States, the terms of the grant for utility patents are set forth in [35 U.S.C.A. § 154](#):

Up to this point, the term "patent rights" has been employed without specifying the nature of these rights. An inventor, assuming that his invention is neither illegal nor immoral, would possess the right, independently of the Constitution and the patent laws promulgated pursuant thereto, to make, use, sell, and otherwise enjoy his invention.

These rights are sometimes spoken of as an inventor's common-law rights, because they are recognized and protected by the common law independently of the Constitution and federal patent statutes.

The essence of an inventor's common-law rights is the right to practice his invention and the right to allow another to practice such invention under terms agreed to between the parties, which terms may include keeping in confidence knowledge of how to practice the invention. Nondisclosure to the public constitutes for the proprietor of the invention a sort of *de facto* exclusivity, but an exclusivity which subsists only so long as third parties do not discover by fair means how to practice the invention. More will be said about an inventor's common-law rights in Ch 2. By contrast, a patent bestows *de jure* exclusivity on the proprietor of the patent. The right to a patent is purely statutory.

Consequently, it has been said that there is no common law of patents.

Without the protection of the patent laws, anyone who learns, by fair means, of another's invention would be free to copy that invention and, thenceforth, to enjoy that invention to the same extent as its inventor. It is federal policy that all ideas in general circulation be dedicated to the common good unless they are protected by a valid patent.

In fact, those who would merely copy another's invention, are likely to reap greater economic benefits therefrom than the inventor, since the copier would not be burdened with the costs incidental to the development of the invention.

The Constitution, Article I, Section 8, Clause 8, confers upon the Congress power to secure to authors and inventors, for periods of limited duration, the *exclusive* right to their respective writings and discoveries. Ever since the first Congress met in 1790, this power has been continuously implemented by appropriate legislation. The patent laws do, in effect, vest an inventor with an inchoate right to the exclusive use of his invention, but this inchoate right can be perfected only by proceeding in the manner required by the patent law.

All of the other "rights" associated with letters patent flow from the fundamental right of exclusivity in the subject matter of the invention. By making his right exclusive, the patent laws give to the inventor (and to his successors in interest) a legal monopoly in the subject matter of his invention. According to the Supreme Court: "The hallmark of a protected property interest is the right to exclude others. That is 'one of the most essential sticks in the bundle of rights that are commonly characterized as property.' "

A patent is a right to exclusive use granted by law. This right gives the patent holder not merely the ability to make cash; it gives him monopoly power. It gives

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him not just the ability to set prices with relative impunity, but also the ability to obtain concessions that others cannot, to establish licensing relationships and generally to exploit the commercial benefit of monopoly power. As a policy matter we usually do not like monopolies, but in the patent area the Constitution and courts have said that monopolies are fine.

The word "monopoly" literally means the right of exclusive sale (from the Greek $\mu\omicron\lambda\lambda\omicron\pi\omicron$ = alone, $\pi\omicron$ = to sell). However, no treatment of monopolies, at least in an Anglo-American legal context, would be meaningful without allusion to the English experience with monopolies prior to the Statute of Monopolies of 1623, something that obviously was in the minds of the framers of the U.S. Constitution.

Prior to the Statute of Monopolies (which actually is a statute *against* monopolies), monopolies could be and were granted by English monarchs without regard to whether or not the subject of the grant had theretofore been practiced within the realm.

The Statute of Monopolies § 1 rendered all existing monopolies void; § 6 allowed the grant of monopolies "for the term of 14 years or under, hereafter to be made of the sole working or making of *any manner of new manufactures* within this realm to the true and first inventor or inventors of such manufactures, which others at the time of making such letters patent and grants shall not use, so as also they be not contrary to the law nor mischievous to the State by raising prices of commodities at home, or hurt of trade, or generally inconvenient."

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PATENTS AS MONOPOLIES AND AS (INTELLECTUAL) PROPERTY IS A PATENT A MONOPOLY?

A patent is literally a monopoly, as a patent owner enjoys the right of exclusive sale for the term of the patent. The right to a monopoly has been said to be "the very foundation of the patent system." The essence of a patent owner's statutory monopoly has been said to be the right to invoke the state's power to prevent others from utilizing the invention without the patent owner's consent. In an attempt to reconcile patents and monopolies, the Supreme Court stated: "At the same time, a patent is an exception to the general rule against monopolies and the right to access to a free and open market."

Although Thomas Jefferson was a strong advocate of the patent system, having himself, in effect, been the first patent examiner in his capacity as Secretary of State, he viewed the grant of patent rights in an idea already disclosed to the public as akin to an ex post facto law, "obstruct[ing] others in the use of what they possessed before."

Jefferson's aversion to monopolies was so intense that he apparently advocated incorporation into the Constitution itself an express prohibition against monopolies for subject matter other than productions in literature and inventions in the arts.

The Federal Circuit avoids use of the word "monopoly" in connection with patents, having characterized as an "obfuscation" the description of a patent as an exception to the general rule against monopolies, and as "perjorative" the referring to a patent owner as a "monopolist." In a law review article, Chief Judge Markey points out that neither the Patent Act, nor any other federal statute, characterizes a patent as a "monopoly." The Federal Circuit has also pointed out that a patent is not per se a monopoly in the antitrust sense.

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PATENTS AS MONOPOLIES AND AS (INTELLECTUAL) PROPERTY CONSEQUENCES OF PATENTS AS MONOPOLIES

Intellectual property is the most intangible form of property; it still, in many characteristics, is closer in analogy to real than to personal estate. Unlike personal property, it cannot be lost or found; it is not liable to casualty or destruction; it cannot pass by manual delivery. Like real property, it may be disposed of, territorially, by metes or bounds; it has its system of conveyancing by deed and registration; estates may be created in it, such as for years and in remainder; and the statutory action for infringement bears a much closer relation to an action of trespass than to an action in trover and replevin. It has, too, what the law of real property has, a system of user by license.

PATENTS AS MONOPOLIES AND AS (INTELLECTUAL) PROPERTY CONSEQUENCES OF PATENTS AS MONOPOLIES A PATENT ENCOMPASSES AN INDEFINITELY LARGE NUMBER OF PHYSICAL OBJECTS

A monopoly differs from other, more traditional, forms of property in a very significant way: a monopoly encompasses or "reads on" an indefinitely large number of physical objects--including physical objects which are not in being at the time the monopoly comes into effect. Thus, a monopoly carries with it the power to control an indefinitely large class of articles, not merely existing ones.

Patents as monopolies and as (intellectual) property Consequences of patents as monopolies A patent is not limited to a particular situs

The patentee's right to exclude others is not limited to a particular situs, but exists anywhere that the patent is recognized. A patent is a federally created property right, valid throughout the United States, having a legal situs anywhere it is called into play. This point is illustrated by the fact that, when an infringement occurs by a sale of an infringing product, the right to exclude is violated at the situs where the sale occurs.

Patents as monopolies and as (intellectual) property Consequences of patents as monopolies A patent is a negative right

Federal patent laws do not create any affirmative right to make, use, or sell anything. As stated by the Federal Circuit:

[While]the act of invention itself vests an inventor with a common law or "natural" right to make, use and sell his or her invention absent conflicting patent rights in others (and in certain circumstances, may similarly vest such

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rights in an employer of the inventor), a patent on that invention is something more. A patent in effect *enlarges* the natural right, adding to it the *right to exclude others* from making, using or selling the patented invention.

Likewise, federal patent law does not create a "right to copy" what is in the public domain.

Rights conferred by letters patent are *negative* rights. A consequence of securing to inventors the *exclusive* right to make, use, vend, offer to vend, and import the thing patented is the right *to prevent others* from exercising like privileges without the consent of the patentee.

It is elementary patent law that a patent may issue on an improvement which infringes another's patent. As a consequence of the right of each patentee to exclude others, each can prevent the other from embodying that which is recited in the claims of his own patent.

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Exclusive right/right to exclude others

Although the Constitution speaks of the exclusive right of inventors, an inventor--even by obtaining a patent--will not necessarily have any right to make, use, sell, offer to sell, or import embodiments of the invention. The exclusivity flowing from a patent is but a negative right, "the right to exclude others" It must be remembered (as was said of Chief Justice Marshall) that the Constitution spoke at a time "when social complexities did not so clearly reveal as subsequently the practical limitation of a rhetorical absolute."

The hierarchy of patents (dominance/subservience)

A consequence of the fact that patent rights are negative rights is that a hierarchy may exist between patents--more precisely, among the *claims* of respective patents. Domination is a phenomenon that occurs whenever one patent has a broad or "generic" claim which "reads on" an invention defined by a narrower or more specific claim in another patent, the former "dominating" the latter because the more narrowly claimed invention cannot be practiced without infringing the broader claim.

Where there are subsisting dominant and subservient patents, it is more precise to speak of the right of each patentee as "the right to exclude others" from the subject matter of his invention, rather than as "the exclusive right" to his invention, since the latter suggests that the patentee has positive rights in his invention.

Consider the following facts: *A* discovers that an evacuated container having two electrodes (a diode) can rectify an alternating current and he obtains a patent on the structure of such tube, the claims of which call for "two electrodes." Subsequently, *B* discovers that an evacuated container having three electrodes (a triode) can not only rectify, but can amplify as well. *B* obtains a patent on the structure of his triode, the claims of which call for "three electrodes."

Since every three-electrode vacuum tube must necessarily contain two electrodes, it is impossible for *B*, or indeed anyone, to make, use, or sell a triode without in so doing trespassing upon, that is, infringing, the claims drawn to *A*'s diode. Should *A* invoke his patent rights, *B* could not lawfully make, use, or sell his own invention for the life of *A*'s patent, albeit the same is patented and *B* is the patentee. The holder of an improvement patent acquires no rights in the basic patents.

Because every three-electrode structure must necessarily have two electrodes, a claim calling for (at least) two electrodes, in a sense, encompasses or, to use the term of art, "reads on" what is recited in a claim calling for three electrodes, since it is necessary to have two plus one electrodes to meet or satisfy that for which the claim calls. A claim calling for at least two electrodes may be said to dominate a claim calling for at least three electrodes.

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A claim calling for at least three electrodes may be said to be subservient to a claim calling for at least two electrodes. _ While claiming "x" number of anything implies *at least* that number, there is nothing improper in employing the very words "at least" to set forth the minimum number of a particular element required. _ The dominant/subservient relationship between patents and the consequences necessarily flowing therefrom have long been recognized by the courts, _ including the Supreme Court.

Thus, *B* could prevent *A* from embodying specifically what is recited in *B*'s claims, namely, a vacuum tube having three electrodes. This is actually what happened, at least for a time. In the situation above, *A* and *B* correspond to real people, namely, Sir Ambrose Fleming and his assignee, the Marconi Wireless Company, and Dr. Lee DeForest, respectively. Both the patent covering Fleming's diode and the patents covering DeForest's triode--or "audion" as DeForest himself called it--were held valid and each device was held to infringe the claims of the other's patent. _ Subsequently the Supreme Court held the claims in both Marconi's wireless telegraphy apparatus and Fleming's "valve" invalid.

In most instances wherein there are such overlapping claims owned by different parties, each licenses the other, so that each party can exploit his own invention as well as that of the other party. Such a mutual arrangement is often referred to as a "cross-license." _ A patentee is under no obligation to exploit his invention or to allow others to do so. It is generally well settled that a court will not decline to enjoin an infringement merely because the patentee has not used his invention. _ While a court will not decline to enjoin infringement merely because the patentee does not practice the invention, a patentee that does not itself produce embodiments of the patented invention must rely on licenses to derive a return from the patent, and a pattern of granting licenses creates at least the inference that infringement can be compensated for by a royalty, rather than an injunction.

A patent on the alleged infringing embodiment does not conclusively avoid infringement. _ The separate patentability of a dominant patent and the subservient patent has been said to present no legal or evidentiary presumption of noninfringement. _ While it has also been said that a patent on an alleged infringing embodiment is irrelevant to the issue of infringement, _ the fact that the accused infringer's patent overcame a prior art reference to plaintiff's patent has been cited as a factor indicating that plaintiff's embodiment is substantially different.

Normally, the invention corresponding to the dominant patent must have been made earlier than that corresponding to the subservient one; for otherwise, the more specific disclosure corresponding to the claims of the subservient patent would anticipate, and thus render invalid, the more general claims of the later patent. A dominant patent is in some contexts referred to as a blocking patent, because its holder can prevent others, including those who hold subservient patents, from practicing their inventions. _ One cannot avoid infringement of a basic patent by making certain improvements on its basic structure. _ Thus, an improvement in a step of a patented method, even if separately patentable, may not avoid infringement. As has been repeatedly stated:

It is fundamental that one cannot avoid infringement merely by adding elements if each element recited in the claims is found in the accused device. For example, a pencil structurally infringing a patent claim would not become noninfringing when incorporated into a complex machine that limits or controls

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what the pencil can write. Neither would infringement be negated simply because the patentee failed to contemplate use of the pencil in that environment.

At this point it is appropriate to introduce other terminology related to, but not synonymous with, the dominant-subservient relationship. The claims of dominant patents are, in a sense, broader than those subservient thereto; the claims of a subservient patent are, in a sense, narrower than those of a patent whose claims dominate.

The average patent contains several claims, which differ from one another by their breadth. The term "breadth" refers to two entirely different claim properties: (1) *extension*, which relates to the number of features that the claim recites and involves a combination/subcombination relation; and (2) *intensity* or depth, which relates to the particularity with which a recited feature is described, and involves a genus/species relation. See §§ [14:19](#) to 14:21, *infra*. A subsequent species invention, if unobvious, while patentable over an earlier generic invention, is subservient to it.

Also, a claim may be so phrased as to read on either (1) only the elements actually recited in that claim and no others (closed language); or (2) at least those elements actually recited in the claim plus any additional elements which may accompany those recited (open language). A claim couched in closed language and reciting "two electrodes" would not read on a device having three electrodes. A claim's clause that is of closed construction, in effect, "reads on" *solely* those elements actually mentioned in that clause.

Another example of a dominant/subservient relationship is that between a claim drawn to a product and a claim drawn to a process or method of making or using that product. The owner of the patent containing a claim drawn to the product, per se, can exclude others from carrying out a method of making or using that product, even though such others may hold perfectly valid patents covering methods of manufacture and use.

Similarly, claims drawn to an apparatus dominate claims drawn to any method of using such apparatus. For this reason, it has been said that the inventor of an apparatus is entitled to the benefit of every use of the patented device. However, this is not universally so, because a patent drawn to a new and unobvious method of using an already patented apparatus is separately patentable, and, while the patentee of the apparatus can exclude the patentee of the new method from practicing such method, the patentee of the apparatus could not practice such new method without the consent of the patentee of the new method.

Both dominant and subservient patents may represent truly basic or pioneer inventions, such as those covering the diode and triode. The characterization of a patent as an *improvement* is often meaningless and even misleading. Improvements on or modifications of a device may indeed be separately patentable from the device per se if the requirements of patentability are met, yet the improved device may still infringe a prior patent. Some of the most basic inventions were improvements. James Watt's steam engine was but an improvement upon the steam engine of Newcomen. Similarly, Newcomen's steam engine was but an improvement upon earlier models. Alexander Graham Bell characterized his telephone as "An Improvement in Telegraphy." Even the Wright brothers were, at least in the

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technical legal sense, not deemed "pioneers," in that their apparatus was not novel in its entirety.

The term "author" is generally associated with writings, the term "inventor," with inventions, although an inventor may be described as the author of his invention. While the Constitution speaks of "Authors and Inventors" and of "their respective Writings and Discoveries," the term "invention" is not mentioned. From the Constitution, one might conclude that "invention" and "discovery" are synonyms. Indeed, a provision of the Patent Act presently in force declares: "When used in this title unless the context otherwise indicates--The term 'invention' means invention or discovery."

Notwithstanding the foregoing statutory provision and the fact that these terms are frequently used interchangeably in common usage, they have each acquired, since the framing of the Constitution, at least in technical usage, different and distinctive meanings. So fundamental is this technical distinction between "inventions" and "discoveries" that only inventions are patentable-- naked discoveries are not! _ The term "invention" properly signifies that which was created or contrived by man. According to Webster: "Invention is applied to the contrivance and production of something that did not before exist. Discovery brings to light that which existed before, but which was not known." _ Invention involves more than recognition of latent qualities in the prior art without any physical or objective change in that art.

An example of such a discovery was Newton's formulation of the law of universal gravitation, relating the force of attraction between two bodies, F , to their masses, m and m' , and the square of the distance, d , between their centers, according to the equation $F = mm'/d^2$. But this relationship always existed-- even before Newton announced his celebrated law. Such "mere" recognition of a heretofore existing phenomenon or relationship carries with it no rights to exclude others from its enjoyment. _ *A patent system must be related to the realm of commerce rather than to the realm of philosophy.*

Patentable subject matter must be new (novel); not merely heretofore unknown. An exception should be noted. Plant patents, in essence, are predicated upon the "mere" *discovery* of a new and distinct plant variety. Into the category of an unpatentable discovery would fall observations such as that of Sir Alexander Fleming involving the recognition of the antibacterial properties of a substance elaborated by the mold, *Penicillium notatum*.

As it exists in nature a substance such as penicillin would not be patentable per se, although such substance in isolated and purified form as well as methods for accomplishing such result and/or modifying its chemical structure to make an even more effective antibiotic and methods of treatment involving the use of penicillin would not lack novelty as having existed in nature.

There is a very compelling reason for this rule. The reason is founded upon the proposition that in granting patent rights, the public must not be deprived of any rights that it theretofore freely enjoyed. _ Moreover, another consequence that would attach to patents granted upon naked discoveries, as that term is defined by Webster, would be that their scope would not be commensurate with the discoverer's contribution. A patent upon a principle or law of nature would encompass every illustration and application of that principle or law. Consider, again, Newton's law of

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universal gravitation. It would, indeed, be a vain and foolish gesture to grant a mortal the right to exclude others from enjoying the benefits derived from the operation of that law. In attempting to assert that right, one would have to do, in effect, what King Canute did-- command the tide not to come in! Patents, however, may issue, and in fact have issued, upon a myriad of inventions inspired by an appreciation of Newton's law of universal gravitation. Such involve the contrivance of novel combinations of physical means or manipulative steps --as the plumb line and the centrifuge and methods of using the same.

A classic illustration of the distinction between the discovery of a scientific principle or law of nature and an invention and the relationship between the two is furnished by the contributions of Benjamin Franklin on the subject of lightning. Franklin's recognition of the electrical nature of lightning falls into the category of a *discovery*, whereas his application of the discovery in the form of the lightning rod is an invention. While a scientific truth, or the mathematical expression of it, is not patentable invention, a novel and useful structure created with the aid of knowledge of scientific truth may be.

Most inventions do involve one or more underlying discoveries. For example, Edison's incandescent lamp, comprising a carbonized filament disposed in an evacuated glass chamber, involved the discovery that the ability of a material to glow or incandesce without being rapidly dissipated depends upon its fineness, its resistivity, and the degree of evacuation of the environment in which the filament of high resistivity is placed. A claimed process or machine for implementing a principle of nature is patentable and this is so regardless of whether it constitutes the only known application of the principle.

Similarly, the inspiration for the Bessemer process of converting iron into steel was the discovery or recognition that the chemical reactions engendered by blowing air through molten pig iron generate enough heat to sustain the conversion of iron to steel without the application of external heat.

Observation and recognition of significant intuitive animal behavior, a discovery, may form the basis of an invention. For example, the Rev. Lorenzo Langstroth invented the movable- frame beehive because he recognized that honey bees will build a comb across a space only if it is in excess of three-eighths of an inch.

The discoverer of a heretofore unknown or unappreciated property of a known substance may not patent that substance, since such substance lacks novelty. The classic example of this rule is Dr. Morton's discovery of the anesthetic properties of ether. One may now obtain a patent upon a new use for a known substance, provided that the new use is expressed as a novel process or method.

Another consequence of the rule that the physical object or embodiment to be protected by a patent must itself be truly new is that naturally occurring products or products of nature--substances inherently produced by natural processes--have been held to lack novelty. Thus, synthetic alizarin was held to be unpatentable, since it was substantially the same as naturally occurring alizarin.

However, the isolation of a substance which heretofore existed only in such impure form that a desirable property of that substance went unnoticed, may entitle the one who first isolated the substance and recognized that property to a patent

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upon the purer product. _ The rationale of granting such a patent is that a material having precisely the refined composition is new--it never before existed.

Still another consequence which should flow from the requirement that the physical object to be protected by a patent must be new is that an existing but unknown substance, such as the penicillin mold, would be per se unpatentable--even by the one who first recognized it as possessing theretofore wholly unknown and unappreciated properties. _ (U.S.N.Y. Dec Term 1859).

Finally, it should be mentioned here that a so-called "plant patent" is not strictly upon the plant per se, but rather only upon asexually reproducing such plant. _ See Ch 6, *infra*.

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Patent rights, physical embodiments, and implied license to use

Patents are endowed by statute with the attributes of personal property. _ Such property is said to be abstract, incorporeal, or intangible in that it can and often does have an existence (i.e., an ownership) separate and distinct from a material or physical object (the legal term for which is "chattel") incorporating or embodying the same. When one purchases a device which embodies one or more claims of a subsisting patent, albeit from the patentee or from one whom the patentee has authorized to make and sell, one does not thereby acquire any rights in the patent apart from what is called an implied license to use the very object or chattel purchased. _ Such implied license to use includes the right to repair. _ The scope of such implied license does not so extend to repair or replacement as to obviate the fact that *directly* infringing repair parts still *directly* infringe.

The Uniform Commercial Code contains a provision to the effect that unless otherwise agreed, a seller who is a merchant regularly dealing in goods of the kind warrants that the goods shall be delivered free of the rightful claims of any third person by way of infringement or the like. _ Intellectual property has been deemed not a "good" for purposes of Lanham Act § 43(a), 15 U.S.C.A. § 1125(a). _ There is no warranty that a buyer's use of such goods will be free of all infringement.

The owner of a patent by express conduct may negate or limit the extent of an implied license to use apparatus, products, and/or processes embodying his patent(s). In fact, the owner of a patent can choose any number of ways to exploit his patent(s). If he has claims drawn to both apparatus and a method of use thereof, he can charge one price for the apparatus and an additional fee each time the claimed method is used. _ Moreover, it has been held that the acquisition of a patented embodiment from a *subsidiary* of the patent owner is not in itself sufficient to establish the grant of an implied license from the parent corporation/patent owner.

An implied-in-fact license _ may also may arise with respect to embodiments of a patented invention--although not expressly authorized by the patent owner--as a result of the failure of the patent owner to enforce its patent rights, i.e., by acquiescence, conduct, estoppel (legal or equitable), _ or laches. _ Whether such an implied-in-fact license exists is a question of law.

It is well settled that the unrestricted sale of a patented article by the owner of the patent conveys to the purchaser the right of unrestricted ownership as against the vendor. _ But the purchaser does not acquire any right greater than those possessed by the owner of the patent. _ Where one separately acquires the components of a patented combination from or through the owner of the patented combination there is deemed to exist an implied license to assemble the combination.

An accused infringer that asserts an implied license as a defense to a suit for patent infringement must demonstrate that any patent under which an implied license is asserted is necessary for the exercise and enjoyment of explicitly granted rights. _ Where a party argues that the sale of a device carries with it an implied license to use that device in practicing a patented invention, that party has the burden of showing, inter alia, that the purchased device has no noninfringing uses.

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A license, moreover, does not amount to an interest in the patent but rather merely to immunity from suit for patent infringement. Ordinarily ownership of a physical object or chattel embodying a patent may be transferred independently of the intangible patent rights. Interesting questions of law arise when attempts are made by the patentee to restrict (as by notice to such effect on the chattel itself) distribution of the same after the chattel has passed into the channels of trade. Cognate problems arise when the patent is a combination of mechanical elements and one or more of such elements wears out. Is replacement permissible repair or impermissible reconstruction?

As a general rule the first sale terminates the exclusive right to vend the chattel in which the invention is embodied. Such sale need not be a truly voluntary one, but can consist of some reasonable and recognized form of compulsory transfer, such as a judicial sale or court compelled assignment.

THE DURATION OF PATENTS

Section 154(a) of 35 U.S.C. provides:

(2) Term--Subject to the payment of fees under this title, such grant [for a utility or plant patent] shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for patent was filed in the United States or, if the application contains a specific reference to an earlier filed application or applications under section 120, 121, or 365(c) of this title, from the date on which the earliest of such application was filed.

As originally enacted, and until relevant provisions of the Uruguay Round Agreements Act of 1994, [Pub. L. 103-465](#), became effective, the duration of the patent term under the Patent Act of 1952 did not begin to run until the day letters patent issued, i.e., from the date of grant of letters patent, _ and for utility and plant patents the term was *seventeen years* measured from the date of issue of letters patent _ and for design patents the maximum term was *fourteen years* from the date of issue of letters patent.

The term for design patents is unaffected by the Uruguay Round Agreements Act of 1994, the term for all design patents being fourteen years from the date of issue, even if the application on which the design patent is based claims the priority of an earlier filed application. It should be noted that prior to October 1, 1982, an applicant for a design patent could choose a three- and-one half, a seven-, or a fourteen-year term determined by the fee the applicant elected to pay.

As a consequence of the Uruguay Round Agreements Act of 1994, [Pub. L. 103-465](#), utility and plant patents issuing on applications filed on or after *six (6) months* from the date of enactment are subject to a *twenty-year* patent term measured from the filing date of the first application to which reference is made under [35 U.S.C.A. §§ 120, 121, or 365\(c\)](#). The date of enactment of the Uruguay Round Agreements Act of 1994, [Pub. L. 103-465](#), was December 8, 1994. Thus, patents issuing on any application filed on or after June 8, 1995, are subject to the twenty-year term. IF THE APPLICATION IS A CONTINUING APPLICATION (i.e., a CONTINUATION, DIVISION, OR CONTINUATION-IN-PART), THE TWENTY-YEAR TERM WILL BE MEASURED--NOT FROM THE ACTUAL FILING DATE OF THE CONTINUING APPLICATION--BUT FROM THE FILING DATE OF THE FIRST APPLICATION TO WHICH REFERENCE IS MADE UNDER [35 U.S.C.A. §§ 120, 121, OR 365\(c\)](#).

It also should be noted that, as the twenty-year patent term is measured from the filing date of the *first* application to which reference is made under [35 U.S.C.A. §§ 120, 121 or 365\(c\)](#), which need not necessarily be the *earliest* filing date in a chain of continuing applications, an applicant can choose which application in a chain of continuing applications is to mark the commencement of the patent term. Consequently, an applicant has a choice between (1) a greater chance of getting behind possible prior art by choosing an earlier filed application and (2) obtaining a later patent expiration date by choosing a later filed application in a chaining of continuing applications. It is not clear just when the election must be made.

PATENT LAW BASIC

A transitional provision in the Uruguay Round Agreements Act of 1994 extends, subject to certain limitations, the terms of patents in force and patents based on an application pending in the Patent & Trademark Office before June 8, 1995, to the greater of the twenty-year term from filing or the seventeen-year term from issue.

PATENT LAW BASIC

U.S. Patent System 1790-2000

Under the patent system in effect in the United States from 1790 until the Domestic Publication of Foreign Filed Patent Applications Act of 1999 became effective, which was on November 29, 1999, all original patent applications pending before the U.S. Patent Office were kept in confidence by the Office. By statute, the Office was prohibited from releasing to the public any information about an original patent application unless a patent issued thereon. Upon issuance of a patent, the patent owner was authorized to sue even "innocent" infringers without warning.

Manufacture, sale, or an offer to sell, use, or importation into the United States of a patented invention prior to the issuance of letters patent did not constitute either direct infringement or inducement to infringe, unless the party that manufactured, sold, or used the invention derived it from the inventorship entity and manufactured, sold, or used the invention contrary to the terms of the confidential relationship. No damages were payable on products manufactured and sold before a patent issued. Under such circumstances, the patent owner has been allowed to recover damages from the date of confidential disclosure or misappropriation rather than from the date the patent was issued.

As a patent subject to maintenance fees will lapse for failure to pay such fees when due, with respect to such patents, it is perhaps more precise to speak of a seventeen-year term or a twenty-year term as the *maximum* term unless further extended by special legislation. Utility patents based on an application filed on or after December 12, 1980, are subject to maintenance fees. The first maintenance fee comes due *three years and six months* after the patent issues to maintain the patent in force beyond *four years*.

U.S. Patent System 2000

The Domestic Publication of Foreign Filed Patent Applications Act of 1999, subject to certain specified exceptions, mandates publication of foreign filed patent applications promptly after the *expiration of a period of eighteen (18) months from the earliest filing date for which a benefit is sought*, coupled with creation of a "provisional" right to obtain a reasonable royalty from any person who, during the period beginning on the date

of publication of the application, had ACTUAL NOTICE OF THE PUBLISHED PATENT APPLICATION.

The right to obtain a reasonable royalty is "provisional" inasmuch as only "a patent" includes this right--and thus no right exists to institute legal proceedings to recover a royalty for any manufacture, use, offer to sell, sale, or importation occurring prior to the date the patent issues.

At the request of the applicant, a utility or plant patent application may be published earlier than the end of the eighteenth-month period. An applicant might want such earlier publication in order to trigger its provisional right to a reasonable royalty.

TO AVOID PUBLICATION BY THE U.S. PATENT & TRADEMARK OFFICE OF A PENDING UTILITY OR PLANT PATENT APPLICATION, THE APPLICANT MUST MAKE A REQUEST, UPON FILING THE APPLICATION, AND CERTIFY THAT THE INVENTION DISCLOSED IN THE APPLICATION HAS NOT BEEN, AND WILL NOT BE, THE SUBJECT OF AN APPLICATION FILED IN ANOTHER COUNTRY OR UNDER A MULTILATERAL INTERNATIONAL AGREEMENT THAT REQUIRES PUBLICATION OF APPLICATIONS EIGHTEEN MONTHS AFTER FILING.

PATENT LAW BASIC

An applicant *may* rescind a request that the application not be published while it is pending, _ and must notify the Office of any filing of a foreign or International Application not later than *forty-five (45) days* after the date of such foreign or International Application filing. _ Failure to provide such notice of foreign or international filing within the prescribed

period will result in the application being regarded as abandoned, unless it is shown that the delay in submitting the notice was unintentional.

Where parallel foreign filed applications are less extensive than the one filed in the U.S. Patent & Trademark Office, the Office will only publish so much of the application as was filed abroad, provided that the applicant submits to the U.S. Office, within *sixteen (16) months* after the earliest effective filing date for which a benefit is sought, a redacted copy of the application, eliminating any part or description of the invention that is not also contained in any of the corresponding applications filed in a foreign country.

Specifically excepted by statute from publication are:

- (1) applications that are no longer pending;
- (2) applications subject to a secrecy order;
- (3) provisional applications; and
- (4) design patent applications.

PATENT LAW BASIC

Patent Term under Private Acts

Congress may, by private act, extend the term or grant one of different duration. Until 1984 there was but a single instance of Congress, by private act, extending the life of a patent beyond its seventeen-year term. The patent involved had previously been declared invalid by a United States Court of

Appeals. _ When it was subsequently learned that one of the judges in so holding had been influenced by a bribe, Congress acted to rectify the horrendous injustice. The wayward judge was subsequently defrocked, indicted, convicted, and served a stretch in a federal penitentiary.

In 1984, Congress extended the term of two patents by overtly private acts to compensate for administrative delays in the granting of marketing approval. _ In addition, in 1983, Congress, because of delays in the granting of marketing approval, passed two acts which, though labeled "public" laws, are so specifically worded that only a single patent can qualify under each. _ The Omnibus Trade and Competitiveness Act of 1988 contains provisions _ that extend the term of a specifically mentioned U.S. patent _ for three years and six months from the date of its expiration subject to compliance with certain conditions.

More significantly, patent term extension legislation of far more general applicability has been enacted.

PATENT LAW BASIC

Extension of term due to regulatory review Under the Patent Term Restoration Act of 1984

By virtue of the Drug Price Competition & Patent Term Restoration Act of 1984, the term of a patent which claims a product, a method of using a product, or a method of manufacturing a product that has been subject to a regulatory review period before commercial marketing or use may be extended for a period commensurate with the period of such premarketing administrative review, but not for more than five years. Under the Act, patent term extension is not automatic. Rather, application must be made by the patent owner to the Commissioner of Patents & Trademarks for an extension of term and such application may only be submitted within a window period of *sixty days* beginning on the date the product received "approval" under the provision of law under which the applicable regulatory review period occurred for commercial marketing or use.

Extension of term due to regulatory review Under the Patent Term Restoration Act of 1988

The Generic Animal Drug & Patent Term Restoration Act of 1988 _ makes available patent term extension coupled with availability of Food & Drug Administration approval on the basis of an Abbreviated New Drug Application by manufacturers other than the patent owner after expiration of the patent for animal drugs on terms generally analogous to that for human drug products under the Drug Price Competition & Patent Term Restoration Act of 1984. One significant difference is that animal drugs which are primarily manufactured using recombinant DNA, recombinant RNA, hybridoma technology, or other processes involving site specific genetic manipulation techniques, while available for patent term extension, may not be approved on the basis of an Abbreviated New Drug Application.

The duration of patents--Extension of term due to prosecution delay

While provisions of the Uruguay Round Agreements Act of 1994 extend the patent term on the basis of "prosecution delay," the delays cognizable under the Uruguay Round Agreements Act are limited to those attributable to: (1) a successful appellate review of one or more rejected claims; (2) a secrecy order issued pursuant to 35 U.S.C.A. § 181; and/or (3) an interference proceeding. Moreover, under the Uruguay Round Agreements Act, patent term extension for prosecution delay on any or all of the foregoing bases cannot exceed a total of five years. The Uruguay Round Agreements Act also contains transitional provisions, which applied only to patents in force and patents issuing on applications pending at the time of the enactment of the Act.

Under the Patent Term Guarantee Act of 1999, which is Subtitle D of the Intellectual Property and Communications Omnibus Reform Act of 1999, the term of an *original* utility or plant patent may be extended not only for delays attributable to successful appellate review, imposition of a secrecy order, or an interference, but also where: (1) the Patent & Trademark Office failed to act *promptly*, as deemed in the statute; or (2) the application was pending before the Office more than three years, subject to limitations also set out in the statute.

To the extent that delays also cognizable under the Patent Term Guarantee Act of 1999 overlap, the period of any adjustment in patent term may not exceed the actual number of days the issuance of the patent was delayed. The objective of the Patent Term Guarantee Act of 1999 is to endow utility and plant patents with an effective term of seventeen years, the same term such types of patents enjoyed prior to the Uruguay Round Agreements Act.

Moreover, the period of adjustment of the patent term will be reduced by a period equal to the period of time during which the applicant failed to engage in "reasonable efforts" to conclude prosecution of the application.

An initial determination of patent term adjustment because of prosecution delay will be made by the Patent & Trademark Office, upon application made by the patent applicant. The determination will be transmitted with the written notice of allowance under [35 U.S.C.A. § 151](#).

Provisions relating to patent term adjustment under the Patent Term Guarantee Act of 1999 are declared by the Act to take effect on the date that is six months after its date of enactment of November 29, 1999, i.e., original applications other than designs, filed on or after May 29, 2000.

PATENT LAW BASIC

Extension of term due to prosecution delay

Factors affecting term extension

The guarantee of prompt office responses

The guarantee of prompt Office responses takes cognizance of:

(1) Notification to the applicant by the Office of its initial action on an application--a period of *fourteen (14) months* after the filing date is set by the statute;

(2) Action by the Office in response to an applicant's reply--a period of *four (4) months* after the date on which the reply was filed in the Office or the appeal was taken is set by the statute;

(3) Action by the Office following a decision by the Board of Appeals & Interferences or by a federal court--a period of *four (4) months* is set by the statute;

(4) Issuance of a patent after the date on which the issue fee was paid and all outstanding requirements are satisfied--a period of *four (4) months* is set by the statute.

THE STATUTE MANDATES EXTENSION OF THE PATENT TERM *ONE (1) DAY* FOR EACH DAY AFTER THE END OF THE PERIODS SPECIFIED IN ITEMS (1), (2), (3), or (4), ABOVE, UNTIL THE RESPECTIVE ACTION IS TAKEN BY THE OFFICE, _ subject to reduction by a period equal to the period of time during which applicant failed to engage in "reasonable efforts" to conclude prosecution.

Period of Extension Caused By The Office's Failure To Make Timely Response

The period of extension for delay caused by the Patent & Trademark Office's failure to take timely action is the sum of the following periods:

(1) The number of days, if any, in the period beginning on the day after the date that is fourteen months after the date on which the application was filed under [35 U.S.C.A. § 111\(a\)](#) or fulfilled the requirements of [35 U.S.C.A. § 371](#) and ending on the date of mailing of either an action under [35 U.S.C.A. § 132](#), or a notice of allowance under [35 U.S.C.A. § 151](#), whichever occurs first;

(2) The number of days, if any, in the period beginning on the day after the date that is four months after the date a reply under [37 C.F.R. § 1.111](#) was filed and ending on the date of mailing of either an action under [35 U.S.C.A. § 132](#), or a notice of allowance under [35 U.S.C.A. § 151](#), whichever occurs first;

(3) The number of days, if any, in the period beginning on the day after the date that is four months after the date that is four months after the date a reply in compliance with [37 C.F.R. § 1.113\(c\)](#) was filed and ending on the date of mailing of either an action under [35 U.S.C.A. § 132](#), or a notice of allowance under [35 U.S.C.A. § 151](#), whichever occurs first;

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(4) The number of days, if any, in the period beginning on the day after the date that is four months after the date an appeal brief in compliance with [37 C.F.R. § 1.192](#) was filed and ending on the date of mailing of any of an examiner's answer under 37 C.F.R. § 1.193, an action under [35 U.S.C.A. § 132](#), or a notice of allowance under [35 U.S.C.A. 151](#), whichever occurs first;

(5) The number of days, if any, in the period beginning on the day after the date that is four months after the date of a final decision by the Board of Patent Appeals and Interferences or by a Federal court in an appeal under [35 U.S.C.A. § 141](#) or a civil action under [35 U.S.C.A. § 145](#) or [§ 146](#) where at least one allowable claim remains in the application and ending on the date of mailing of either an action under [35 U.S.C.A. § 132](#) or a notice of allowance under [35 U.S.C.A. § 151](#), whichever occurs first; and

(6) The number of days, if any, in the period beginning on the day after the date that is four months after the date the issue fee was paid and all outstanding requirements were satisfied and ending on the date a patent was issued.

The guarantee of no more than three-year application pendency

The guarantee of no more than three-year application pendency takes cognizance of the *overall period of pendency* of an original utility or plant patent application, measured from the actual filing date of the application in the United States until the date on which the patent is issued.

THE STATUTE MANDATES EXTENSION OF THE PATENT TERM *ONE (1) DAY* FOR EACH DAY AFTER THE END OF THE THREE-YEAR PERIOD UNTIL THE PATENT IS ISSUED, _ subject to reduction by a period equal to the period of time during which applicant failed to engage in "reasonable efforts" to conclude prosecution.

Period of Extension Caused By The Office's Failure To Issue A Patent Within Three Years of Filing

The period of extension for delay caused by the Patent & Trademark Office's failure to issue a patent within three years of filing is the number of days, if any, in the period beginning on the day after the date that is three years after the date on which the application was filed under [35 U.S.C.A. § 111\(a\)](#) or the national stage commenced under 35 U.S.C. § 371(b) or (f) in an International Application and ending on the date a patent was issued.

Apparently, the nature of the delays that will trigger the guarantee of no more than three-year pendency--as distinct from the guarantee of prompt Office responses--could arise from a succession of Office actions.

The guarantee of adjustments for delays due to interferences, secrecy orders, and appeals

If the issue of an original utility or plant patent is delayed due to:

- (1) an interference proceeding;
- (2) the imposition of a secrecy order; _ or
- (3) appellate review by the Board of Patent Appeals & Interferences or by a federal court in a case in which the patent was issued under a decision in the review reversing an adverse determination of patentability;

THE STATUTE MANDATES EXTENSION OF THE PATENT TERM *ONE (1) DAY* FOR EACH DAY OF THE PENDENCY OF THE INTERFERENCE PROCEEDING, SECRECY ORDER, OR APPELLATE REVIEW, AS THE CASE MAY BE, _ subject to reduction by a period equal to the period of time during which applicant failed to engage in "reasonable efforts" to conclude prosecution.

Period of Extension Caused by Interference Proceedings

The period of extension for delay caused by interference proceedings is the sum of the following periods to the extent that the periods are not overlapping:

- (1) The number of days, if any, in the period beginning on the date an interference was declared or redeclared to involve the application in the interference and ending on the date that the interference was terminated with respect to the application; and

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(2) The number of days, if any, in the period beginning on the date prosecution in the application was suspended by the Office due to interference proceedings under [35 U.S.C.A. § 135\(a\)](#) not involving the application and ending on the date of the termination of the suspension.

Period of Extension Caused by Secrecy Order

The period of extension for delay caused by secrecy order is the sum of the following periods to the extent that the periods are not overlapping:

- (1) The number of days, if any, the application was maintained in a sealed condition under [35 U.S.C.A. § 181](#);
- (2) The number of days, if any, in the period beginning on the date of mailing of an examiner's answer under 37 C.F.R. § 1.193 in the application under secrecy order and ending on the date the secrecy order was removed;
- (3) The number of days, if any, in the period beginning on the date applicant was notified that an interference would be declared but for the secrecy order and ending on the date the secrecy order was removed; and
- (4) The number of days, if any, in the period beginning on the date of notification under [37 C.F.R. § 5.3\(c\)](#) and ending on the date of the mailing of the notice of allowance under [35 U.S.C.A. § 151](#).

Period of Extension Caused by Successful Appellate Review

The period of extension for delay caused by successful appellate review is the sum of the number of days, if any, in the period beginning on the date on which a notice of appeal to the Board of Patent Appeals & Interferences was filed

under [35 U.S.C.A. § 134](#) and [37 C.F.R. § 1.191](#) and ending on the date of a final decision in favor of the applicant by the Board or by a Federal court in an appeal under [35 U.S.C.A. § 141](#) or a civil action under [35 U.S.C.A. § 145](#).

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Actual period of term adjustment

Actual Period of Term Adjustment	= [Term Extension] 37 C.F.R. § 1.703	- [Reduction of Extension] 37 C.F.R. § 1.704
	Guarantee of Prompt Office Responses 37 C.F.R. § 1.702(a)	Guarantee of No More than 3-yr. Pendency 37 C.F.R. § 1.702(b)
Grounds for Extension	37 C.F.R. § 1.703(a)	37 C.F.R. § 1.703(b)
Period of Extension	37 C.F.R. § 1.704	37 C.F.R. § 1.703(b)
Period of Reduction	37 C.F.R. § 1.704	

An extension of term runs from the expiration date of the patent as set forth in [35 U.S.C.A. § 154\(a\)\(2\)](#).

The total period of term extension is the SUM of the periods of recognized delay attributable to: (1) failure by the Office to take timely action; (2) failure by the Office to issue a patent within three years; (3) successful appellate review; (4) interference proceedings; and (5) secrecy order TO THE EXTENT THAT THE FOREGOING PERIODS DO NOT OVERLAP and to the extent that the period of extension does not exceed the actual number of days the issuance of the patent attributable to all the foregoing factors was delayed.

Reduction of Extension of Term

Reduction of the period of extension is, in fact, covered by two rules, one entitled, "[37 C.F.R. § 1.704](#) Reduction of period of adjustment," applies to all forms of prosecution delay; the other, [37 C.F.R. § 1.703\(b\)](#), applies only to the Guarantee of No More Than Three-Year Application Pendency and is couched so as to expressly exclude from the three-year period specified intervals for certain activities, e.g., the interval beginning on the date on which a request for continued examination was filed and ending on the date the patent was issued.

Reductions Applicable to All Forms of Prosecution Delay

Circumstances that constitute a failure of the applicant to engage in reasonable efforts to conclude processing or examination of an application include:

(1) *EXCESS OF THREE MONTHS TO REPLY*: for the cumulative total of any periods of time in excess of *three (3) months* that are taken to reply to any notice or action by the Office making any rejection, objection, argument, measuring such three-month period from the date the notice or action was mailed or was given to the applicant, in which case the period of adjustment is reduced by the number of days, if any, beginning on the day after the date that is three months after the date of mailing or transmission of the Office communication notifying the applicant of rejection, objection, argument, or other request and ending on the day the reply was filed.

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(2) *SUSPENSION OF ACTION UNDER [37 C.F.R. § 1.103](#)* at the applicant's request, in which case the period of adjustment will be reduced by the number of days, if any, beginning on the date a request for suspension of action under [37 C.F.R. § 1.103](#) was filed and ending on the date of the termination of the suspension.

(3) *DEFERRAL OF ISSUANCE OF A PATENT UNDER [37 C.F.R. § 1.314](#)*, in which case the period of adjustment is reduced by the number of days, if any, beginning on the date a request for deferral of issuance of a patent was filed and ending on the date the patent was issued.

(4) *ABANDONMENT OF THE APPLICATION OR LATE PAYMENT OF THE ISSUE FEE*, in which case the period of adjustment will be reduced by the number of days, if any, beginning on the date of abandonment or the date after the date the issue fee was due and ending on the earlier of:

- (i) The date of mailing of the decision reviving the application or accepting late payment of the issue fee; or
- (ii) The date that is four months after the date the grantable petition to revive the application or accept late payment of the issue fee was filed.

(5) *FAILURE TO FILE A PETITION TO WITHDRAW THE HOLDING OF ABANDONMENT OR TO REVIVE AN APPLICATION WITHIN TWO MONTHS FROM THE MAILING DATE OF A NOTICE OF ABANDONMENT*, in which case the period of adjustment will be reduced by the number of days, if any, beginning on the day after the date two months from the mailing date of a notice of abandonment and ending on the date a petition to withdraw the holding of abandonment or to revive the application is filed.

(6) *CONVERSION OF A PROVISIONAL APPLICATION UNDER [35 U.S.C.A. § 111\(b\)](#) TO A NONPROVISIONAL APPLICATION UNDER [35 U.S.C.A. § 111\(a\)](#) PURSUANT TO [35](#)*

[U.S.C.A. § 111\(b\)\(5\)](#), in which case the period of adjustment will be reduced by the number of days, if any, beginning on the date the application was filed under [35 U.S.C.A. § 111\(b\)](#) and ending on the date a request in compliance with [37 C.F.R. § 1.53\(c\)\(3\)](#) to convert the provisional application into a nonprovisional application was filed.

(7) *SUBMISSION OF A PRELIMINARY AMENDMENT OR OTHER PRELIMINARY PAPER LESS THAN ONEMONTH BEFORE THE MAILING OF AN OFFICE ACTION UNDER [35 U.S.C.A. § 132](#) OR A NOTICE OF ALLOWANCE UNDER [35 U.S.C.A. § 151](#) THAT REQUIRES THE MAILING OF A SUPPLEMENTAL OFFICE ACTION OR NOTICE OF ALLOWANCE*, in which case the period of adjustment will be reduced by the lesser of:

- (i) The number of days, if any, beginning on the day after the mailing date of the original Office action or notice of allowance and ending on the date of the mailing of the supplemental Office action or notice of allowance; or
- (ii) Four months.

(8) *SUBMISSION OF A REPLY HAVING AN OMISSION ([37 C.F.R. § 1.135\(c\)](#))*, in which case the period of adjustment will be reduced by the number of days, if any, beginning on the day after the date the reply having an omission was filed and ending on the date that the reply or other paper correcting the omission was filed.

(9) *SUBMISSION OF A SUPPLEMENTAL REPLY OR OTHER PAPER, OTHER THAN A SUPPLEMENTAL REPLY OR OTHER PAPER EXPRESSLY REQUESTED BY THE EXAMINER, AFTER A*

REPLY HAS BEEN FILED, in which case the period of adjustment will be reduced by the number of days, if any, beginning on the day after the date the initial reply was filed and ending on the date that the supplemental reply or other such paper was filed.

(10) *SUBMISSION OF AN AMENDMENT OR OTHER PAPER AFTER A DECISION BY THE BOARD OF PATENT APPEALS & INTERFERENCES, OTHER THAN A DECISION*

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DESIGNATED AS CONTAINING A NEW GROUND OF REJECTION UNDER [37 C.F.R. § 1.196\(b\)](#) OR STATEMENT UNDER [§ 1.196\(c\)](#), OR A DECISION BY A FEDERAL COURT, LESS THAN ONE MONTH BEFORE THE MAILING OF AN OFFICE ACTION UNDER [35 U.S.C.A. § 151](#) THAT REQUIRES THE MAILING OF A SUPPLEMENTAL OFFICE ACTION OR SUPPLEMENTAL NOTICE OF ALLOWANCE, in which case the period of adjustment will be reduced by the lesser of:

- (i) The number of days, if any, beginning on the day after the mailing date of the original Office action or notice of allowance and ending on the mailing date of the supplemental Office action or notice of allowance; or
- (ii) Four months.

(11) *SUBMISSION OF AN AMENDMENT UNDER [37 C.F.R. § 1.312](#) OR OTHER PAPER AFTER A NOTICE OF ALLOWANCE HAS BEEN GIVEN OR MAILED*, in which case the period of adjustment will be reduced by the lesser of:

- (i) The number of days, if any, beginning on the date the amendment under [37 C.F.R. § 1.312](#) or other paper was filed and ending on the mailing date the Office action or notice in response to the amendment under [37 C.F.R. § 1.312](#) or such other paper; or
- (ii) Four months.

(12) *FURTHER PROSECUTION VIA A CONTINUING APPLICATION*, in which case the period of adjustment will not include any period that is prior to the ACTUAL FILING DATE of the application that resulted in the patent.

Submissions Deemed Not Constituting Failure To Engage In Reasonable Efforts To Conclude Prosecution

(1) A paper containing only an information disclosure statement in compliance with [37 C.F.R. §§ 1.97](#) and [1.98](#) if it is accompanied by a statement that each item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart application and that this communication was not received by any individual designated in [37 C.F.R. § 1.56\(c\)](#) more than thirty days prior to the filing of the information disclosure statement. This thirty-day period is not extendable.

(2) An application for patent term adjustment under [37 C.F.R. § 1.705\(b\)](#), with or without a request under [37 C.F.R. § 1.705\(c\)](#) for reinstatement of reduced patent term adjustment.

Reductions Applicable Only To The Guarantee of No More Than Three-Year Pendency

In reckoning the period of extension under the Guarantee of No More than Three-Year Application Pendency, the sum of the following periods are not included:

(1) *CONTINUED EXAMINATION* The number of days, if any, in the period beginning on the date on which a request for continued examination of the application under [35 U.S.C.A. § 132\(b\)](#) was filed and ending on the date the patent was issued.

(2) *INTERFERENCE PROCEEDINGS*

- (i) The number of days, if any, in the period beginning on the date an interference was declared or redeclared to involve the application in the interference and ending on the date that the interference was terminated with respect to the application; and
- (ii) The number of days, if any, in the period beginning on the date prosecution in the application was suspended by the Office due to interference

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proceedings under [35 U.S.C.A. § 135\(a\)](#) not involving the application and ending on the date of the termination of the suspension.

(3) *SECRECY ORDER*

i) The number of days, if any, the application was maintained in a sealed condition under [35 U.S.C.A. § 181](#);

(ii) The number of days, if any, in the period beginning on the date of mailing of an examiner's answer under 37 C.F.R. § 1.193 in the application under secrecy order and ending on the date the secrecy order was removed;

(iii) The number of days, if any, in the period beginning on the date applicant was notified that an interference would be declared but for the secrecy order and ending on the date the secrecy order was removed; and

(iv) The number of days, if any, in the period beginning on the date of notification under [37 C.F.R. § 5.3\(c\)](#) and ending on the date of mailing of the notice of allowance under [35 U.S.C.A. § 151](#).

(4) *SUCCESSFUL APPELLATE REVIEW*

The number of days, if any, in the period beginning on the date on which a notice of appeal to the Board of Patent Appeals & Interferences was filed under [35 U.S.C.A. § 134](#) and [37 C.F.R. § 1.191](#) and ending on the date of the last decision by the Board or by a Federal court in an appeal under [35 U.S.C.A. § 141](#) or a civil action under [35 U.S.C.A. § 145](#), or on the date of mailing of either an action under [35 U.S.C.A. § 132](#), or notice of allowance under [35 U.S.C.A. § 151](#), whichever occurs first, if the appeal did not result in a decision by the Board.

It should be borne in mind that, while delay due to interference proceedings, secrecy order, and/or successful appellate review is not

cognizable under the Guarantee of No More than Three-Year Application Pendency, credit for such delay is indeed cognizable under the separate Guarantee or Adjustment for Delays Due to Interference, Secrecy Order, and Appeal.

Disputes as to the proper period of adjustment

The notice of allowance will include notification of any patent term adjustment under [35 U.S.C.A. § 154\(b\)](#).

A request for reconsideration of (1) *the patent term adjustment* indicated in the notice of allowance--unless the patent issues on a date other than the projected date of issue and this change necessitates a revision of the patent term adjustment indicated in the notice of allowance _ and (2) *reinstatement of all or part of the period of adjustment reduced pursuant to* [37 C.F.R. § 1.704\(b\)](#) must be by way of application for patent term adjustment.

The determination of a patent term adjustment is not subject to challenge by a third party prior to the grant of the patent.

Application for Patent Term Adjustment

An application for patent term adjustment must be accompanied by:

- (1) The fee set forth in [37 C.F.R. § 1.18\(e\)](#);
- (2) A statement of facts involved specifying:
 - (i) The correct patent term adjustment and the basis or bases under [37 C.F.R. § 1.702](#) for the adjustment;
 - (ii) The relevant dates as specified in [37 C.F.R. § 1.703\(a\) through \(e\)](#) for which an adjustment is sought and the adjustment as specified in [37 C.F.R. § 1.703\(f\)](#) to which the patent is entitled;
 - (iii) Whether the patent is subject to a terminal disclaimer and any expiration date specified in the terminal disclaimer; and
 - (iv)(A) Any circumstances during the prosecution of the application resulting in the patent that constitute a failure to engage in reasonable efforts to conclude processing or examination of such application as set forth in [37 C.F.R. § 1.704](#); or
 - (B) That there were no circumstances constituting a failure to engage in reasonable efforts to conclude processing or examination of such application as set forth in [37 C.F.R. § 1.704](#)

***Application for Patent Term Adjustment that Requests Reinstatement of All or Part of the Period of Adjustment Reduced Pursuant to* [37 C.F.R. § 1.704\(b\)](#)**

An application for patent term adjustment that requests reinstatement of all or part of the period of adjustment reduced pursuant to [37 C.F.R. § 1.704\(b\)](#) must also be accompanied by:

- (1) The fee set forth in [37 C.F.R. § 1.18\(f\)](#); and
- (2) A showing to the satisfaction of the Commissioner that, in spite of all due care, the applicant was unable to reply to the rejection, objection, argument,

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or other request within three months of the date of mailing of the Office communication notifying the applicant of the rejection, objection, argument, or other request. The Office shall not grant any request for reinstatement for more than three additional months for each reply beyond three months from the date of mailing of the Office communication notifying the applicant of the rejection, objection, argument, or other request.

When the Application Must Be Filed

An application for patent term adjustment must be filed no later than the payment of the issue fee but may not be filed earlier than the date of mailing of the notice of allowance.

The period is not extendable.

Judicial Review

An applicant dissatisfied with a determination made by the Patent & Trademark Office has a remedy by civil action in the U.S. District Court for the District of Columbia, which action must be filed within *one hundred and eighty (180) days* after the grant of the patent.

[65 Fed. Reg. 56366, at 56394 \(Sept. 18, 2000\)](#), 1239 O.G. 14, at 38 (Oct. 3, 2000), *codified as* [37 C.F.R. § 1.705\(a\)](#).

[65 Fed. Reg. 56366, at 56394 \(Sept. 18, 2000\)](#), 1239 O.G. 14, at 38 (Oct. 3, 2000), *codified as* [37 C.F.R. § 1.705](#):

If the patent is issued on a date other than the projected date of issue and this change necessitates a revision of the patent term adjustment indicated in the notice of allowance, the patent will indicate the revised patent term adjustment. If the patent indicates a revised patent term adjustment due to the patent being issued on a date other than the projected date of issue, any request for reconsideration of the patent term adjustment indicated in the patent must be filed within *thirty* days of the date the patent issued and must comply with the requirements of paragraphs (b)(1) and (b)(2) of this section.

PATENTABILITY OF IDEAS

Perhaps the deepest rooted misconception about patents pertains to "the patentability of ideas." Thus, not infrequently, a certain idea will be spoken of as being "patentable," another idea, as being "unpatentable." Even the Supreme Court, on occasion, has spoken in these terms. Ideas nurture the patent system; they are its pabulum. Strictly speaking, however, naked ideas are not patentable.

The Supreme Court, in 1972, explicitly recognized that one may not patent an idea. This position has been echoed by other federal courts.

Those acquainted with the mysteries of patent law often employ the word "idea" as a shorthand substitute for "invention" or for the physical exploitation or embodiment of an idea. Perhaps this is so because there is no requirement that an invention be reduced to actual practice before the patent thereon issues or before a patent application therefor is filed, it being sufficient that the patent specification contain a description adequate to enable one skilled in the art to which it pertains to reduce it to practice.

Actual reduction to practice may, however, be material in determining priority of invention. See Ch 10, *infra*. While ideas are not patentable, an idea is often the inspiration for an invention. For example, James Watt's monumental improvement of the steam engine was built around the idea of employing a separate chamber to condense the steam. When a patent attorney speaks of the patentability of an idea, he means the patentability of an invention and its exploitation in tangible form. To the uninitiated, however, this causes confusion and misunderstanding. It projects an erroneous image, tending to leave laymen with the impression that patents somehow interfere with the freedom of thought.

No patent confers a right to exclude others from the underlying idea which gave rise to the invention. The monopoly conferred by a patent attaches only to the embodiment of an idea in tangible form. Patent rights and rights in physical objects which possess the physical attributes called for by the claims of a patent are entirely distinct.

The very motivation for having a patent system is to enlarge the fund of knowledge freely accessible to the public. The patent system fulfills this objective by offering monopolies, for limited times, upon the exploitation, in tangible form, of ideas in exchange for public disclosure. Immediately upon the granting of a patent, the ideas disclosed in the patent specification become available to the public. Everyone is free to think about any patented invention, even during its ephemeral life. The patent system imposes no constraints upon thought: it certainly encourages the free exchange of ideas.

Some of the notions to be examined here are discussed elsewhere in Part I. There, however, they are introduced as pristine legal concepts, the state of the popular mind having been largely ignored. In what follows, special effort has been made to relate these and other concepts indigenous to patent law to common experience, hopefully thereby facilitating the dissipation of misconceptions

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surrounding them. The author, however, has no illusions about the efficacy of this presentation. He appreciates the fact that these misconceptions are so deeply ingrained that only with the conscious, constant, and concerted efforts of the readers can they be dispelled and relapse prevented.

Similarly, naked ideas are not copyrightable, as the attribution to an egg of qualities normally possessed by humans. _ Only the expression of ideas are copyrightable. _ A parallel prohibition applies in regard to trademarks, in that a general marketing theme, as such, is not protectible. For example, it has been held that no exclusivity resides in the use of a Swedish or Scandinavian-sounding name for ice cream products.

Another manifestation of the confusion between ideas and intellectual property rights is the association of such rights with metaphysics. _ The patent system, however, is more closely related to the world of commerce than to the realm of philosophy.

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Relation between invention and patents

The ultimate goal of the patent system has been said to be to bring new designs and technologies into the public domain through disclosure.

The viability of any law ultimately depends upon how well it reflects and reinforces accepted customs and conventions. The use of law as an instrument to effect reform or bring about social change will succeed only to the degree that the changes are declaratory of deeply rooted sentiment. Patent law is no exception.

To what extent does patent law coincide with and codify what is commonly regarded as invention and how well does the legal system protect the same?

It should be noted that the realm of patentable subject matter is *not* commensurate with the possible range of invention. Significant fields of potential inventive activity lie largely outside the pale of even the possibility of patent protection. For an invention to be even eligible for patent its subject matter must be deemed a machine, a manufacture, a composition of matter, a process, an ornamental design, or a botanic plant.

While many of the aforementioned categories have been accorded an expansive construction, such that virtually any apparatus is regarded as a machine and a genetically engineered microorganism, albeit alive, is treated as a manufacture or composition of matter, the invention of such things as an alphabet or the use of paper money would not be patentable, though new, useful, and nonobvious. However, an improvement in printing or in coinage, such as the clad coins in current circulation, qualify as patentable subject matter; _ the coins themselves being a manufacture, the alloy composing them, a composition of matter; and the method of fabrication, a process.

The widest chasm between invention and the protection thereof by patent occurs in regard to enforceability. That one has duly obtained a patent from the United States Patent & Trademark Office by no means insures that such will be respected by a court, no less by competitors.

In the American constitutional scheme of government, acts of the Patent & Trademark Office, as those of any administrative agency, are only presumptively correct, being subject to judicial review. Accordingly, one sued for patent infringement has the right to defend on the ground that the patent is invalid. Moreover, patent infringement is not a crime and courts, even where they find a patent valid and infringed, often allow the patent owner to recover no more than a reasonable royalty as damages and, in the exercise of sound discretion, may decline to issue an injunction restraining prospective infringement. In such a climate, where an invention is perceived by competitors as having any substantial value, a sufficient incentive exists to disregard the imprimatur of letters patent and infringe. Courts do have the power to multiply damages up to threefold the actual amount established. Enhancing damages where the infringement is found to have been intentional appears to be an emerging trend.

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Ironically, many judges who are generally regarded as being liberal, have tended to construe patent rights quite strictly and vice versa. _ The frequency with which certain ostensibly "liberal" Justices of the Supreme Court exercised their "passion" for striking down patents once prompted one such Justice to remark in a dissenting opinion: "[T]he only patent that is valid is one which this Court has not been able to get its hands on."

Other courts, after lauding the inventor and his contribution, have proceeded to strike down the patent on a flimsy technicality. _ Preoccupation of the Supreme Court with issues generally perceived to be of more pressing importance and the establishment of the Court of Appeals for the Federal Circuit, having exclusive appellate jurisdiction over all appeals from United States district courts in patent infringement cases, will probably make Supreme Court intervention on the issue of patent validity a thing of the past or at least a less frequent phenomenon.

The Court of Appeals for the Federal Circuit is attempting to exert a salutary influence on the posture to be taken by district courts. _ Remarks that evince a negative attitude toward patents may constitute reversible error, as a jury charge that suggested that a patent owner has the burden of establishing the validity of his patent in the infringement litigation. _ As a result of a patent infringement suit, the Eastman Kodak Company withdrew from its foray into the instant camera business. Patent infringement damage awards in the tens of millions of dollars have been upheld by the Federal Circuit.

The foregoing is not to suggest, however, that all, or nearly all, holdings of patent invalidity are the fault of the courts or even of the Patent & Trademark Office. As the Supreme Court noted long ago:

The specification and claims of a patent, particularly if the invention be at all complicated, constitute one of the most difficult legal instruments to draw with accuracy... . [I]t is no matter of surprise that the latter frequently fail to describe with requisite certainty the exact invention of the patentee, and err either in claiming that which the patentee had not in fact invented, or in omitting some element which was a valuable or essential part of his exact invention.

As both patent law and technology have become far more complex and intricate since those words were first written, their caveat is even more appropriate today than when propounded.

The validity of Tesla's patents on the generation, transmission, and utilization of alternating current was upheld in case after case, _ with glowing praise and admiration from the bench. The validity of the basic patents on Xerography _ and Polaroid photography _ were never challenged in court!

Several significant parameters control the fate of patent validity. It should go without saying that the first is whether the patent covers an invention, i.e., whether there corresponds to the patent an invention and whether such has been adequately disclosed and accurately claimed. To the foregoing factors, which are within the control of the inventor and his patent attorney, must be added an element of luck, i.e., that there is no seemingly close prior art which can be turned and twisted by clever opposing counsel to convince a court that what is claimed is not worthy of patent protection.

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It has been said that the prosecution of a patent application is a lengthy proceeding in which the patent examiner acts like an adversary, not merely an administrator, repeatedly rejecting an application until he is satisfied that the relevant prior art has been fully disclosed and examined. _ Accordingly, obtaining a patent from the Patent & Trademark Office is generally regarded by inventors and businessmen as an *obstacle*. Another and perhaps more appropriate way of viewing patent prosecution is an *opportunity* to make a case for the patentability of the claimed invention.

The rationale for administrative agencies, in general, is to provide a forum for establishing facts and resolving issues at considerably less expense and otherwise more expeditiously than would be possible in the context of a judicial proceeding. Courts are not nearly so inclined to invalidate a patent with respect to an issue that was raised and duly considered by the Patent & Trademark Office, even on the ground of obviousness.

At least with respect to prior art considered by the Patent & Trademark Office the presumption of validity is alive and well. _ Of course, a presumption of validity is not tantamount to a presumption of infallibility. While most judges are willing to accept the expertise of patent examiners, courts on occasion do overrule Patent & Trademark Office determinations of patentability, even on the very same prior art previously considered by the Office.

For this the Patent & Trademark Office has sometimes been criticized, _ but in our constitutional scheme of government, administrative agencies, regardless of the wisdom of their decisions, yield to judicial determination. Moreover, the Patent & Trademark Office is not, and really cannot be, equipped to be aware of prior art existing in forms other than patents and "printed publications," i.e., in forms other than literature references. Unless the information is proffered to the Patent & Trademark Office, how can it possibly detect prior art existing in such forms as public use, sale, or mere public knowledge?

The Patent & Trademark Office makes efficient use of resources which are necessarily limited. As has been noted by a highly regarded federal appellate judge in a dissenting opinion, "[W]hile it seems popular nowadays to cry down the Patent Office ... the Patent Office is doing a good job." _ A former Supreme Court Justice suggested that the Patent Office applies a lower standard of patentability than do the courts, a point occasionally echoed by other federal courts. In fairness to the Patent & Trademark Office, it should be noted that previous court opinions as well as the very ones criticizing the Patent Office fail to articulate a clear and consistent standard that the Office could apply. In the absence of such standard, the Patent & Trademark Office, being an administrative agency, is bound to fall back on the statute, which until the Patent Act of 1952 became effective, did not prescribe any substantive requirements beyond the specified subject matter, novelty, and utility.

Effective patent prosecution is important, if not crucial, for at least two additional reasons: (1) From comments by the Supreme Court, it appears that failure to make out a case for patentability before the Patent & Trademark Office which the Court deems adequate, even though the Office issues a patent, may not be obviated during patent infringement litigation. _ Not only must novel structure be disclosed and claimed but also the efficacy of that novel structure must clearly be identified and argued, the afterthoughts of an astute patent lawyer being unavailing to cure such

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omission. _ Thus, advocacy begins at the patent application stage before the Primary Examiner.

Inventors and investors should not underestimate the worth of building a thorough record and otherwise effectively prosecuting an application before the Primary Examiner. (2) Defects in prosecution taint the patent and tend to be magnified in patent infringement litigation. An accused infringer, confronted with the prospect of liability for damages and an injunction is like a cornered wild beast. He will seize any straw if it offers the possibility of extricating him from the legal consequences of patent infringement.

As one judge noted, an infringer that "blithely continues to practice the arts of piracy, and in making broad its phylacteries, while pointing its finger at plaintiffs as unclean, is not a Daniel come to judgment, but Satan quoting scripture to his purpose." _ For an accused infringer, the exhaustive prior art search which the government cannot afford for every application, becomes feasible as a business gamble. Possibly it will prove an excellent investment. Examiners have neither the time nor the assistance to exhaust the prior art; nothing is more common in a suit than to find that all the important references are turned up for the first time by the industry of a defendant whose interest animates his search.

Accused infringers have long endeavored to escape liability for the consequences of their infringement by alleging that the patent is somehow defective. Before want of invention and obviousness became recognized as a defense to an accusation of infringement, lack of enablement and anticipation were the stock strategies, almost invariably interposed as a defense to a charge of patent infringement. Lack of enablement was argued against such monumental contributions to the progress of the useful arts as Edison's incandescent lamp, _Watt's patent on the separate condenser for steam engines, _ Arkwright's patent on the carding engine for spinning, _ and Medlock's patent on the preparation of Fuchsine dye.

In regard to the anticipation defense the Supreme Court noted: _ "[A]lmost every important patent, from the cotton gin of Whitney to the one under consideration, has been attacked by the testimony of witnesses who imagined they had made similar discoveries long before the patentee has claimed to have invented his device."

The failure to proffer to the Patent Office test results which did not support the applicant's contention with regard to the patentability of tetracycline over the prior art set in motion legal difficulties that have enmeshed the corporate assignee for well over a decade. _ Antitrust liability looms in regard to a patent procured by intentional fraud. _ Failure to challenge an examiner's position may forever foreclose consideration of the propriety of the examiner's position, even where that position was erroneous.

Outright holdings of invalidity have not been the only tool invoked by courts to diminish or destroy the impact of patents. Judicially created doctrines, such as file wrapper estoppel, patent misuse, and collateral estoppel, as well as the abrogation of the doctrine of licensee estoppel, have had the effect of emasculating many patents. Refusal to enforce fully patent rights has occurred even where neither the patent nor the patent owner/inventor was in any way tainted. For example, a court declined to enjoin a corporate infringer on the ground that the patent owner/inventor was not personally engaged in manufacturing the patented invention, this despite

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the fact that even a Supreme Court wary of abusive enforcement of patents has recognized that a patent owner may use the leverage of the patent monopoly to exact royalties as high as the market will bear.

As characterized in a dissenting early opinion of the Supreme Court, the tenure by which patent rights is held is "frail" _ indeed, being subject to defeasance each and every time the patent owner attempts to assert them. A plethora of critical parameters are involved in every patent, even that covering the least complicated invention. A defect in any one is fatal to validity.

Still more precarious and tenuous is commercialization. A myriad of forces militate against commercial implementation. Most of us are creatures of habit. Consumers are fickle. Tastes change. Labor is wary of being displaced by innovation. Capital need for commercialization must compete fiercely with appealing alternatives. High interest rates earn handsome returns with minimal risk. Bankers and other businessmen look for a secure and stable haven for their funds. Patents, at best, eliminate only one factor militating against commercialization of invention, namely, competition, and this only for a limited time.

If patents are to continue to have a significant positive impact on promoting the progress of American industry, courts must be willing to let patents be patents and enforce the full measure of patent owners' putative rights, even if this means closing down an operating plant or making obsolete an entire industry. Sacrificial days devoted to creative activities deserve rewards commensurate with the services rendered. _ It is supposed that men will not labor diligently or invest freely unless they know that they can depend on rules which assure them that they will indeed be permitted to enjoy a substantial share of the product as the price of their labor or their risk of savings.

But more of a commitment than mere lip service to the value of patents is needed. _ Many large corporations by virtue of their market position and their concomitant financial resources have de facto monopolies, being able virtually to dictate what, if any, innovations are commercialized. Such corporations really do not need patents. Paradoxically, despite the fact that patents are, literally, de jure monopolies, they are deeply rooted in the competitive system. Consider the following scenario. _ An inventor brings forth an apparatus that is better and made at less cost than anything heretofore made or used in this field. All competitors are threatened with loss and perhaps ruin if an equally good product is not made and sold at prices which meet the new patented product.

At once, the inventive and creative talents of competitors are aroused. They are spurred to their best efforts to produce, not merely as good as, but a better product, by a new, noninfringing method or apparatus. Thus, instead of displaying monopolistic traits, the patent fosters competition among inventors and begets new and better products at lesser costs. As a result the public is the beneficiary. One who elects to build a business on a product to infringe cannot be heard to complain if an injunction against continuing infringement destroys the business so elected.

It is individuals and small- or medium-size corporations that need patents and the entire panoply of infringement remedies to have a chance of competing against entrenched giants to gain access to their markets. Unlike the de facto monopolies enjoyed by corporations in highly concentrated industries, a patent rarely encompasses enough of a technology to constitute a relevant market. Patents are

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rewarded for merit and do not remove any art or industry from the public domain. Any restructuring of the traditional American patent system which does not continue to allow relatively inexpensive access to those that most need patents would be an idle gesture and perhaps a disastrous experiment.

A patent, even one with broad claims, covers only a minute portion of a technology. A portfolio of patents is needed to maintain a position in almost any technology. It must not be forgotten that the salutary effect of the traditional American patent system in promoting the progress of American industry is attributable as much to the relatively modest fees imposed as in the certainty and extent of enforcement of patent rights.

The encumbrance of maintenance fees introduces an additional and perhaps an unacceptable element of uncertainty into the even otherwise precarious process of innovation and one which may drive inventors underground, encouraging them to rely more heavily on trade secrets. Pruning of patents may become necessary to trim maintenance fee payments during the recurring phenomenon of economic exigency. As it is not always possible to prophesy which patents may become economically viable, potentially valuable rights may be allowed to lapse prematurely but irretrievably.

At best, maintenance fees are an unwarranted nuisance, a form of government harassment requiring additional record keeping. In aggregate, maintenance fees are a substantial burden, even for a large corporation. As it is not possible to produce a product in commercial quantities from a patent specification and any patent drawings without the expenditure of substantial effort on engineering work, an alternative to patenting, which becomes more attractive, is to rely on such confidential developmental know how as the barrier to competitive entry, availing one's self of patents only very selectively.

Of course, such would largely defeat the patent system's beneficent purpose-- public disclosure and dissemination of information. The argument that nearly all of the other industrialized nations impose maintenance fees overlooks what at least traditionally has been an important and underlying difference in philosophy and social structure between the United States of America and such other countries: America is the land of opportunity; in other countries a priority of government is maintenance of the existing socioeconomic order!

Those who would suggest that the patent system is perhaps outworn _ should consider whether it is really other supporting and complementary institutions that are outworn, _ such as law which allows an employee to alienate entirely his American birthright to patents, even on inventions not yet conceived, in exchange for subsistence _ and a tax structure which treats as ordinary income the pittance that an employed inventor may receive from his corporation as an incentive.

The Patent Act of 1836 _ was relatively simple, inexpensive to administer, and extremely effective. Virtually unaltered, it served as Canada's patent statute until Canada substantially amended its Patent Act in 1987. Under it, despite the vicissitudes of the marketplace, patented invention flourished in America and American industry flourished under it. Accordingly, one should be wary of purported "reforms" which tamper with its basic scheme of procuring patents for protecting invention.

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The Substantive Requisites of a Valid Patent

In marking off the realm of patentable or statutory subject matter, the approach which Congress has consistently followed, from its very first enactment in 1790, is to list categories or classes of patentable subject matter. Section 1 of the Act of 1790 declared amenable to patent protection "any useful art, manufacture, engine, machine, or device, or any improvement therein not before known or used." Subsequent enactments have retained this format largely intact.

The redundancy in "engine, machine, or device" was recognized, the verbiage removed, machine being retained and engine and device removed. Until the present Act, the word "process" did not appear; the "art" in "useful art" was construed, at an early date, to encompass a process or method. _ Indeed, the very first patent issued by the United States, and signed by President Washington, Secretary of State Jefferson, and Attorney General Randolph, was for apparatus and process for making potash and pearlash. As will presently be seen, of all the classes of statutory subject matter, the one which has presented, and which continues to present, the most numerous problems is the "process" or "art," an "art" being, indeed, a word of art.

In 1842, Congress expanded the horizons of statutory subject matter to include (ornamental) designs. The realm of statutory subject matter was further enlarged in 1930 to include plants.

The 1930 Act extends patent protection only to asexual reproduction and it specifically exempts from its purview all tuber propagated plants and plants found in an uncultivated state. _ In 1970, the Plant Variety Protection Act was enacted. _ It provides patent-like protection for sexual reproduction of new varieties of plants. Unlike the Plant Patent Act of 1930, the Plant Variety Protection Act of 1970 is not administered by the Patent & Trademark Office.

Rather, the Plant Variety Protection Act created a new office, within the Department of Agriculture, known as the Plant Variety Protection Office. The office is vested with the power to issue Certificates of Plant Variety Protection which carry rights of exclusivity analogous to those embraced in letters patent.

In the eyes of the law, a design or a plant patent is as much a patent as is one for a process, machine, manufacture, or composition of matter. Nevertheless, the literature applies such terms as "invention patent," "utility patent," and "patents proper" to patents for processes, machines, manufactures, and compositions of matter collectively, to distinguish this group from design and/or plant patents. The reader should bear in mind, however, that nonobviousness or invention is as necessary for the validity of a design patent as it is for a so-called invention patent.

By virtue of the Constitution, it would appear that Congress has the power to extend patent protection to all subject matter falling within what can fairly be construed as "the useful arts." In specifying classes or categories of statutory subject matter, [35 U.S.C.A. § 101](#) declares amenable to patent protection "*any* new and useful process, machine, manufacture, or compositions of matter [emphasis added]." The word "any" is also applied to new, original and ornamental designs in [35 U.S.C.A. § 171](#) and to distinct and new varieties of plants in [35 U.S.C.A. § 161](#), although [35 U.S.C.A. § 161](#) qualifies "any" by excepting tuber propagated plants and

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plants found in an uncultivated state. Moreover, it has been held that all that is necessary to make a sequence of operational steps a statutory "process" within [35 U.S.C.A. § 101](#) is that it be in the technological arts. _ Congress may, of course, carve out particular exceptions from the enumerated statutory classes. One such exception is contained within the Patent Act itself, namely, that for tuber propagated plants and plants found in an uncultivated state.

The Atomic Energy Act of 1954 excepts from patent protection inventions useful solely in the utilization of special nuclear material or atomic energy in an atomic weapon.

Apparently, it is the position of the Supreme Court that the judiciary should not read into the patent laws restrictions on the scope of subject matter amenable to patenting which Congress has not expressed.

The reader may be puzzled by the fact that Section 1 of the Act of 1790, in enumerating categories of subject matter amenable to patent protection, contains the phrase "or any *improvement* therein not before known or used [emphasis added]." Section 101 of the present Act retains the substance of that recitation. Some consider the phrase as raising improvements to the dignity and status of separate and distinct statutory classes of invention.

Such an interpretation, however, makes little sense, particularly in view of the fact that nearly all inventions can be characterized as an improvement on or of something old. Nearly every mechanical machine is, in a sense, an improvement on the wheel. Patents on such pioneer inventions as Bell's telephone and Edison's phonograph were entitled improvements.

Samuel Hopkins, the first patentee of the United States, referred to his invention as an improvement. It should be borne in mind that nothing was more abhorrent to the strict-constructionist orientation of the common-law legal mind than the failure to spell out, in a legal document or statute, every possible variation, however slight. The framers of the Act of 1790 found it necessary to enumerate "engine, machine, or device," where "machine" suffices today. Accordingly, it is submitted that the recitation of improvement in the present Act is mere surplusage, adding nothing to the preceding categories. Its presence is a mere vestige of the idiom of a bygone era.

From the standpoint of the claim drafter, the statutory class to which an invention belongs is a material consideration; for it will, to a significant degree, dictate claim format. Deference must be paid to the statutory class to which an invention belongs in organizing a claim and in arriving at the precise language in which it is to be cast:

- (1) Each claim should be drawn to but a single statutory class of invention. A claim which is drawn to more than one statutory class is sometimes referred to as a hybrid claim.
- (2) All the limitations of a claim upon which patentability turns should belong to the same statutory class. The line of demarcation is rather strictly observed with respect to the process-apparatus dichotomy. Thus, process limitations are given no weight in construing claims drawn to a machine, _ machine limitations are given no weight in construing claims drawn to a process _ . . . In other words, the manner or method in which a machine is to be utilized is not germane to the issue of patentability of the machine itself.

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Regarding the relationship between a method and the apparatus used in carrying it out, the rule, at least in determining infringement, is that a method patent is not dependent on the form of the apparatus used. Infringement cannot usually be avoided merely by making slight innovations in the apparatus disclosed in the patent.

The inclusion of method limitations in article claims is not objectionable per se, so as to render claims vague and indefinite.

Stated in other words: the patentability of a process claim must turn upon process limitations; the patentability of machine claims must turn upon machine limitations. The line of demarcation between machine, manufacture, and composition of matter claims is not nearly so sharp.

As the terms are used in patent law, process is synonymous with art, method, and mode of treatment.

A process consists of an act, operation, or step, or of a series of steps, performed upon specified subject matter to produce a physical result. A series of steps is a "process" within the meaning of [35 U.S.C.A. § 101](#) unless it falls within a judicially determined category of nonstatutory subject matter exceptions.

Where a process consists of more than a single step, the arrangement, order, or sequence in which these component steps are to be performed may itself be of patentable significance. Thus, the patentability of a multi-step process may reside solely in the arrangement of its constituent steps--each of the individual steps being old, the particular order constituting a new combination. On the other hand, the patentability of a process may reside in the materials being employed, the physical manipulative steps being old. _ Weight must be accorded to the particular ingredients that are combined with each other in a claimed method, even though they are analogous to those of the prior art. _ Method claims need not recite all of the operating details.

The patentability of a process may reside in a particular step or in the order in which the constituent steps are performed. _ Any difference in magnitude in any process parameter (e.g., time, temperature, pressure) between what is claimed and the prior art should be deemed to render the process technically novel, though not unobvious unless the difference is somehow critical and/or the result unexpected. Nevertheless, a lower court was of the opinion that a method of applying a composition to hair that differed from the prior art only in the time the composition was left in contact with the hair was not even novel.

It is conceivable that sufficient novelty and nonobviousness may reside in a starting material as to sustain the patentability of a process claim, the steps themselves being old. While the materials employed in a process cannot be ignored in resolving the question of the patentability of process claims, _ where a process differs from the prior art solely in that a different but related or analogous starting material is employed, that process, though novel, may be deemed prima facie obvious, _ unless it is a biotechnological process within the purview of the Biotechnological Process Patents Act of 1995, [Pub. L. 104-41](#). _ Moreover, to be considered prima facie obvious, the prior art apparently must define a fairly narrow class of compounds that would render obvious the use of a member of such narrow class as a starting material in the prior art process. _ The novelty of such a process

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resides in the fact that the materials are not identical with those employed by the prior art. Failure of the prior art to teach the analogy between the materials should tend to establish unobviousness, as would the existence of a different and unexpected result. In chemical cases, the starting materials are often spoken of as reactants or reagents; and in mechanical cases as the workpiece.

The materials subjected to treatment by the steps of a process and the steps themselves are the parameters which define a process. The nature and composition of the product are defined by and necessarily flow from the foregoing parameters. Two processes which treat the same starting material in the same manner are identical and must of necessity give rise to the same product.

The steps of a method or process claim are analogous to the components of an apparatus claim. Both are "combination" claims. It should be noted that many of the so-called one-step processes actually involve several steps, the single step being performed at a particular stage in a conventional series of steps.

Formerly, the nature of the steps themselves was of significance in determining whether a process fell within the realm of statutory subject matter. At an early date, the courts distinguished between processes involving the use of machines and those involving the application of more fundamental forces, holding that only processes involving the latter type of forces fell within the purview of an art. That processes involving chemical action constituted statutory subject matter was early recognized. With the coming of the Electrical Age, processes based upon transformations of electromagnetic energy became numerous, and these also were deemed to constitute an art.

The rationale for denying that processes involving the use of machines constituted an art was that in such instances the invention resided, not in the process of using the machine, but rather in the machine itself.

After a time, the courts mitigated the extreme harshness of this position. A distinction was drawn between (1) processes which amounted to no more than the inherent and necessary function of a machine, the steps of the processing being part and parcel of the peculiar operation of the particular machine; and (2) processes which might be performed by hand or by any of several different mechanisms or machines and thus not inextricably tied to a particular machine. Only the former category of processes was still deemed to lie outside the pale of an art as contemplated by the patent statute. A caveat, however, is in order. Where a patent application contains both machine claims and claims drawn to the method of using such machine, the Patent & Trademark Office may require restriction between the machine and method claims, if either or both of the following can be shown: (1) the process as claimed can be practiced by another materially different machine or by hand; or (2) the machine as claimed can be used to practice another and materially different process.

The law is now fairly well settled: a statutory process may be composed of any combination of physical or manipulative steps. Thus, it has been held that a surgical procedure or technique, which was properly claimed, constituted a statutory process.

The distinction between claims drawn to living matter, i.e., an organism per se, and a claim in which an organism or a part thereof is an element in a *combination* of

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elements should be noted. There is nothing improper in reciting living matter as an element in a claim drawn to a *combination* of elements, and such element is generally deemed an effective limitation, as, for example, "adapted for application to human skin."

Methods of diagnosis or treatment, including a regimen of drug therapy or a surgical procedure, qualify as statutory processes, even though one or more steps thereof are performed upon a human or other living organism. _ However, a 1996 amendment to the Patent Act, which applies only to patents granted on or after September 30, 1996, precludes any remedy for infringement against a "medical practitioner" for his or her performance of a "medical activity," as defined in [35 U.S.C.A. § 287\(c\)\(2\)\(A\)](#). _ The amendment is intended to insulate from liability for patent infringement health care professionals for using innovations in pure medical or surgical procedures, such as the Heimlich maneuver or cardio-pulmonary resuscitation:

[A] *medical activity* means the performance of a medical or surgical procedure on a body, but shall not include (i) the use of a patented machine, manufacture, or composition of matter in violation of such patent, or (ii) the practice of a patented use of a composition of matter in violation of such patent, or (iii) the practice of a process in violation of a biotechnology patent.

The phrase *patented use of a composition of matter* "does not include a claim for a method of performing a medical or surgical procedure on a body that recites the use of a composition of matter where the use of that composition of matter does not directly contribute to achievement of the objective of the claimed method." _ To be patentable the method must be new. Although the analgesic properties of aspirin have long been recognized, it is only recently that the effectiveness of aspirin in preventing heart attacks has been established. If the dosages of aspirin and the intervals of its administration to ward off a heart attack are the same as that for which aspirin has been taken as an analgesic, such is but the discovery of a heretofore unrecognized benefit which, however meritorious, would not be patentable, as the method itself is old.

The controversy over what constitutes a statutory process still rages, however, with the lines now drawn around what are known as "mental" or "nonphysical" steps. A mental act or step is one which may be performed by the human mind without the need or intervention of a physical instrumentality. Such acts are broadly divisible into: (1) those which merely involve the application of logic or deduction; and (2) those which involved aesthetic thoughts or other value judgments. Examples of mental acts involving simple logic include computing, measuring, determining, counting, dividing, etc. Such acts may also be performed by a machine, according to predetermined and predeterminable criteria.

The " First Inventor Defense Act of 1999," so styled, makes it a defense to a charge of infringement of *a method of doing business* or of *conducting business* that the accused, "acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent." By the terms of the First Inventor Defense Act of 1999, the defense to a charge of infringement insulates from liability not only those who carry out the method, but the embodiments generated thereby.

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That an invention relates to a method of developing one's psychic powers apparently does not in and of itself remove a claim drawn thereto from the category of a statutory process or method.

Statutory subject matter--Processes--Computer programs

The technology in which the issue of mental steps is most frequently involved is computer programs. _ The term "computer" is subject to numerous definitions and is used to describe a variety of devices with varying levels of sophistication and complexity. According to the Federal Circuit, the term "computer" will be understood as it commonly understood by those skilled in the art, i.e., "at the most fundamental level, a device is a computer if it is capable of carrying out calculations." _ Whether a claim drawn to a computer program constitutes statutory subject matter has not been entirely resolved despite years of controversy, yet in view of the plethora of judicial precedents generated in the course of this controversy, the following issues appear to have been settled.

(1) A claim drawn to a computer program which is couched as a method, the ultimate object of which is merely the generation of numerical values according to some mathematical formula or algorithm, may recite a statutory process;

(2) A claim drawn to a computer program which is couched as a method does not constitute a statutory process even though the numerical values bring about a physical result where the only novelty recited in that claim resides in the generation of the numerical values; _ and

(3) A claim drawn to a multi-step physical process is not rendered nonstatutory merely by virtue of the fact that a physical relationship involved therein is expressed as a mathematical formula.

While a mathematical formula alone, sometimes referred to as a mathematical algorithm, viewed in the abstract, is considered unpatentable subject matter, _ the absence or presence of a mathematical formula or algorithm in a claim is not dispositive of whether the claim is drawn to statutory or nonstatutory subject matter. A panel of the Federal Circuit decided that claims drawn to a method of determining the motion of an object were nonstatutory even though no mathematical algorithm expressly appeared in any of the claims under appellate review. The panel noted that, although the specification did make cursory references to apparatus, no more than brief reference was made to any computer architecture, circuit diagrams, or computer hardware. _ However, this decision was vacated and remanded to the Board of Appeals and Patent Interferences for rehearing in light of the Federal Circuit's decision *In re Alappat*.

According to a panel of the Board of Patent Appeals & Interferences, a claim should be considered as reciting a mathematical algorithm only if it essentially recites, directly or indirectly, a method of computing one or more numbers from a different set of mathematical computations and, consequently, a claim which essentially recites another type of method does not recite a mathematical algorithm, even though it incidentally requires, either directly or indirectly, the performance of some mathematical computation.

A claim the sole physical step in which is performing clinical tests on individuals to obtain data has been held to be nonstatutory. _ A claimed method and apparatus for generating a data structure that represents the shape of a physical object in a position and/or a motion control machine as a hierarchy of bubbles was found to involve no more than the solving of a mathematical algorithm and, hence, not to constitute statutory subject matter. _ It is true, particularly with ideas expressed in

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mathematical form, that if a claim requires more than the manipulation of ideas so that the process described in the claim produces something quite different, then the process may indeed describe statutory subject matter. _ Accordingly, a data structure which manipulates mathematical or abstract ideas is not patentable, while one which implements a physically interconnected arrangement of hardware which may be patentable. _ Similarly, a data structure which merely represents data in a database is not patentable, while one which dictates how application programs manage information may be patentable. _ Token use (e.g., the recitation of a display step) does not convert

a mathematical algorithm into statutory subject matter.

A distinction is drawn between claims which purport to preempt all use of a mathematical equation, which are deemed nonstatutory, and claims which merely employ a mathematical equation in conjunction with other steps, which are deemed statutory.

A test applied by the former Court of Customs & Patent Appeals to determine whether a claim drawn to a computer program is nonstatutory involves a two-step analysis: *first*, determination of whether the claim recites an algorithm, and *second*, if it does, ascertainment of whether the claim in its entirety wholly preempts that algorithm. _ Once it is determined that a claim recites a mathematical algorithm has been found, the claim *as a whole* must be further analyzed. If it appears that the mathematical algorithm is implemented in a specific manner to define structural relationships between physical elements of the claim (in apparatus claims) or to refine or limit claim steps (in process claims), the claim being otherwise statutory, the claim passes muster under [35 U.S.C.A. § 101](#). If, however, the mathematical algorithm is merely presented and solved by the claimed invention, and is not applied in any manner to physical elements or process steps, no amount of post-solution activity will render the claim statutory; nor is it saved by a preamble merely reciting the field of use of the mathematical algorithm.

The Supreme Court has said that in determining whether a claimed process is eligible for patent protection under [35 U.S.C.A. § 101](#), the claims must be considered as a whole and that it is inappropriate to dissect the claims into old and new elements, treating any algorithm or mathematical formula appearing therein as an old element, and then ignore the presence of the old elements. The question of whether a particular invention is novel is fully apart from whether the invention falls into a category of statutory subject matter. _ Every step-by-step process, be it electronic or chemical or mechanical, involves an algorithm in the broad sense of the term, so that the fact that apparatus operates according to an algorithm does not necessarily make it nonstatutory.

In an attempt to circumvent the mental step doctrine, claims to computer programs have been couched in "means-plus-function" terms, thereby apparently subsuming such a claim under the category of an apparatus. While the Court of Customs & Patent Appeals for a time sanctioned this strategem, _ it proved to be short lived. Apparatus claims which differ from method claims by *reciting* "means for" performing the steps set forth in the method claims and "means for displaying" the results are not treated differently from the method claims. _ According to the Federal Circuit: _ "Whether stated implicitly or explicitly, we consider the scope of [§ 101](#) to be the same regardless of the form--machine or process--in which a particular claim is drafted." A claim which substitutes, for a mathematical formula in algebraic

form, words which mean the same thing nonetheless recites an algorithm. _ In computer-related inventions, if the "means" recited in a claim is that for solving mathematical algorithms and making calculations, such claims will be treated as a method therefor unless the applicant can demonstrate that the claim is truly drawn

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to specific apparatus distinct from other apparatus capable of performing the identical function. _ However, the Federal Circuit has said that computer software becomes physical apparatus when run on a general purpose computer. _ Data structure designed to permit a computer to run more efficiently "impart a physical organization on the information stored in memory."

In 1996, the Patent & Trademark Office issued its Examination Guidelines for Computer-Related Inventions. _ These Guidelines are designed to assist examiners in analyzing computer-related inventions for compliance with substantive law. Among the most significant portions of the Guideline are those directed to (1) determining what it is that the applicant has invented and is seeking to patent; _ and, (2) determining whether the claimed invention complies with [35 U.S.C.A. § 101](#).

(1) Rather than beginning their examination with a determination of whether an applicant's claims recites a mathematic algorithm, examiners are instructed to determine what it is that the applicant has invented and is seeking to patent. Examiners are obliged to review the entire application to determine whether the invention as a whole would produce a "useful, concrete, and tangible result." This "practical application requirement" goes beyond the utility requirement set out in [35 U.S.C.A. § 101](#) to encompass something more than abstract ideas or the manipulation of abstract ideas.

As examples of claims satisfying the practical application requirement, the Guidelines point to: claims directed to the use of Boolean algebra to enhance the usefulness of telephone customer billing records, _ claims directed to the transformation of monetary data through a series of mathematical calculations into a final share price; _ and claims directed to a rasterizer for converting discrete waveform data samples into anti-aliased pixel illumination intensity display data.

The Guidelines note that the onus is on the examiner to present a *prima facie* case that the invention fails to satisfy the practical application requirement. Such a *prima facie* case can only be made out where the claim is devoid of any limitation to a practical application in any area of technology.

(2) In determining whether the claimed invention complies with [35 U.S.C.A. § 101](#), the Guidelines advise examiners to consider the inclusive breadth of [§ 101](#); examples of nonstatutory subject matter; and, finally, "safe harbors" for computer-related inventions.

The Guidelines note that the Supreme Court has held that Congress chose the expansive language of [35 U.S.C.A. § 101](#) in order to include "anything under the sun made by man." _ However, the Guidelines go on to note that this statutory provision is limited both by its wording and court cases interpreting that wording. The text of [35 U.S.C.A. § 101](#) states that one may only patent something that is a machine, manufacture, composition of matter, or a process. Cases interpreting those categories have found them not to encompass abstract ideas _ or the mere manipulation of abstract ideas.

The Guidelines go on to distinguish between claims directed to functional and nonfunctional descriptive material. Functional descriptive material consists of data structures and computer programs. Nonfunctional descriptive material consists of music, literary works, and compilations or arrangements of data. When functional descriptive material is embodied in computer-readable media, "it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since the use of the technology permits the function of the descriptive material to be realized." _ However, when nonfunctional descriptive material is embodied in computer-readable media, "it is not statutory since no requisite functionality is present to satisfy the practical application requirement."

Finally, the Guidelines give examples of safe harbors for statutory patent process claims. These include claims directed to pre- and post-computer process activities. A

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pre-computer process will be statutory where it requires the transformation of measurements made of activities or objects occurring outside

of the computer in advance of computer processing. _ A post-computer process will be statutory where computer processing is followed by acts occurring outside of the computer that involve the manipulation of physical objects which result in those objects having a different attribute or structure.

Still unsettled is whether a computer program expressed in terms of the actual microscopic level changes it effects in the structure of the computer's hardware, as changes in the orientation of magnetic domains within the computer memory or the location of conductive pathways on the silicon chip of a microprocessor, constitutes statutory subject matter.

In *State Street Bank & Trust v. Signature Financial Group*, _ the Federal Circuit clarified the criteria for determining statutory subject matter with respect to computer-related inventions. Signature Financial was granted a patent claiming a data-processing system for the automated management and allocation of investments in mutual funds. State Street Bank attempted to negotiate a license agreement with Signature Financial. When negotiations failed, State Street Bank brought suit for a declaratory judgment asserting that Signature Financial's patent was invalid for failure to claim statutory subject matter under [35 U.S.C.A. § 101](#).

On appeal, Judge Giles Rich, writing for a unanimous three-judge panel of the Federal Circuit, reversed the holding of the district court and held that the patent's single independent claim designated a "machine" -- one of the four categories of patentable subject matter under [35 U.S.C.A. § 101](#). _ The panel also reversed the finding of the district court that the subject matter of the patent's claims fell into one of two judicially created exceptions to statutory subject matter: the mathematical algorithm exception _ and/or the business method exception.

With regard to "the mathematical algorithm exception," the Federal Circuit restated the earlier holding of the Supreme Court that "mathematical algorithms are not patentable subject matter to the extent that they are merely abstract ideas." Judge Rich expanded on this reasoning to hold that "unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not 'useful.'" _ In this case, the Federal Circuit held that --"the transformation of data, representing discrete dollar amounts by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula or calculation because it produces a 'useful, concrete, and tangible result.'" _ This final result is a "share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." _ The Federal Circuit stated that a "claimed invention involves inputting numbers, calculating numbers,

outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless of course, its operation does not produce a 'useful, concrete, and tangible result.'"

Although the holdings in *State Street Bank* have not been subjected to *en banc* review, other panels of the Federal Circuit have also followed its approach to statutory subject matter for computer-related inventions.

Computer programs are sometimes characterized as "software" to distinguish them from the computer itself and its physical or tangible components, characterized as "hardware," which are clearly machines or apparatus. Some would recognize as distinct an intermediate category which would include information which has been embodied into hardware, applying the term "firmware" to instructions permanently embodied in hardware. A combination of tangible hardware elements one or more of which contains instructions permanently embodied therein which affect the internal

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operation of the computer does not become nonstatutory subject matter merely because it is embodied in the hardware.

Whether a claim is drawn to statutory subject matter is but the threshold question in determining patentability. To be patentable, statutory subject matter must be novel, useful, and unobvious and must be expressed in the claim with sufficient particularity. It must be emphasized that in regard to processes involving mental steps, particular care must be exercised in determining whether the process is defined with sufficient particularity to be capable of being carried out.

Statutory subject matter--Processes--"Use patents" and new uses

Methods of making and methods of using a substance, whether such substance was hitherto known or unknown, individually qualify as statutory subject matter. While the term "use patent" has been regarded as being commensurate with "process," _ it is usually restricted to a method or process of *using* a substance or an apparatus, as opposed to a method or process of making a substance or an apparatus.

Two interesting problems have arisen in connection with process claims and their relation to the corresponding product. One involves the product and the manner of using it, the so-called "new use" for an old product; the other involves the product and the process of making it, the so-called "product-by-process" claim. Does the discovery of a new use for a known substance entitle the discoverer of the new use to a patent on the old substance? The answer is that it does not. _ Dr. Morton was the first to demonstrate the anaesthetic properties of ether. However, the compound ether was known before Dr. Morton applied it to surgery. Dr. Morton obtained a patent on the use of ether in anaesthetic surgery. _ The patent was held invalid because ether *per se* was claimed, rather than a method of using it as an anaesthetic. _ Nevertheless, under present law, one who discovers a new use for a known substance may patent the use itself, provided that the new use is claimed

as a process. _ The recitation in a claim of a mere statement of intended use of the composition set forth therein is deemed insufficient to make such claim a method claim. _ Moreover, the "use" must be recited as a process or method, i.e., it must be claimed as one or more steps. Merely claiming: "The use of ..." has been deemed improper. _ Similarly, finding a new use for an old device does not entitle one to any apparatus claim on such device.

What about a "new use" or new application of an old *process*? While there is some authority to the contrary, _ the better rule would seem to be that a new use for an old process or product is patentable if such new use or application satisfied the nonobviousness standard of [35 U.S.C.A. § 103](#).

A new use for a known process that is analogous to and a cognate of an old process is deemed obvious and therefore not patentable. _ A new use, if claimed as a process, is a new process. A new use of an old thing or an old process, quite unchanged, can under no circumstances be patentable.

Statutory subject matter--Processes--Product-by-process claims

A composition of matter may be claimed in terms of the process of making that composition of matter. _ Such a claim is called a product-by-process claim, and is deemed a product claim, not a process claim.

The fact that a process limitation appears in a claim does not convert it to a product-by-process claim. _ Where a product-by-process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product.

overruling what had been Patent & Trademark Office practice, _ the Court of Customs & Patent Appeals held that an application may present both conventional product claims and product-by-process claims drawn to the same composition of matter.

It is unsettled whether making the product of a product-by-process claim by a process substantially different from the process steps recited in the product-by-process claim necessarily constitutes an infringement of such claim. One panel of the Federal Circuit has indicated that a product-by-process claim is infringed even if the product is made by a different process. _ In a subsequent case, a different panel of the Federal Circuit has indicated that process terms in a product-by-process claim may limit the claim. _ If a product-by-process claim does not encompass the product, however made, it is not truly a product claim, but rather merely a process claim.

Statutory subject matter--Products

Although the Patent Act distinguishes among a process, machine, manufacture, and composition of matter, these four statutory classes, from the standpoint of logic, more conveniently fall into but two categories: one embraces physical objects or instrumentalities and thus comprehends all machines, manufactures, and compositions of matter; the other embraces all physical operations and thus comprehends all processes. Corresponding to the two broad categories of statutory subject matter are two different types of claims, namely a claim to a physical entity (composition, machine, manufacture) and a claim to a physical activity (method, process). The term product is properly used to signify that which is produced by a machine or process. Its meaning, however, may be stretched to comprehend machines. In such sense, it may be employed as a generic term for machine, manufacture, and composition of matter, being in this sense commensurate with physical object or instrumentality. While a product, the manner of making it, and the manner of using it are all statutory subject matter, a patent on the product per se gives the owner thereof the right to restrict the use and sale of such product regardless of how and by whom it was manufactured. _ The term "article" is actually shorthand for (article of) manufacture. However, its meaning, like that of product, is sometimes expanded to include all physical objects and instrumentalities.

Statutory subject matter--Products--Machine

As the terms are used in patent law, "machine" is virtually interchangeable with apparatus, mechanism, device, or engine. Although the Patent Act employs the word "machine," in practice, the term "apparatus" is much preferred, particularly in the chemical arts. The term "machine" includes tools and other implements intended for use by hand. There is no requirement that to be patentable a machine must be automatic.

A machine is an instrument, that is to say a physical entity, consisting of parts, components, or elements, which are so arranged and organized as to cooperate, when set in motion, to produce a definite, predetermined, and unitary result.

The particular way in which the components are arranged, as well as the nature of the components themselves, are the parameters which define and distinguish a machine. Thus, the patentability of a machine may reside entirely in the manner in which the components are arranged, all of the components being old. _ Similarly, patentability may reside both in the manner of combining the components and in one or more of the components. An old or exhausted combination which contains a new component, however, is not patentable, although such new component may be patentable by itself. _ A patentable machine may consist of (1) an entire or integral working entity; or (2) merely a component or subcombination of some larger machine. However, it may not be deemed obvious to combine pieces of prior art where structures disclosed therein are used for different purposes.

The material or workpiece upon which a machine is capable of operating is not considered to be a component thereof and, thus, is to be ignored in determining the patentability of a machine. _ In other words, the material or article worked upon by a machine, device, or apparatus being claimed does not impart patentability to such machine, device, or apparatus.

Every different combination of components gives rise to a distinct and inherent rule or law or principle of action, according to which that combination will necessarily operate. This is sometimes referred to as the inherent function of the machine or as its mode of operation. Claims directed thereto may be patentable as a process. _ This is so even if the process constitutes the only method of accomplishing the effect. The operation of a machine may involve a transmittal, transformation, or any other utilization of energy.

Statutory subject matter--Products--Manufacture

The term "manufacture" is actually shorthand for "article of manufacture," and is derived from the English Statute of Monopolies, which speaks of "any manner of new manufacture." In United States law "manufacture" has been construed as excluding what is comprehended by the other statutory classes of inventive subject matter, and is thus a residual category of inventive subject matter.

Also excluded from the class manufacture are articles that have had their appearance, properties, function, form, shape, and/or size slightly or negligibly altered by a manufacturing process, since the essential character of such articles remains that they are products of nature. For example, fresh fruit impregnated with a solution of borax was held not a manufacture, even though the borax imparted to the fruit fungicidal properties which made it resistant to decay. _ In the words of the Supreme Court: "To obtain a patent for a product made from raw material, it must possess a new or distinctive form, quality, or property."

This rationale of the Supreme Court was invoked by the Patent Office Board of Appeals in affirming a rejection of claims drawn to coal coated with a thin film of iridescent coloring, the Board declaring that coal so treated was changed in no substantial manner. _ In view of the language in a more recent Supreme Court case holding that a bacterium genetically altered by human intervention constitutes a statutory composition of matter or article of manufacture, _ the Board of Patent Appeals & Interferences extended to a multicellular organism (the polyploid oyster) the Supreme Court's rationale that an organism contrived by man is statutory subject matter.

While a more than transient or ephemeral existence would seem to be an attribute inherent in the concept of a manufacture, instability, at least with respect to compositions of matter, does not preclude patentability.

It has been held that one is not entitled to claim a product in two different stages of manufacture.

It should be noted that building structures, made as houses and bridges, have been generally regarded as manufactures.

The Patent & Trademark Office Board of Patent Appeals & Interferences has held that a sound recording falls within the scope of an article of manufacture.

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Statutory subject matter--Products--Composition of matter

As used in patent law, "composition of matter" or "composition" includes chemical compounds and physical mixtures. A transuranic chemical element has been held patentable as a composition of matter. _ A reaction product may be patentable as a composition of matter.

A mixture is deemed to be "new" even where the only novelty is in the proportions of the constituent ingredients. The novelty of a mixture may also reside in the arrangement or segregation of its ingredients. _ A purer form of a naturally occurring substance may be patentable where it has been demonstrated that the purer form possesses an unexpected property, such as dramatically enhanced activity.

Cooking recipes, while certainly defining physical mixtures of ingredients, are generally denied patent protection on the ground that the ordinary recipe "lacks invention," that is to say that it would have been obvious. _ Adding a vitamin to food to produce an effect already known has been held not to constitute a patentable invention.

The fact that a substance is unstable does not preclude its patentability as a composition of matter.

As the term suggests, "composition of matter" covers materials or substances themselves, and these are wholly independent of and distinct from the particular extrinsic and macroscopic configurations in which they may appear. The latter are manufactures.

It is deemed not a matter of great moment whether a claim is for a "manufacture" or a "composition of matter," under [35 U.S.C.A. § 101](#), since there is not considerable overlap between these two broad categories.

A machine is a combination of parts; a composition of matter is a combination, union, or association of ingredients. A chemical element is, in effect, a combination of subatomic particles--protons, electrons, and neutrons. As the patentability of a machine may turn not only upon the novelty of its components but on the manner in which they are combined, so too the patentability of a composition of matter may turn not only upon the novelty of its ingredients but on the manner in which they are combined. The mode of combination may be (1) chemical, as in the case of compounds; or (2) physical, as in the case of mixtures. A new crystalline form of an old compound has been held patentable as a composition of matter.

Like the components of a patentable machine, the components or ingredients of a patentable composition of matter must cooperate to produce a unitary result-- that is, they must, in association, exhibit a set of properties distinct from those possessed by the separated constituents.

After much litigation before the Court of Customs & Patent Appeals _ and the Supreme Court, _ live bacteria, and perhaps other forms of living microorganisms, that have been contrived through the intervention of man's genetic engineering (as

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by gene splicing) and that are not naturally occurring have been held to be patentable subject matter, as compositions of matter or as articles of manufacture.

It is still unsettled whether an isolated pure culture of a naturally occurring microorganism is patentable *per se*. _ Also unsettled are questions engendered by attributes of living matter which perhaps find no precise analogy in inanimate forms of compositions of matter and manufactures. For example, in the context of the patent grant of the "right to exclude others from making ... the invention," _ is *reproduction* to be equated with *making*? If so, if the microorganism spontaneously reproduces itself, has an infringement occurred? Of course, techniques of fabricating and/or utilizing microorganisms would be patentable as methods.

The Patent & Trademark Office Board of Patent Appeals & Interferences has held a claim drawn to a multicellular organism to constitute statutory subject matter. The Patent & Trademark Office has issued a patent whose claims cover a transgenic nonhuman mammal, i.e., a nonhuman mammal all of whose germ cells and somatic cells contain a recombinant activated oncogenic sequence introduced into said mammal, or an ancestor of said mammal, at an embryonic stage.

Publication in the Official Gazette _ of a notice, which does no more than restate the current status of the law as announced in Court and Board decisions, regarding the patentability of claims drawn to living organisms, does not constitute rulemaking for which prior notice and a period for public comments would be required.

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Statutory subject matter--Designs

Designs first became patentable subject matter in 1842. _ The design for the Statue of Liberty was patented by Bartholdi in 1879.

The former Court of Claim and Patent Appeals rejected the contention that a lesser standard of invention applied to design patents as compared to utility patents. The Federal Circuit has reaffirmed the view that the same standard of inventorship is to be used for both design and utility patents. _ The inventor for both design and utility patent purposes is the "person or persons who conceived the patented invention." _ Once the invention has been conceived, the inventor may then "use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent."

Statutory subject matter--Designs--What constitutes a statutory design

The language "new, original and ornamental design for an article of manufacture" encompasses at least three kinds of designs: _ (1) a design for an ornament, impression, print, or picture to be applied to an article of manufacture (surface ornamentation); (2) a design for the shape or configuration of an article of manufacture; and (3) a combination of the first two categories. Accordingly, a picture standing alone is not protectible by a design patent. The factor that distinguishes statutory design subject matter from a mere picture or surface ornamentation per se is the embodiment of the design in an article of manufacture.

While the design must be embodied in some article, it need not be commensurate with a complete or discrete article. _ In other words, a design may be for a portion of an article of manufacture.

While a statutory design may be for surface ornamentation, it must be applied to an article of manufacture. This means that the article of manufacture must be shown in solid black lines and thus claimed in the design patent.

The patentability of a design resides in its appearance. _ A design is a unitary thing and all of its portions are material in that they contribute to the appearance which constitutes the design. _ A design, in the view of the patent law, is that characteristic of a physical substance which, by means of lines, images, configurations, and the like, taken as a whole, makes an impression through the eye upon the mind of the observer. The essence of a design resides, not in the elements individually, nor in their method of arrangement, but in their effect taken *tout ensemble*--in that indefinable whole that awakens some sensation in the observer's mind. Impressions thus imparted may be complex or simple; in one, a mingled impression of gracefulness and strength, in another, the impression of strength alone. But whatever the impression, there is attached to the object observed in the mind of the observer a sense of uniqueness and character. _ Accordingly, a design that would be hidden from view when the objects embodying it are in their normal use is not the proper subject for a design patent. _ Articles that are concealed or obscure during their "normal and intended use" are not proper subjects for design patents, since their appearance cannot be a matter of concern. _ Although "normal and intended use" excludes the time during which an article is manufactured or assembled, it does not necessarily coincide with the period of final use. That an article is visible at times other than the period of its final use is legally relevant to ascertaining whether the article is "ornamental" within the meaning of [35 U.S.C.A. § 171](#). _ A design for an article that is hidden in its final use may nevertheless be patentable if during some point in its life its appearance is a "matter of concern." Appearance at the point of sale is apparently sufficient. _ Visibility during an article's "normal use" is not a statutory requirement, but rather a guideline for courts to employ in determining whether the patented features are "ornamental." _ The rule that a design must not be hidden from view is not avoided by encasing a heretofore concealed design element in a transparent cover solely to avoid this rule's effect. This principle is in contrast to that applied to patents on processes, machines, manufactures, and compositions of matter, the motivation for which is some utility or function.

While the Patent Act ties patents for designs to articles of manufacture, _ this wording has been liberally construed as requiring only that the design be in the form of a tangible object, even if that object be as ephemeral as that created by a water

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fountain. _ To this end, a design patent application must depict the complete appearance of the article of manufacture in which the design is embodied. _ A design patent, however, may be for only a discrete portion of an article of manufacture. _ In such case, the patent drawing may depict the entire article of manufacture with the portion not claimed shown by broken lines. _ Broken lines explain the environment in which the patent exists, but are technically not part of what is being claimed.

Merely illustrating a picture displayed on the screen of a computer or other display device, such as a television or movie screen, is not alone sufficient to convert a picture into a design for an article of manufacture. _ A display on a computer screen or other display device does not constitute "ornamentation" applied to or embodied in some article of manufacture.

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Statutory subject matter--Designs--Novelty of designs

A patentable design, like a patentable process, machine, manufacture, and composition of matter, must be new and unobvious.

The section 171 requirement that a design be "new" is the equivalent of the [35 U.S.C.A. § 102](#) novelty requirement. As applied to design patents, this requires that the overall appearance of a prior reference be virtually identical to the design in issue in order to negate its novelty. _ A design patent is not valid where the design is *substantially identical* to the prior art. "It is the substance of this doctrine that substantial identity or similarity in appearance negates novelty on the one hand, or establishes infringement on the other."

The basic test for anticipation--"that which infringes if later anticipates if earlier"-applies to design patents. _ In other words, every aspect of the design contributes to the overall appearance. _ A court must not, in comparing a patented design to prior art, break it down into its separate components.

To be novel, a design must be one which the average observer considers to be new and different and not a modification of an existing design. _ The experimental use exception apparently does not apply to ornamental designs. _ However, for products that possess both patentable ornamental and functional aspects, experimentation involving the functional aspects can be a non-public use.

The twelve-month requirement of [35 U.S.C.A. § 102\(d\)](#) is changed to *six months* in the case of designs by virtue of [35 U.S.C.A. § 172](#).

Statutory subject matter--Designs--Ornamentality of a design

The Supreme Court, in deciding the validity of a design patent under the Patent Act of 1842, indicated that to be patentable, a design must possess the same substantive requisites as other statutory categories of patentable subject matter, including *utility*. _ The Patent Act of 1902 substituted the word "ornamental" for the word "useful."

Under present law, the "utility requirement" of [35 U.S.C.A. § 101](#) is not applicable to design inventions and rejection of design claims for "lack of utility" is error. _ One consequence of the fact that there is no utility requirement for a design patent is that no practical utility need be demonstrated in order to establish a design's reduction to practice. _ Because the disclosure of a design patent consists merely of an artist's view of the device and protection runs only to the ornamental features of the article (and not the article itself), how a design patent can advance the

"useful arts" has been questioned. _ To the extent that appearance is dictated solely by functional or utilitarian considerations, appearance is not patentable as a design. _ If a patented design is "primarily functional," rather than primarily ornamental, the patent is invalid. _ If function dictates the design, a design patent covering it is invalid. _ In view of evidence demonstrating that a truck fender was designed according to functional and performance considerations, as opposed to aesthetic or ornamental considerations, such fender design was held ineligible for design patent protection.

That a shape shown in a design patent is the same as that shown in a utility patent, and testimony indicates that customers do not purchase that kind of article based on whether they like its looks, has been cited in support of a finding that the shape depicted in the design patent is functional rather than ornamental.

The question is not whether the item is functional, but whether significant decisions about how to put it together and present it in the marketplace were formed primarily by ornamental considerations. _ In order to determine if the design for a patent is primarily functional, the court must analyze individual features of the design. _ The term "functional" is not to be treated as synonymous with the literal signification of "utilitarian." A design, for example, may not be utilitarian in a technical sense, but it may nevertheless be functional in the sense that it will contribute materially to a general sale of the goods. _ That components of a design perform a function is not determinative of the unpatentability of a design as being functional. Apparently, a factor that militates against a design being deemed functional is the fact that the function ascribed to the design could be performed by a different design.

The ornamentality requirement has made the appearance, attractiveness, and decorativeness of a design material considerations. It has invited courts to impose upon the law their own subjective notions of aesthetics. _ It should be noted that in no other species of intellectual property is the aesthetic value of a contribution a consideration. The dangers inherent in having persons trained only in law constituted as the final judges of aesthetic worth was noted by Justice Holmes, in a copyright case.

While the tests for determining the validity of a design patent have been said to be identical to those tests currently espoused for determining the validity of a utility patent, _ design patents have not fared particularly well in the courts.

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The nonornamentality, or the functionality, of the parts of a device does not necessarily preclude patentability of the overall design.

The same physical object may have aspects which are patentable as a manufacture and others which are patentable as a design.

Statutory subject matter--Designs--Nonobviousness of designs

The test under [35 U.S.C.A. § 103](#) for designs (as it is for other classes of statutory subject matter) is obviousness, not distinctiveness. _ The basic consideration in applying the nonobviousness standard of [35 U.S.C.A. § 103](#) to a claimed design as a whole is the similarity of appearance between the design that is claimed and prior art designs. The appropriate viewpoint in this inquiry is the eye of an ordinary observer, who will bring to the examination of the article upon which the design has been placed that degree of observation that one of ordinary intelligence brings. The Federal Circuit has repeatedly indicated that it is the eye of a hypothetical "ordinary observer" that determines design patent infringement. _ That a design evokes both nostalgic and contemporary feeling is not determinative of nonobviousness. _ To satisfy the nonobviousness standard, a design must be more than merely pleasing enough to catch the trade; it must reflect some exceptional talent beyond the skill of an ordinary designer.

Breaking down a combination, whether in a design or utility patent claim, is an impermissible basis for determining obviousness. _ If an examination of the totality of the prior art suggests the *overall appearance* of the claimed design, and not merely its components, the rejection of a design patent application under [35 U.S.C.A. § 103](#) is appropriate.

Obviousness determinations made with respect to design patents are questions of law based on underlying facts. _ When reviewing decisions of the Patent and Trademark Office on the obviousness of designs, the Federal Circuit reviews its factual findings for substantial evidence and its legal conclusions without deference. Accordingly, the Federal Circuit reversed a Patent & Trademark Office decision to deny design patent to an ornamental design for a pre-recorded optical disk based on a prior utility patent because the Circuit Court concluded that the Office failed to apply the ultimate test for obviousness of a design patent that is "... whether the overall appearance and visual effect of the claimed design is obvious in view of the prior art."

Statutory subject matter--Designs--Originality of a design

The Patent Act further requires of a patentable design that it be original.

In the opinion of the author, the originality requirement is embraced in the novelty requirement, as originality in the law of copyright is construed as requiring something less than novelty. _ Others have related the word "original," as it appears in the design patents statute, to unobviousness. _ This statute further provides that the general provisions of the Patent Act shall apply to patents for design, except as otherwise provided.

Statutory subject matter--Designs--Infringement of a design patent

The issue of infringement in design patent cases cannot be decided solely on an element-by-element or line-by-line comparison of the accused patented designs. Its determination has been said to be somewhat of an existential exercise. _ Design patent infringement requires a showing that the accused design is *substantially the same* as the claimed design in the eye of the ordinary observer. _ The test of infringement in design patent cases may be stated as follows:

[I]f, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other, the first one patented is infringed by the other.

The "ordinary observer" is a hypothetical one, much the same as the "reasonable man" in negligence law. The test is an objective one. It must be applied by comparing the overall appearance of the two designs and not by selecting one or more features of which the observer particularly approves. Substantial similarity with respect to designs is not negated by a mere difference in the number of lines in the drawing or by slight variances in configuration so long as the elements are arranged in a like manner. _ In determining infringement, some courts apply a "point-of-novelty" test, looking not only to "general appearance" or "substantial identity," but also to any feature of the patent owner's design to which he points to establish novelty over the prior art. _ The factfinder must consider both the claimed over-all design and the "point of novelty" in assessing infringement. _ To establish infringement, the patent owner must prove both substantial similarity and appropriation of the "point of novelty." _ The purpose of the "point-of-novelty" approach is to focus on those aspects of a design that render the design different from prior art designs. _ Infringement can be found for designs that are not identical to the patented design, where such designs are equivalent in their ornamental, not functional, aspects. _ Such equivalency apparently exists where the general appearance of the design is preserved though there are minor differences of detail in the manner in which the appearance is produced, observable by experts, but not noticed by ordinary observers. _ Accordingly, summary judgment of noninfringement of a design patent has been denied despite differences between the patented and accused designs.

Where a patented design is composed of functional as well as ornamental features, to prove infringement a patent owner must establish that an ordinary person would be deceived by reason of the common features that are *ornamental* in the claimed and accused designs. _ In addition, the accused design must appropriate the novel ornamental features of the patented design that distinguish it from the prior art. _ Where possible, functional features should *not* be shown in the design patent drawings, lest they be deemed an essential aspect of the design's ornamentality.

Statutory subject matter--Designs--The design drawing

In addition to the criteria for utility applications set forth in [37 C.F.R. §§ 1.81-1.88](#), _ design drawings must also comply with:

[37 C.F.R. § 1.152](#). Design drawing

The design must be represented by a drawing that complies with the requirements of § 1.84 and must contain a sufficient number of views to constitute a complete disclosure of the appearance of the design. Appropriate and adequate surface shading should be used to show the character or contour of the surfaces

represented. Solid black surface shading is not permitted except when used to represent the color black as well as color contrast. Broken lines may be used to show visible environmental structure, but may not be used to show hidden planes and surfaces that cannot be seen through opaque materials. Alternate positions of a design component, illustrated by full and broken lines in the same view are not permitted in a design drawing. Photographs and ink drawings are not permitted to be combined as formal drawings in one application. Photographs submitted in lieu of ink drawings in design patent applications must not disclose environmental structure but must be limited to the design claimed for the article.

Views. _ The drawings or photographs should contain a sufficient number of views to disclose the complete appearance of the design claimed, which may include the front, rear, top, bottom and sides. Perspective views are suggested and may be submitted to clearly show the appearance of three dimensional designs. If a perspective view is submitted, the surfaces shown would normally not be required to be illustrated in other views if these surfaces are clearly understood and fully disclosed in the perspective.

Surface Shading. _ The drawing figures should be appropriately and adequately shaded to show clearly the character and/or contour of all surfaces represented. See [37 C.F.R. 1.152](#). This is of particular importance in the showing of three (3) dimensional articles where it is necessary to

delineate plane, concave, convex, raised, and/or depressed surfaces of the subject matter, and to distinguish between open and closed areas. Solid black surface shading is not permitted except when used to represent the color black as well as color contrast.

Broken Lines. _ A portion of an article that is not considered part of the design may be shown in broken lines. _ However, broken lines are not permitted for the purpose of indicating that a portion of an article is of lesser importance in the design.

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Statutory subject matter--Designs--Other design patent peculiarities

The claim of a design patent is the *solid-line portion* of the drawings.

Amendment of the drawing of the design does not necessarily constitute "new matter." _ Broken lines may be converted, by amendment, to solid lines without violating the prohibition against new matter. _ However, a solid-line drawing may not be amended to a solid-line drawing of only a portion of what was depicted in the original drawing without support in the original disclosure for such an amendment.

The substitution of a square-shaped seat for a round-shaped seat in a design for a bar stool has been deemed to constitute new matter.

Another difference between design and the so-called utility patents is their duration. Patents for designs are granted for the term of fourteen years.

There is a standard filing fee of \$330.00 (\$165.00 if the applicant can establish "small entity" status) for all design patent applications. _ There is now also a standard issue fee for all design patent applications of \$460.00 (\$230.00 if the applicant can establish "small entity" status).

_ There are no maintenance fees for design patents.

For design patents, only a single claim in formal terms is permitted, _ even though more than one embodiment is disclosed. Where patentably distinct designs are present in a design application, the proper course is to require restriction under [35 U.S.C.A. § 121](#). _ Any descriptive statement in a design patent application narrows claim scope, _ although the Federal Circuit has noted that a design patent has almost no scope. _ The claim merely claims the figure(s) depicted in the drawing. No specific description other than a reference to the drawing is ordinarily required or permitted. (See Appendix 2, Grant and Specification of an Original U.S. Design Patent (Des. 378,181).)

A design patent applicant may amend the claim in his application before final rejection as a matter of right and, moreover, is entitled to have the amended claim reconsidered and reexamined. In design patent applications, an amendment to the drawing is deemed an amendment to the claim.

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Statutory subject matter--Plants

New varieties of botanical plants are amenable to patent or patent-like protection. The first provision made for the protection of new botanical plant varieties was the (Townsend-Purnell) Plant Patent Act of 1930, which keys protection to *reproduction by vegetative propagation* (i.e., by asexual reproduction).

The Plant Variety Protection Act of 1970 provides for patent-like protection of new plant varieties *propagated by seed* (i.e., by sexual reproduction).

As the Supreme Court has held that new life forms that have been contrived by man constitute articles of manufacture or compositions of matter, it should follow that utility patent protection is available therefor. (See Appendix 3, Grant and Specification of an Original U.S. Plant Patent (Pl. 2,160)).

Patents for botanical plants confer upon the patent owner the right to exclude others from asexually reproducing the plant and from using, offering for sale, selling, or importing any plants so reproduced. Accordingly, plant patent protection is more analogous to method-claim protection than to article-claim protection. The provisions of the Patent Act relating to patents

for inventions are made applicable to patents for plants except as specifically otherwise provided. The only express provision modifying applicability of invention patent statutes for plant patents is contained in [35 U.S.C.A. § 162](#), which says that no plant patent will be invalidated for noncompliance with [35 U.S.C.A. § 112](#) if the description is as complete as is reasonably possible.

Excluded by specific legislation from plant patent protection are tuber propagated plants and plants found in an uncultivated state. Tuber propagated plants, which include the Irish potato and the Jerusalem artichoke, were excluded because of their importance as food sources. By "uncultivated state" is meant plants found in the wild. In other words, only new plant varieties that are found in an area under cultivation are eligible for plant patent protection. There is no case law interpreting just what constitutes an "uncultivated state." Accordingly, such questions as whether a pasture or a field left fallow for a number of seasons constitutes an "uncultivated state." How often does husbandry have to be performed to make an area cultivated? Every plant patent oath or declaration must contain an averment that the plant was found in a cultivated area and every plant patent specification must particularly point out the location and character of the area where the plant was discovered.

Since the 1954 amendment to the Plant Patent Act, newly found seedlings are included within the purview of plant patent protection, provided they are found in a *cultivated area* (as opposed to being found in the wild); it is not necessary for a plant to have been generated with the aid of human intervention to be patentable. Under the Plant Patent Act as originally enacted, it had been held that new plant varieties which had merely been recognized or discovered, even though the person(s) applying for the patent had succeeded in asexually reproducing the plant, were not amenable to patent protection. Accordingly, since the 1954 amendment, "inventors" of new plant varieties, unlike inventors of other types of subject matter, include not only contrivers but also mere discoverers. The existence of a new and distinct variety, albeit unappreciated for many years before its discovery, would not invalidate a patent thereon. Although the Plant Patent Act uses both the terms "invents" and "discovers" in connection with new plant varieties, those who merely recognize a new variety (as opposed to purposefully generating one by hybridization) are more properly styled discoverers, as they have contrived

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nothing--nature has done that. The essence of their contribution is the recognition of the new variety. Perhaps an even more appropriate designation is that employed by the Plant Variety Protection Act, namely, "breeder." The concept of novelty in regard to plant patents has been said to refer to *novelty of conception* rather than to *novelty of use*.

Excluded by judicial construction from plant patent protection are newly discovered bacteria. _ In the court's opinion, Congress used the word "plant" in its commonly understood sense--not in its technical, biologic sense--and so did not contemplate inclusion of bacteria in the term "plant." Microfungi apparently constitute subject matter amenable to protection under the Plant Patent Act and an application therefor may be a continuation of a utility patent application.

A tissue culture is excluded from protection under the Plant Patent Act as a tissue culture is not a "plant" within the scope of [35 U.S.C.A. § 161](#). _ Such exclusion applies to protection of a tissue culture *itself* as distinguished from protection of a *plant variety* composing a tissue culture. Tissue culture propagation is an acceptable means of asexual propagation for establishing one's right to a plant patent. A tissue culture itself qualifies as subject matter protectible under [35 U.S.C.A. § 101](#).

Plant species, like animal species, may be selectively bred. A *cultivated variety* or *cultivar* in the plant kingdom corresponds to a *breed* in the animal kingdom.

Apparently, what constitutes a distinct plant variety, at least within the meaning of the Plant Patent Act, is a plant that possesses at least one significantly different characteristic. _ "Distinctness" means the aggregate of a plant's distinguishing characteristics. _ A difference in color might in and of itself be sufficient to distinguish a plant over a

related variety, especially where the major distinguishing characteristic is color. The characteristic may be physiological (e.g., ease of reproduction, immunity to disease, resistance to cold) or anatomical (e.g., size, shape, color, absence of seed) and need appear in only a portion of the plant (e.g., stem, leaf, fruit). For plants, the requirement of distinctness replaces that of utility. _ It does not matter whether the characteristic is ornamental or useful.

Unlike animals, higher plants may be reproduced asexually (i.e., by vegetative propagation) as well as sexually (i.e., by seed). Accordingly, a new and distinct plant variety may appear as a result of either vegetative propagation or propagation by seed.

A plant or a portion of a plant may suddenly and spontaneously assume an appearance or character distinct from that which normally characterizes the variety or species. Such variety is generated asexually and is called a "sport." _ Sport variations are fortuitous and normally a one-time phenomenon, absent human intervention. _ A sport of a patented sport variety is, in effect, an "improvement" upon its parent and is not covered by the patent on its parent.

Seedlings, i.e., plants generated from seed, as opposed to those generated by vegetative propagation, generally do possess characteristics different from either parent, particularly where the seed was the result of

cross-pollenization. A "hybrid" is a new and distinct variety resulting from cross-pollenization. A "mutant" is a new and distinct variety resulting from self-pollenization. One who merely cultivates a new plant variety without appreciating it as such is not deemed an inventor thereof. Nevertheless, the owner of the proprietary rights in any plant patent appears to belong to the person on whose premises the plant is found.

One who has discovered in a cultivated area a new plant variety, whether it is a sport, a mutant, or a hybrid and has asexually reproduced it is entitled to patent it so long as it is not a tuber propagated plant. _ The fact that a particular "sport" or

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"mutation" variety may have recurred or recurs frequently does not negate novelty within the meaning of the patent law.

It should be borne in mind that although the new variety results from seed, a plant patent thereon will only exclude others from vegetatively propagating such plant. Even though a new plant variety was generated asexually, i.e., it is a sport, before one can apply for a patent thereon, that person must have succeeded in reproducing it by some asexual means _ (i.e., by budding, grafting, layering, etc.).

The Plant Patent Act requires not only discovery or recognition of the new plant variety but asexual reproduction as well. _ The purpose of requiring asexual reproduction is to demonstrate that the plant is in fact a *distinct* variety.

The act of discovery or recognition may be analogized to conception for a utility invention and its asexual reproduction as analogous to reduction to practice, but for plants, unlike other types of invention, the reduction to practice must be actual and must occur before the filing of a patent application.

The key to the nonobviousness standard in regard to new plant varieties is the discovery and appreciation of new traits plus foresight to take the steps of asexual reproduction. The ultimate question when applying the nonobviousness requirement to a plant which is a source of food might be its nutritive content or prolificacy. Medicinal plants might be judged by their increased or otherwise changed therapeutic value. An ornamental plant would be judged by its increased beauty and desirability in relation to other plants of its type, its usefulness in industry, and how much of an improvement it represents over prior ornamental plants, taking all of its characteristics together.

From a written and/or pictorial description of the usual utility or design invention, one skilled in the relevant art can make and use the invention. This is not true of inventions involving living matter.

The specification of a plant patent is not enabling. The mere description in a printed publication of a new plant variety, even though such description has been published more than a year prior to the filing date of a plant patent

application, does not constitute a statutory bar (under 35 U.S.C.A. § 102b) to a patent thereon. _ However, the Federal Circuit has held that while the specification of a plant patent published more than a year prior to filing in the U.S. is not enabling, the additional element of the sale of the plants may have "enabled" the publications and given public access to the invention. [[.1](#)] There is no requirement for a how-to-make disclosure in a plant patent application. _ Accordingly: (1) it has been held *not* new matter to add by amendment a detailed written description of the claimed microfungi; _ (2) *no* deposit of a plant of the variety on which a plant patent is sought is required.

Apparently with respect to a plant patent invention, public use can only commence after one has recognized a plant as being a new (i.e., theretofore unappreciated) variety and has asexually reproduced the same.

In the case of plant patent applications, the applicant *may* be required to furnish specimens of the plant, or of its flower or fruit, in a quantity and at a time in its stage of growth as may be designated, for study and inspection.

While plant patent drawings are not enabling, they must disclose all the distinctive characteristics of the plant capable of visual representation. _ Plant patent drawings are not mechanical drawings and should be artistically executed. The drawing may be in color and, when color is a

distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil. Photographs made by color photography or properly colored on sensitized paper may be submitted instead of drawings.

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Plant patents, like design patents, contain but a single claim, in formal terms, which may, however, recite the distinguishing characteristics.

The declaration that must accompany an application for a plant patent is now the same as that for applications for utility and design patents *except that* the declaration accompanying a plant patent application must contain, *in addition* to the averments in utility or design declarations: (1) an averment to the effect that the new plant variety has been asexually reproduced; and, where the new plant variety was discovered by chance, as opposed to being generated by controlled or systematic breeding of hybrids, (2) an averment to the effect that the new plant variety was discovered in a cultivated area.

Infringement of a plant patent occurs whenever one not authorized by the patent owner either *asexually* reproduces the plant *or* uses *or* offers for sale *or* sells *or* imports the plant so reproduced. _ The Plant Patent Amendments Act of 1997 expands the purview of plant patent protection by expressly making it an infringement to offer for sale or sell any plant asexually reproduced, or any of its parts, throughout the United States, or to import any plant so reproduced, or any of its parts, into the United States.

Supplying another with a patented plant or portion thereof and requesting that such other person grow plants therefrom has been held to constitute infringement by inducement. _ Court decisions impose the requirement, as a condition to finding infringement of a plant patent, that the patent owner prove derivation of the infringing plant from the plant material which gave rise to the plant application, i.e., as in copyright infringement, that the patent owner must prove that the accused infringer had access to a plant of the patent owner. _ The Federal Circuit has, in effect, adopted this view, taking the position that a plant patent covers not a "variety" but rather only the very plant patented.

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Nonstatutory subject matter Subject matter specifically excluded by statute

One major category comprises subject matter explicitly excluded by statute. This category may in turn be divided into two: (1) Subject matter excepted from within a single statutory class. These exceptions all relate to plants, and have been enumerated in the immediately preceding section; and (2) Subject matter which might otherwise fall into any of the statutory classes of utility inventions. Thus, the Atomic Energy Act contains a blanket exception, excluding from patent protection any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in any atomic weapon. Antiradiation agents have been deemed not to constitute such special nuclear material and, therefore, they do constitute statutory subject matter.

A composition of matter merely because it is unstable and incapable of being isolated is not for such reason nonstatutory.

Nonstatutory subject matter--Discoveries

Often considered as constituting a class of unpatentable subject matter is that which is so broad as to be incapable, as a practical matter, of adequate definition and/or is not really new (but merely previously unknown or unappreciated). Such inventions are more appropriately styled discoveries. These have already been discussed at length. They include: (1) principles or laws of nature; and (2) naturally occurring articles.

Nonstatutory subject matter--Subject matter the novel aspects of which require mental activity

A third group of subject matter has been excluded by judicial construction. It includes:

- (1) Printed matter;
- (2) Methods of doing business; and
- (3) Mental processes.

Nonstatutory subject matter--Subject matter the novel aspects of which require mental activity--Printed matter

Printed matter and mere arrangements thereof are seemingly manufactures. The mere arrangement of printed matter on a sheet or sheets of paper, in book form or otherwise, does not constitute "any new and useful art, machine, manufacture, or composition of matter" or "any new and useful improvements thereof." The rationale for denying patent protection to inventions addressed to this subject matter is that the essence of its novelty does not reside in physical structure or extension, but rather in concepts conveyed by the arrangement of words and/or other symbols. The novel aspects of printed matter may be protectible under the copyright laws.

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The Patent & Trademark Office Board of Patent Appeals & Interferences has held that a sound recording falls within the scope of an article of manufacture.

The Federal Circuit has stated that a "printed matter rejection" is inapplicable to information stored in a computer memory. _ Subsequently the Commissioner of Patents & Trademarks stated that computer programs embodied in a tangible medium, such as floppy diskettes, constitute statutory subject matter, effectively overruling a decision of the Patent & Trademark Office

Board of Patent Appeals & Interferences that rejected computer program product claims on the basis of the "printed matter doctrine." _ Regarding the inapplicability of the "printed matter doctrine" to information merely because it is stored in a computer memory rather than literally printed, one cannot but note the apparent inconsistency between such position and the position taken almost uniformly by the courts that a "printed publication" within the purview of [35 U.S.C.A. § 102\(b\)](#), although the very term "printed" appears in the statute, need not literally be "printed!"

While printed matter *by itself* is nonstatutory subject matter, _ it may very well constitute structural limitations upon which patentability can be predicated. _ Printed matter *in combination* with physical means, as a new slide rule calculator, may engender a new functional relationship. _ It was held that volumetric measuring vessels calibrated so that gradations are spuriously expressed as the full measure (that indicated in the recipe) while indicating on the vessel that it is for a fractional recipe were held patentable. _ The Federal Circuit has also held that adding new printed matter such as an instruction sheet to a known product will not make it patentable and that to hold otherwise would permit patenting a product indefinitely by merely adding new instruction sheets. [[.50](#)]

It is improper to dissect a claim, ignoring limitations addressed to printed matter. Rather, the claim must be read as a whole. If the limitations drawn to

printed matter are functionally related to the substrate, the printed matter may serve to distinguish the invention from the prior art.

PATENT LAW BASIC

Nonstatutory subject matter--Subject matter the novel aspects of which require mental activity--Methods of doing business

In *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, the Federal Circuit overruled the district court's reliance on the so-called "business method" exception to invalidate patent claims as being directed to non-statutory subject matter:

We take this opportunity to lay, this ill-conceived exception to rest. Since its inception, the "business method" exception has merely represented the application of some general, but no longer applicable legal principle, perhaps arising out of the "requirement for invention" -- which was eliminated by § 103. Since the 1952 Patent Act, business methods have been, and should have been, subject to the same legal requirements for patentability as applied to any other process or method.

The Federal Circuit noted that, in earlier decisions by it or its predecessor, the Court of Claims and Patent Appeals, cited as involving the "business method" exception, *either* reliance was not placed on the exception to strike down the patent *or* reliance could have been placed on obviousness or lack of novelty. While other circuit courts relied on the business method exception to invalidate patent claims as being nonstatutory, the Federal

Circuit affirmed that the "business method exception has never been invoked by this court, or the CCPA, to deem an invention unpatentable."

Nevertheless, the Federal Circuit--consistent with a test for whether a method is statutory that is recited in a seminal Supreme Court opinion --read into the words "process" and "method," appearing in the present Patent Act, a requirement of transformation or conversion of subject matter representative of or constituting physical activity or objects. Manipulation of business data has been analogized to manipulation of technological data. For example, in a process whereby inputted medical procedure codes are authorized, rejected, or converted into appropriate codes for payment, changes effected by the process were deemed a "product," rather than mere abstractions resulting from data processing.

Applying the transformation-or-conversion test, the Federal Circuit has held that the Board of Patent Appeals & Interferences properly rejected, for lack of statutory subject matter, claims directed to a method for competitive bidding, which involved steps such as identifying a plurality of related items in a record, offering said plurality of related items to a plurality of potential bidders, and receiving bids from said bidders.

The requirement that there be some transformation or conversion of subject matter representative of or constituting physical activity or objects should exclude from the purview of statutory subject matter a considerable class of

what literally can be characterized as methods of doing business, as, for example, business strategies and business plans, such as the method of operating as a health maintenance organization (HMO). Thus, although a method should not be deemed subject matter ineligible for patenting because it can possibly be characterized as a method of doing business, it seems that a method is ineligible subject matter for patenting if it is merely a method of conducting business, as, for example, methods involving no more than such matters as changes in legal status or routing through a sequence of street addresses.

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The transformation-or-conversion requirement should also preclude football plays, other "sports movements," and dance steps from the realm of statutory subject matter, despite the fact that patents purporting to protect "sports movements" have apparently been issued by the U.S. PTO.

However, in a subsequent case, the Federal Circuit has at least suggested that a "physical transformation" may not be necessary: _ "The notion of 'physical transformation' can be misunderstood. In the first place, it is not an invariable requirement, but merely one example of how a mathematical algorithm may bring about a useful application." At issue in this case was a patent directed to a process that augmented data pertaining to long distance telephone calls to facilitate differential subscriber billing in telephone systems involving multiple carriers. In a subsequent case, the Federal Circuit

upheld a district court's finding that a cellular phone patent was invalid based on a prior art patent that "inherently" included a "complex billing algorithm."[\[.1\]](#)

Some untoward consequences of the Federal Circuit's apparent passion for expansively interpreting [35 U.S.C.A. § 101](#) so as not to exclude methods of doing business from the purview of statutory subject matter have been obviated by enactment of the First Inventor Defense Act of 1999.

Although the distinction between a method of doing business and a system of carrying it out has been disregarded, _ it will be noted that the quotation from a Supreme Court opinion to the effect that Congress intended [35 U.S.C.A. § 101](#) to extend to "anything under the sun that is made by man" _ (cited by the Federal Circuit panel in support of its own dicta _) both literally, and in regard to the factual situation before the Supreme Court, referred to a product, not to a process or a method.

The First Inventor Defense Act of 1999 _ makes it a *defense* to a charge of patent infringement of claims drawn to "a method of doing or conducting business" that the person against whom the patent is being asserted "acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent and commercially used the subject matter before the effective filing date of such patent."

It is worth noting, however, that trademark protection may effectively secure the economic value of a system of doing business. Thus, "Christmas Club" is a federally registered service mark, and the use of these words in connection with that system of doing business is the exclusive right of the service mark owner. Registration of the term CASH MANAGEMENT ACCOUNT for "financial services involving the use of plastic credit cards by the cardholders for loans to cardholders from their brokerage equity account," albeit incontestable, has been held not automatically to entitle the registrant to registration of such mark for the broader category of "stock brokerage services, administration of money market fund services, and providing loans against securities services."

PATENT LAW BASIC

Nonstatutory subject matter--Subject matter the novel aspects of which require mental activity--Mental processes

What amounts to a memory aid, although couched as a process, does not constitute a statutory process.

While the apparatus involved in playing a game, including the game board and the game pieces may be patentable separately or in combination, the method of playing a game per se, that is, the actual "play of the game," as it is sometimes called, has been deemed not to constitute statutory subject matter. _ Moreover, differences between a claim drawn to a board-type game and a prior art game that reside in the meaning and information conveyed by printed matter would not be patentable differences. _ Nevertheless, it should be pointed out that one of the most financially successful inventions ever patented is the game "Monopoly."

A mathematical formula, per se, is not the subject of exclusive appropriation, whether under patent, copyright, or any other form of intellectual property law. Accordingly, a formula for deriving one's handicap from a golfer's raw score established by the United States Golf Association, being functional, can be embodied in a computer program even without the Association's permission.

Novelty

Novelty or newness is the sine qua non of every invention. _ It has been said to be the essence of and key requirement for patentability. _ The word "invention" is derived from the French verb *invenire*, to find out. That which is "found out," to be an invention, must be new.

But "novelty" is an ambiguous term, embracing several overlapping and interrelated concepts, which have both subjective and objective aspects. Novelty is relative. Columbus is said to have discovered America, but it was known to its aboriginal inhabitants, that is, the American Indians, for thousands of years prior to his arrival, and had been in existence for millions of years. Implicit in every novelty determination is a frame of reference. One must ask the question: New to whom? This is the subjective aspect of novelty.

It has great significance in patent law. Also highly developed in patent law is the objective aspect of novelty, embraced in the question: How much of a difference and what kinds of differences make a thing new?

Although [35 U.S.C.A. § 101](#) contains the word "new" and employs it as a synonym for "novel," this section has been deemed to be merely a general statement of what may be patented and not a statement of the novelty requirement. _ The requirement of novelty or nonanticipation derives from [35 U.S.C.A. § 102](#). "Anticipation," is a patent law term of art that means disclosure in the prior art of something substantially identical to the claimed invention. _ [Section 102](#) sets forth the novelty requirement by spelling out just what types of activity negate novelty. It declares:

[35 U.S.C.A. § 102](#). *Conditions for patentability; novelty and loss of right to patent.* A person shall be entitled to a patent unless--

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

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

(c) he has abandoned the invention, or

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

(e) the invention was described in --

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application

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designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a); or

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

(g) (1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

The import of the several provisos comprising [35 U.S.C.A. § 102](#) cannot be intelligently evaluated without some perspective. Helpful in gaining that perspective is the dichotomy between, on one hand, the subjective or what is extrinsic, and, on the other, the objective or what is intrinsic. But even before these separate aspects can be explored, a few explanatory words regarding terminology are necessary.

Subjective or extrinsic, in this context, refers to those qualities or attributes that may vary from observer to observer depending upon their prior experience. The judgment that something is old or that it is new is subjective in the sense that it is made relative to and thus dependent upon one's prior experience. Objective or intrinsic refers to those qualities or attributes that are absolute and do not vary from observer to observer. The judgment that one object differs from another is independent of the prior experience of those making the comparison. Novelty is a question of fact.

After a patent has been granted, parties may attempt to defeat it in litigation by asserting that the patented subject matter was not novel at the time of invention. Litigants may seek to show that the invention was not novel in view of a device made before the patent's critical date. To do so, the litigants may seek to show that the patent is literally infringed by that device and, thus, that the device would have anticipated the patent: "[t]hat which would *literally* infringe if later in time anticipates if earlier than the date of invention."

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Prior art

Determinations of anticipation and novelty are made in light of the prior art. Speaking in general terms, prior art is that fund of information which is available or accessible to the public at the time of invention.

The law conclusively presumes that all are familiar with the entire body of prior art. Even though one may have made an original invention, in that he thought it up by himself, independently and in ignorance of the prior art, if that invention is in fact taught by the prior art, it has been anticipated. That an inventor was unaware of the state of the prior art is immaterial. _ In the words of Judge Learned Hand: _ "The law imputes to the

inventor an omniscience which will again and again deprive him of the reward that his talents as an individual might otherwise deserve." Nevertheless, courts have recognized that persons having ordinary skill cannot possibly be aware of every teaching in every art.

An inventor is assumed, in the eyes of the law, to have full and comprehensive knowledge of the prior art. _ Moreover, everything disclosed in an issued patent is deemed prior art, regardless of its ultimate validity. _ A disclosure may be anticipatory even though prior art indicates that the embodiment is not preferred or is even unsatisfactory for the intended purpose.

Thus, the fact that a patent on a product the specification for which suggests an unworkable method of manufacture of such product nevertheless does constitute prior art at least with respect to the product. _ Relevant prior art is that to which one can reasonably be expected to look for a solution to the problem that a patented device attempts to solve. To be entitled to patent protection, one must not only be the inventor, but the first inventor. The courts, however, have carved out a very narrow exception to this rule where knowledge of how to make and use an invention, though at one time definitely known, has become lost. Such lost art will not constitute an anticipation.

To determine precisely what the law regards as prior in the context of prior art, one must return to the requirements imposed by [35 U.S.C.A. § 102](#).

[Section 102\(a\)](#) says that an applicant is not entitled to a patent if *at any time* prior to the point at which that applicant made his invention, it was "known or used *by others* in this country, or patented or described in a printed publication in this or a foreign country" (emphasis added). Two significant distinctions appear in [35 U.S.C.A. § 102\(a\)](#). One relates to the form of the information: (1) to mere knowledge or use, i.e., personal knowledge, which negates novelty only if present in the United States before the invention by the applicant; and (2) to written knowledge in the form of a patent or printed publication, which negates novelty whether present in the United States or abroad before the invention by the applicant. The other distinction relates to the originator of the information: (1) to the applicant; and (2) to "others."

Mere knowledge or use of an invention, i.e., knowledge or use not reduced to a patent or printed publication, abroad prior to the point in time at which the applicant made his invention is insufficient to defeat his right to a United States patent. In other words, for something to constitute prior art under [35 U.S.C.A. § 102\(a\)](#), it cannot merely be "publicly known" anywhere in the world, but rather must be publicly known in the United States. _ There are at least two sound reasons for disregarding, as an anticipation, that which was merely known or used outside of the

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United States: (1) such information is not sufficiently accessible to United States industry; (2) proving its very

existence would be difficult. By contrast, there will exist some permanent record of that which has been patented or described in a printed publication, and this is so whether the patenting or publication occurred in this or a foreign country.

It should be noted that public knowledge amounting to a "public use" more than one year prior to the date of application for patent in the United States does negate novelty under [35 U.S.C.A. § 102\(b\)](#). While the phrase "known or used" is not qualified in [35 U.S.C.A. § 102\(a\)](#) by the word *public*, as is the phrase "use or on sale" in [35 U.S.C.A. § 102\(b\)](#), courts have construed the phrase "known or used" appearing in [35 U.S.C.A. § 102\(a\)](#) as meaning *publicly known or used*.

Because relative to the entire world, even an invention that had been known or used by others only abroad would lack novelty, the United States is said to require only relative novelty. This is in contrast to the absolute or worldwide novelty standard which is mandated by the laws of some countries.

The wording of [35 U.S.C.A. § 102\(a\)](#) distinguishes between "the applicant" and "others." Knowledge in any form possessed only by the applicant or any use made only by the applicant is not prior art against such applicant under [35 U.S.C.A. § 102\(a\)](#). The issue of who are "others" within the meaning of [35 U.S.C.A. § 102\(a\)](#) and also who is "another" within the meaning of [35](#)

[U.S.C.A. § 102\(e\)](#) arises where an application for patent is made in the name of an inventorship entity that includes one or more persons named in the inventorship entity of an earlier filed patent or earlier printed publication which is not prior art under [35 U.S.C.A. § 102\(b\)](#) because the date of patenting or of publication of the earlier work is *subsequent* to the filing date of the patent application. The weight of authority is that inventorship entities composed of different individuals are separate legal entities, even if their memberships overlap by the presence of one or more members common to both. _ Nevertheless, the availability of such earlier work as prior art against a later-filed patent application can be obviated under the following circumstances:

(1) Where it can be demonstrated that the portion of the disclosure relied upon in the earlier-filed application as "prior art" in the later-filed application is *in fact* the work product of the identical entity in whose name the later application has been filed, _ the prima facie prior art effect of such earlier-filed application can be obviated by the submission of a declaration pursuant to [37 C.F.R. § 1.131](#).

(2) Where the earlier-filed and later-filed applications, although they list different inventorship entities, have both been assigned to the same entity and a difference exists between the claims of the two applications that is deemed to be obvious, the issue reduces itself to a question of obviousness-type

double patenting, which can be obviated by the filing of a terminal disclaimer.

Novelty connotes change or innovation: a difference between that which is sought to be patented and that which went before (the prior art). That which went before lacks novelty and is said to be old.

If there is a physical identity between the prior art and that sought to be patented, that which is sought to be patented is said to be anticipated by the prior art. Nevertheless, it has been said that strict identity between the prior art and the claimed subject matter is not necessary for anticipation. _ Thus an appellate court held a patent invalid where the only difference between what was claimed and the prior art was characterized by the court as being "dimensional." _ The words "physical identity" have special significance.

In determining whether there has been an anticipation, only physical differences are considered. "Physical" here is used in a generic sense to denote both physical and chemical differences. Accordingly, if an article was in use or a process had been

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carried out prior to the point in time when it was first made by the party seeking a patent, that article or process is literally anticipated by the earlier use, even though those who had earlier used the article or had carried out the process were totally unaware of or failed to appreciate its advantages. Moreover, at least one appellate court has taken the position that a prior art (mechanical-type) process involving the same steps as

claimed, although it produced a different product, was anticipatory where the difference was dimensional only.

It is not inventive or patentable to perceive that a product discovered by another has qualities that others failed to detect.

Similarly, the discovery of a property of a prior art product does not amount to a new use therefor.

Even under the foregoing circumstances, the article or process is deemed to have been "known," within the meaning of [35 U.S.C.A. § 102\(a\)](#). Stated in other words, mere existence in the case of a product claim or mere use in the case of a process claim generally suffices to constitute an anticipation. The principles underlying the foregoing results constitute what is sometimes referred to as the doctrine of inherency.

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Patents and printed publications as prior art

The printed publication provision of the statute, namely, [35 U.S.C.A. § 102\(b\)](#), was designed to prevent withdrawal by inventors of that which was already in the public domain, that is, to prevent public domain subject matter from becoming the subject matter of a patent.

One may wonder why the statute bothers to mention separately patents and printed publications. After all is not the distinction immaterial? The specifications of all United States patents are, speaking literally, printed publications. The printing of patent specifications, however, is not a universal practice. In some countries, the contents of patent specifications

are merely made available for public inspection, their governments not undertaking to multiply copies of them.

This is the case with the German *Gebrauchsmuster*, or utility model, which is a public record in the German Patent Office that serves to charge practitioners in the art with notice of what it discloses. _ A *Gebrauchsmuster* only anticipates a United States patent to the extent of the claims of the *Gebrauchsmuster*. The specification and drawings of a *Gebrauchsmuster* can only be considered under [35 U.S.C.A. § 102\(b\)](#) to the extent that they help to explain the claims of the *Gebrauchsmuster*. _ A German *Geschmacksmuster*, or design registration, is on display for public view in the German Patent Office and, consequently, a *Geschmacksmuster* qualifies as a foreign patent for purposes of [35 U.S.C.A. § 102\(a\)](#) and thus also constitutes prior art for use in obviousness analysis under [35 U.S.C.A. § 103](#).

Australian patent applications, upon being classified and laid open for public inspection at the Australian Patent Office and its five sub-offices, have been held to be printed publications, copies being available for purchase by the public and equipment being available on the premises of such facilities for providing copies. Not every foreign document labeled a "patent" is a patent within the meaning of [35 U.S.C.A. § 102\(a\)](#) or [§ 102\(b\)](#). _ The standard for anticipation by prior publication or by prior patent is the same-- the publication or patent anticipates a purported invention only where,

except for insubstantial differences, the invention contains all of the same elements, operating in the same fashion, to perform an identical function.

What constitutes a printed publication within the meaning of [35 U.S.C.A. § 102](#) is not entirely settled. _ Before discussing the various judicial interpretations of printed publication, some of the different contexts in which "publication" is used should be mentioned. In the law of defamation, publication signifies communication to a third person. What constitutes publication in the context of copyright law depends upon the nature of the work. As a general rule, a work is not deemed published until it has been reduced to tangible and permanent form and copies in such form have been offered for sale. Thus, "publication" carries with it the notion that the subject matter in question is available or accessible to the public.

The technical meaning of the word "printed" is that copies of the subject matter have been multiplied on paper with ink from set type. Traditional methods of printing are not the only acceptable methods for the purpose of satisfying the "printed publication" standard. _ Some tribunals have gone far beyond the denotation of printed, having generalized the phrase "printed publication" so as to include within its purview a microfilm or a photocopy of a typewritten manuscript, _ or even the original typewritten manuscript itself. _ As the law now stands, whether or not

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the information has been reproduced by means other than a conventional printing press is immaterial. However the information was reduced to tangible and permanent form, if that information has been reproduced or duplicated and has been disseminated or otherwise made available to the extent that persons interested and ordinarily skilled in the subject matter or art, exercising reasonable diligence, can locate it and recognize and comprehend therefrom the essentials of the claimed invention without need of further research or experimentation, it may be said that that information exists in a printed publication as that term was contemplated by Congress in [35 U.S.C.A. § 102](#). _ Moreover, it apparently is not even essential that the information have been duplicated. While the production of a certain number of copies and production by a method allowing multiplication of a large number of copies may aid in determining whether an item may be termed a "printed publication," such are neither always conclusive nor requisite. "Printed" and "publication" have been interpreted to mean "probability of dissemination" and "public accessibility," respectively, so that their use in the phrase "printed publication" is somewhat redundant. _ Dissemination of copies to at least six persons without restrictions has been deemed "publication" when there were between fifty and five hundred persons interested and of ordinary skill in the art who knew of the existence of the paper and were informed of its contents by oral presentation.

Slides can constitute printed publications. _ A photograph of the claimed device made available without restriction constitutes a printed publication and exhibition of such photograph to a prospective buyer coupled with a purchase order therefrom constitutes a placing of the invention "on sale" within the meaning of [35 U.S.C.A. § 102\(b\)](#).

A photograph may qualify as a "printed publication" for purposes of [35 U.S.C.A. § 102](#), as a photograph may disclose an invention as well as or better than a drawing. Restricting the interpretation of the "printed" publication requirement solely to reproduction by a traditional printing press would ignore the realities of the modern scientific and technological period. _ For a diagram or photograph to constitute an anticipation, it must disclose each element of the claim.

A sales brochure that fully describes every aspect of the subject matter of the claims qualifies as a "printed publication."

The knowledge contemplated by [35 U.S.C.A. § 102\(a\)](#) must be accessible to the public.

Accessibility to the public is also the touchstone in determining whether a printed document constitutes a bar under [35 U.S.C.A. § 102\(b\)](#). _ It has been held in regard to a thesis that public accessibility occurs as soon as the document is cataloged with temporary authorship, and not when the library staff gains access to it. _ Moreover, it is sufficient if the document

is available to that class of persons concerned with the art to which the document relates and thus most likely to avail themselves of its contents. _ Distribution of a research report without confidential restriction to commercial, corporate entities made the document accessible to the (relevant) "public." _ Cataloging a paper in a technical or scientific library may make the publication sufficiently accessible to those interested in the art to satisfy the requirement of [35 U.S.C.A. § 102\(b\)](#).

"Accessibility to the public," however, is not equated with being cataloged. Student theses that were indexed only through index cards, filed alphabetically by author's name, and kept only in a shoebox in the college's chemistry department library, were deemed not reasonably accessible to the public and thus not "printed publications" within the purview of [35 U.S.C.A. § 102\(b\)](#). _ Difficulty in locating a document does not diminish the public's right of access thereto once it is found. _ A document is deemed to be publicly available as long as those persons in the class of people to whom the document is directed could have a copy merely by asking for it.

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Distribution only internally within the organization that generated the document does not make the document a "printed publication" within the meaning of [35 U.S.C.A. § 102\(b\)](#), even where the document has been registered in the U.S. Copyright Office. Thus, mere presentation at research committee meetings does not constitute publication. _ The existence of a copyright registration

does constitute prima facie evidence of publication on the date stated in the registration certificate, such prima facie evidence being rebuttable by convincing factual evidence to the contrary.

That information in a publicly accessible document may not have actually been reduced to practice has no bearing on whether it constitutes a printed publication under [35 U.S.C.A. § 102\(b\)](#). _ That the reference may also fail to explain why a result is achieved by the invention is likewise immaterial to the issue of anticipation. References are presumed to be operable.

Abandoned patent applications that are not open to public scrutiny are not prior art.

It appears that the source or sponsorship of the "printed publication" is immaterial. A teaching is no less a teaching because it emanates from a source, or is sponsored by an entity, that may be scientifically suspect. _ A teaching from classical mythology has been applied by the Supreme Court.

The remoteness of the distribution of the printed publication from the United States and the limited geographic extent of the distribution are immaterial. All that is required is that the document be printed and so disseminated as to provide wide access to some segment of the public. The key factor is not access by a specific segment of the public, or number of persons, or even by any

specific means, but simply distribution to any segment of the public. The distribution of 500 instructional booklets and thousands of advertisements, though only in Japan, rendered a disclosure a printed publication within the contemplation of [35 U.S.C.A. § 102\(a\)](#). _ If the information is accessible to the public, there is no requirement to show that particular members of the public actually received the information. _ Accessibility includes availability. Thus a memorandum that was listed on a project card in a library but was located in a part of the library to which the general public did not have access, library personnel being required to advise members of the public that the memorandum was not available from the library, was not deemed a printed publication within the meaning of [35 U.S.C.A. § 102\(b\)](#). _ An IBM Technical Bulletin deposited only in the Patent Office Library, the New York Public Library and the Brown University Library was deemed a "printed publication." It is well settled that documents in libraries--even foreign libraries--can be printed publications. _ A single copy transmitted to a professional society for possible presentation, that was merely referred to the society's editorial board and never presented, although distributed by the society to a number of persons in the industry, constituted a "printed publication." _ Mere submission of a paper for consideration for presentation to a technical association's review committee was held not to constitute a dissemination to the public or interested persons

as contemplated by [35 U.S.C.A. § 102\(b\)](#). _ Mere deposit of copies with the Copyright Office for the purpose of copyright protection does not make the document a "printed publication" within the meaning of [35 U.S.C.A. § 102\(b\)](#). _ A "printed publication" under [35 U.S.C.A. § 102\(b\)](#) does not exist until copies reach its subscribers. _ Another court has gone a step further, taking the position that a party asserting that a document is a "printed publication" must establish the date on which it was *actually disseminated* to the relevant public. _ Where a publication is undated, its date of publication must be established by other evidence that is clear and convincing before it can be considered prior art. _ The Court of Appeals for the Federal Circuit has indicated that to prove public accessibility, proof of a specific date

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of cataloging is not required. _ More recently the Federal Circuit has indicated, at least in regard to magazines, that evidence must be presented as to the date of receipt by an addressee before an issue can be considered prior art as a printed publication.

Where a revelation is discarded shortly after receipt and no record of its contents are kept, it is deemed not to have constituted a "printed publication."

Accordingly, an army report which stated that each transmittal of its documents outside the agencies of the United States government must have prior approval of the commanding general and that the report should be destroyed when no longer needed was not considered prior art, as it was not public information within the meaning of [35 U.S.C.A. § 102](#). _ A restriction on dissemination effective to preclude a document from being treated as a "publication" need not be express. Industry practice of regarding progress reports of defense contractors as being confidential was deemed sufficient to deny such a report the status of a "printed publication." _ Showing a film to military and commercial customers with an understanding of confidentiality was deemed to negate the novelty of subject matter depicted therein.

A government report in which secrecy was in effect disavowed and which was distributed to corporations, universities, research organizations, and a foreign government shortly prior to its declassification, and for which the government would honor requests for copies was deemed prior art from the time of its declassification. Communication of documents *in confidence* cannot be viewed as a publication under [35 U.S.C.A. § 102\(b\)](#).

Merely marking a document "restricted" or "confidential" is of no consequence where it is evident that intent and conduct are contrary to the purported restriction. On the other hand, a statement of confidentiality need not accompany a document which is circulated to employees of an organization who are already aware that the organization has a policy of confidentiality.

A circumstance not directly addressed by [35 U.S.C.A. § 102](#) is whether the mere oral delivery of a paper at a professional or other meeting triggers the running of the one-year grace period within which an application for patent must be filed. If an unrecorded and untranscribed presentation is insufficiently detailed to allow those skilled in the art to make or use the invention, the presentation will not qualify as a printed publication triggering the running of the one-year grace period. _ A district court has said that the publication requirement may be satisfied by distributing or making the paper available at a conference where persons interested or skilled in the subject matter of the paper are told of the paper's existence and informed of its contents. _ Oral presentation of a research paper to between fifty and five hundred interested persons of ordinary skill in the subject matter accompanied by *actual dissemination without restriction* to at least six persons has been held to constitute a "printed publication" within the meaning of [35 U.S.C.A. § 102\(b\)](#). _ The inventor's display to his colleagues on a university faculty has been held not a public use, even without his mention of any secrecy, where the inventor retained control over the embodiment and information concerning it.

Another circumstance not specifically addressed by [35 U.S.C.A. § 102](#) is whether "a printed publication" must truly be enabling to constitute an anticipation. Suppose a "printed publication" discloses results but not means by which such results can be obtained and duplicated, does the printed publication constitute an anticipation? It appears that such a publication does not amount to a *prior publication*. The better view would seem to be that a publication does not amount to a prior publication statutorily barring a patent under [35 U.S.C.A. § 102\(b\)](#) unless its disclosure is such that a skilled artisan could take its teachings in

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combination with his own knowledge of the particular art and be in possession of the invention. _ A reference must describe an invention sufficiently to have placed the public in possession of it. _ In other words, the Federal Circuit takes the position that a printed publication must be enabling.

At least one court has indicated that independent corroboration is required in order to establish an actual reduction to practice as anticipatory prior art.

Statements of abilities and results, as those contained in a promotional brochure, are insufficient to constitute an enabling disclosure. _ A brochure qualifies as a prior art reference only for what it discloses. It is not a vehicle by which the more detailed disclosure of the patent may be considered prior art. Disclosure, albeit public, which does not in any substantial way describe the invention, i.e., which is insufficient to enable a person of ordinary skill in the art to produce the invention, should not be deemed to constitute an anticipation. _ Nevertheless, a description of a compound, though lacking a statement of utility therefor, has been held to constitute an anticipation of a claim thereto. _ Disclosure merely of the "concept" in a "printed publication" may suffice as an anticipation.

Conception and actual reduction to practice are prerequisites to a finding that an *unpublished* work of another qualifies as prior art, anything less being merely a failed experiment.

Physical novelty required for anticipation

The physical object or embodiment of that which is sought to be protected by a patent must itself be new, and not merely previously unknown. Although one may be the first to observe and recognize a previously unknown, unappreciated, and important property of an existing substance, he has not, for such contribution, earned the right to exclude others from making, using, and selling that substance. Similarly, one who learns of an advantage to be derived from the operation, in a known manner, of an existing machine or of an existing process would not be entitled to a patent either upon the structure of that machine or upon the manner of operating it.

One who merely explains why _ or even how a prior art process or apparatus works is not deemed the inventor thereof. Thus, the mere discovery of an end use (as abrasive articles) for a composition of matter which in the prior art was used only as an intermediate (in the production of abrasive articles) does not entitle the discoverer of that end use to a patent on the composition.

The foregoing result is derived from and, indeed, is necessitated by the simultaneous application of two fundamental principles, which are that (1) once subject matter enters the public domain, it remains there forever after _ and (2) patentable subject matter must distinguish over that already

in the public domain by more than a mere advantage, that is, there must be a *physical difference* between what already is in the public domain and what is sought to be patented.

The reader will observe that the second principle is closely related to the principle that mere ideas are not patentable, in that the recognition of a naked advantage amounts to no more than a mental result--an idea--having as its physical object that which already lies in the public domain. Moreover, the second principle is, in effect, a corollary of the first, in that all advantages are *inherent* in and are incidents of the physical embodiment. It is axiomatic that one who performs the steps of a process must, in so doing, necessarily produce all its advantages, for these naturally flow from it and, indeed, are an inseparable part of it. To grant a patent for the mere recognition of even a previously wholly unknown advantage would involve the removal of the physical means needed to produce that advantage from the public domain. Mere recitation of a newly discovered function or property that is inherently possessed by things in the prior art does not cause a claim drawn to those things to distinguish over the prior art. _ In regard to novelty, it is irrelevant that the inventors of prior devices failed to describe or appreciate all their advantages, since a prior patent or other prior art suffices as an anticipation if that prior patent or art discloses all of the physical elements claimed, and those elements are arranged as claimed.

In regard to plant patents, the physical novelty requirement is satisfied where the plant sought to be patented possesses significantly different characteristics than the closest "prior art" variety. _ A design patent is anticipated if the prior art includes all elements as arranged in the claim.

It is a fundamental principle of patent law that under [35 U.S.C.A. § 102\(b\)](#), a generic claim is "anticipated" and therefore invalid if any one individual species included within the genus is disclosed in a written publication more than one year prior to the effective filing date of the generic claim.

It should be noted, however, that the disclosure of a chemical genus is not deemed to constitute an anticipation of specific compounds falling within that genus.

Anticipation is established only when a single unit of prior art discloses, expressly or under principles of inherency, each and every element of the claimed invention.

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This test is strictly applied. _ Moreover, such single unit of prior art must disclose the elements arranged in the same manner to obtain a similar result as required by the claims. _ A range of numerical values is deemed anticipated if a single reference discloses a value or values falling *within* the claimed range. _ The converse is not necessarily true in that prior art which discloses merely a range does not necessarily anticipate claimed specific values falling within

the range. _ While evidence of anticipation must be clear and convincing, oral testimony alone may be sufficient if it meets the clear and convincing standard.

Anticipation is a question of fact.

Doctrine of inherency

Anticipation may be based upon an inference of inherency.

To illustrate how the application of the doctrine of inherency may preclude one who has made a valuable discovery from obtaining patent protection for his contribution, consider the following hypothetical situation: *X* discovers that trace amounts of certain rare-earth metal oxides significantly enhance the life of the silica-brick lining of electric arc furnaces when such oxides are incorporated into the silica brick. However, such quantities of these oxides as are effective are inherently present as impurities in the silica brick used to line some prior art arc furnaces, although no one before *X* realized that the presence of these oxides has the effect of prolonging the life of a silica-brick lining. *X* may not patent a silica-brick lining containing rare-earth metal oxides, because the lining is in fact anticipated by those

furnaces which happen to contain the rare-earth metal oxides. Of course, if the concentration of the rare-earth metal oxides in the linings of prior art arc furnaces differs from that found efficacious by *X*, then the structure of *X*'s furnace lining would not be anticipated by the prior art and *X* could obtain a patent covering such structure. Claims are properly rejectable as being anticipated under [35 U.S.C.A. § 102](#), even though all the limitations recited therein are not explicitly mentioned in the prior art reference, provided any limitation not expressed is inherent. _ It should be noted here that relatively slight or minor physical modifications of prior art structures have, on occasion, produced wholly new and unexpected results.

In order for something to be "inherent" in a disclosure it must be the necessary and only reasonable construction to be given to the disclosure, that is, the result claimed must inevitably occur. _ Claims drawn to a process that will inherently be performed by the use of old apparatus or to any product inherently produced by an old process or by the use of old apparatus is invalid for want of novelty.

All advantages and utilities, whether or not appreciated by the inventor, are inherent in structure. Though the inventor of prior art structure did not intend a result or effect, if the effect is necessarily present it constitutes an anticipation of any subsequent recognition and exposition of that result. _ It is axiomatic that an old article cannot be repatented on the basis

of a newly discovered advantage, _ although it may be possible to patent a new use as a method.

Inherency is a question of fact. _ The Federal Circuit has held that in order for a prior art reference to anticipate the claimed invention, the reference must disclose every feature of the invention either explicitly or inherently and "whether a claim feature is inherent in a prior art reference is a factual issue on which extrinsic evidence may be submitted."[\[.1\]](#)

The law of inherent disclosure holds that for a process *A* to be held to duplicate process *B*, it is not necessary for *A* to expressly disclose all limitations of *B*, if the necessary and only reasonable interpretation of process *A* is that it duplicates process *B*.

Consider, for example, a case involving low carbon steel. Low carbon steels are known to exhibit a melting point lower than 2800 degrees F. Accordingly, by disclosing low carbon steel as an appropriate shielding material for an oxygen sensor, a patent applicant was found to have inherently disclosed the use of steels having a melting point below 2800 degrees F. _ Recognition of an advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious.

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It should be noted that the inherency of an advantage and its obviousness are entirely different questions. _ Obviousness cannot be predicated on what is unknown. _ A structure that differs only slightly from the prior art may not be obvious because of an advantage inherent in that difference. However, recognition of an unobvious property of, or application for, a previously known composition cannot impart patentability to claims to the known composition. This is comes about because there is no structural difference whatever exists between the prior art and what is being claimed. _ Inherency is not established by possibilities or probabilities. The mere fact that certain things may result from a given set of circumstances is not sufficient. _ It is a well established rule that for a result to be deemed inherent, it is not sufficient that a person following the disclosure might obtain the result set forth in the count; it must invariably happen.

Recognition of an inherent advantage or feature, in a sense, is equivalent to the discovery of a law or principle of nature. Into this category falls discovery of the structural formula of a "known" chemical compound. In this regard, it was held that there is nothing patentable in the discovery that vitamin C is hexuronic acid.

Now suppose that Y discovers that the same rare-earth metal oxides, when present in the silica-brick lining of a plasma arc furnace, tend to stabilize the plasma arc. Assume that the prior art does not explicitly disclose the combination of a plasma-arc furnace lined with silica brick, but that the prior

art does teach the use of such materials to line the interior walls of conventional arc furnaces and that these rare-earth metal oxides have no effect on the stability of the conventional electric arc. Technically, Y's combination of a plasma arc in a chamber lined with silica brick which contains rare-earth metal oxides is not anticipated by the aforementioned prior art. Moreover, that prior art does not teach that this combination would have the advantage discovered by Y. Nevertheless, one of ordinary skill in the art of constructing arc furnaces who wanted to build a plasma arc furnace, and who looked to the prior art for guidance, would very likely select a lining composed of silica brick (in which there would inherently be present amounts of rare-earth metal oxides effective for stabilizing the plasma arc)--albeit for reasons different from that taught by Y. It is an open question whether under such circumstances Y's combination of structure would or should be patentable.

The doctrine of inherency frequently comes into play where a mathematical equation or quantitative relationship is claimed. For example: Suppose that Z discovers that in the electro-thermic reduction of pyritic copper ores, electric power will most efficiently be expended when there is present a 25 percent by weight excess ore to carbonaceous material. Now assume that the prior art discloses a process for smelting copper ores, which happens to employ 25 percent by weight excess copper pyrites to carbonaceous material. Although that prior art disclosure does not teach that the called for proportions will

make the most efficient use of electric power, it would anticipate Z's claims, in that it does call for a 25 percent weight excess ore to carbonaceous material.

The doctrine of inherency may also be applied to method claims for administering medical treatments. The Federal Circuit upheld a summary judgment of invalidity of method claims for administering a specific pharmaceutical based on a prior art publication to the same method with a different medical effect, holding that "newly discovered results of known processes directed to the same purpose are not patentable because such results are inherent." [\[.1\]](#)

Another application of the doctrine of inherency involves properties inherent in known or existing materials. The mere discovery of one or more such properties, however advantageous and even unexpected or unobvious, does not render a known substance patentable as a composition of matter. _ The unique feature of any composition or article of manufacture, not found in the starting materials and yet

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inhering in the composition or article, are necessarily achieved during the process of manufacture and the law is settled that the process of manufacture is not thereby rendered patentable. _ The failure of the prior art to identify or otherwise to recognize the function that structure inherently and necessarily performs does not make it any less an anticipation. _ Thus, even if an element is absent from the prior art

reference, if that element flows naturally from the disclosure, that reference nevertheless constitutes an anticipation.

A natural product anticipates the same substance synthetically produced. _ The synthetic (artificial) form of a naturally occurring substance is deemed to lack novelty, at least where the naturally occurring substance is known. Nevertheless, the synthetic (artificial) form of a naturally occurring substance, or even the naturally occurring substance isolated from its associated naturally occurring impurities may be patentable where such isolated or purified form possesses one or more unobvious properties, which may be an unexpected degree of chemical activity.

The doctrine of inherency also applies to negate the novelty of method claims where the claims set forth no more than the normal and usual operation of a prior art device. The law is, and long has been, that if a previously patented device, in its normal and usual operation will perform the function which is claimed in a subsequent application for a process patent, then such application for a process patent will be considered to be anticipated by the former patented device.

The unpatentability of physical laws and their quantitative formulations may be predicated upon the doctrine of inherency. The relations underlying every physical law existed from time immemorial and they are inherently present in and accompany every application and illustration thereof. It is, indeed, safe

to say that there has not been an invention made yet that either does not obey some law of nature or violates any law of nature. Patent law, however, is concerned with neither speculations nor theoretical explanations, but rather only with the concrete means or steps by which physical results are obtained. Accordingly, it is ordinarily not incumbent upon an applicant for a patent to advance a theory as to why his invention works. Rather, he need only articulate how it works, that is, how another may reproduce the result he obtained. _ A theoretical explanation of the mechanism by which a physical result is achieved may, however, in some contexts, help distinguish the instant contribution from the prior art. A physical difference must, nevertheless, be present.

Before an applicant can be put to the burdensome task of proving that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter is not inherent in prior art disclosures, the Primary Examiner must provide some evidence or scientific reasoning to establish the reasonable ness of the Examiner's belief that the functional limitation is an inherent characteristic of the prior art.

Novelty and anticipation

It has been generally held that to avoid anticipation and satisfy the novelty requirement, the degree of physical difference which must exist between that which is sought to be patented and the prior art need be only slight. So long as the physical structure of the invention sought to be patented is not "identically disclosed," novelty very likely is present. That a mechanical equivalent is prior art does not thereby render the invention anticipated, although it may render it obvious. _ By this standard, even mere colorable or trivial variations of prior art structures would literally possess novelty. Thus, it has been said that novelty has been called a fairly liberal test of patentability. _ It must be noted, however, that such variations, without more, would be unpatentable, as failing to satisfy the unobviousness standard. *See Ch 9, infra.*

Patent claims in which there is no cooperation between the constituent elements and no cooperative result produced other than the sum of the element's independent functions have been deemed invalid for lack of novelty.

Since physical identity is the test of novelty and anticipation, it should follow that the mere existence, anywhere in the prior art, of physical structure identical in description with that claimed would constitute an anticipation.

To constitute an anticipation, all the claimed elements must be found in exactly the same situation and united in the same way to perform the identical function in a single unit of the prior art. _ When the assertion of loss of novelty is based on printed publication, a finding of anticipation must show that the publication describes the same invention with all the elements of the claim arranged in the same way as they are in the patent claim. _ In the words of Judge Learned Hand: _ "No doctrine of the patent law is better established than that a prior patent or other publication to be an anticipation must bear within its four corners adequate directions for the practice of the patent invalidated." Anticipation can only be established by a single prior art reference which discloses each and every element of the claimed invention. _ An infringer may argue that the differences between the claims and the prior art are "insubstantial" and that the missing elements could be supplied by one having ordinary skill in the art, but these arguments have been held ineffective to establish anticipation. _ Moreover, anticipation cannot be predicated on teachings in a reference that are vague or based on conjecture.

_ Additional references may be used only to *interpret* the allegedly anticipating reference. _ To constitute an anticipation a reference need not disclose the limitations in haec verba. _ To constitute an anticipation, it is not necessary that a prior art reference "teach" what the patent teaches. Rather, it is only necessary that the claim under attack, as construed by the court, "read on" something disclosed in the reference, i.e., that all limitations of the claim are found in the reference, or are "fully met" by it.

Uncorroborated oral testimony by a witness speaking only from memory in regard to past transactions, in the absence of contemporaneous documentary or physical evidence, is insufficient to show anticipation of an issued patent. _ An applicant's designation of a figure in his application as "prior art" has been deemed an admission that such was the case.

A relation exists between anticipation and infringement: "[t]hat which would *literally* infringe if later in time anticipates if earlier than the date of invention." _ The inquiry as to anticipation is not entirely symmetrical with the inquiry as to infringement of a patent, as infringement under the doctrine of equivalents would not constitute an anticipation.

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As in other areas of the law, there is a very real gap between the existence of a fact and establishing that fact to the satisfaction of a legal tribunal. Testimonial evidence of an alleged anticipation, particularly without supporting real evidence, may be suspect. A prior publication, while in some respects more reliable than naked testimony, is often subject to varying interpretations.

With respect to applications pending before the Patent & Trademark Office, the courts have sanctioned the application of the broadest interpretation that the claims may reasonably support. _ This is as true in inter partes proceedings _ (i.e., patent interferences) as it is in ex parte prosecution. By so construing the claims, the probability of anticipatory prior art is increased.

Anticipation has been characterized as a "narrow technical defense" that does not raise for consideration all that the prior art disclosed, but occurs where the same or virtually identical device or invention has previously been disclosed. _ Thus, a broadly worded claim directed to a picture frame might be deemed anticipated by a toilet seat.

The prior art is to be more broadly construed in determining obviousness than in deciding whether there has been an anticipation.

Claims of issued patents tend to be construed more rationally, the courts often going behind their literal wording and considering the inventive thought that underlies and motivated the claims. _ Thus, a court may discount as an anticipation, structure from an art totally unrelated to that to which the invention under consideration is directed, even though such happens to read

literally upon one or more of the claims. Incidental anticipations which are temporary and transitory have been deemed not to negate novelty.

Anticipation and infringement are reciprocals, i.e., it is an elemental principle of patent law that a structure in a prior art reference which would infringe the patent if later in time, anticipates it if earlier in time.

A more detailed treatment of the construction of patent claims during examination in the Patent & Trademark Office is to be found in Ch 15, *infra*.

Anomalous though it may seem, a written description may be adequate to anticipate a claim and yet be insufficient to support a patent. For example, description of a single embodiment of broadly-claimed subject matter constitutes a description of the invention for anticipation purposes, but the same information in a patent specification might not alone be enough to provide a description of that invention for purposes of adequate disclosure. _ Similarly, a description of a compound lacking a statement of use for that compound would suffice as an anticipation of a claim thereto and yet be deemed an insufficient disclosure to support a patent. _ Nevertheless, at least with respect to the source (e.g., whether the disclosure of a prior art patent or printed publication), the same standard as to content applies.

Anticipation has been said to require not only *identity of invention* but also *enablement*. _ The description of a composition of matter may constitute an anticipation even though the description does not disclose how to prepare the composition, provided that it would be within the skill of the art to do so.

A related question is whether and under what circumstances a prior art description of a genus can constitute an anticipation of a claim to a species under that genus. While in the final analysis, each case turns on the precise form and content of the prior art disclosure, it seems safe to state, on one hand, that to constitute an anticipation the prior art need not describe the species in haec verba and, on the other hand, the prior art disclosure must at least substantially identify the species and its properties to constitute an anticipation. _ If it is possible to derive a class of compounds of lesser scope than the genus disclosed in a prior art

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reference on the basis of preferences ascertainable from the reference, anticipation may be found. _ Of course, the prior art disclosure of even a single species constitutes an anticipation of the genus to which such species belongs. _ However, a genus does not constitute an anticipation of a species within that genus.

Case law has long recognized that unsuccessful attempts to develop a commercially acceptable product are nothing more than abandoned experiments that in no way enrich the store of common knowledge available to the inventor at the time he conceived his invention.

An accidental, unintended, and unappreciated duplication of an invention does not defeat the patent right of one who, though later in time, was the first to recognize that which constitutes the inventive subject matter. _ An accidental or unwitting duplication of an invention cannot constitute an anticipation, _ at least where the earlier "inventor" was not aware of what he was doing or how he did it. Another's experiment, imperfect and never perfected, will not serve either as an anticipation or as part of the prior art, for it has not served to enrich the prior art. Rudimentary or unsuccessful experiments with isolated elements of a combination do not anticipate an invention which successfully combines those elements. _ It is well settled that an invention set up in defense of infringement must have been complete and capable of producing the desired result. _ Patents for useful inventions ought not to be invalidated and held for naught because of such excursions into the boneyard of failures and abandoned experiments. _ A "failed" experiment renders itself irrelevant as prior art. _ Cases applying the doctrine of accidental anticipation have consistently held that what is required for the doctrine to apply is true fortuitousness, as in the example of a chemical being produced as a side effect to no one's knowledge. _ The law has never been that the unrecognized or unappreciated coproduction of small amounts of a compound,

without any suggestion of that fact being shown in the prior art, could constitute an anticipation of such compound. _ However, at least one court has implied that anticipation may occur either purposely or fortuitously. _ A patented invention does not become "known" by use or sale, or by anything of which the art cannot take hold of and make use of as it stands. The mere fact that attempts to get the device to work were not concealed does not make the use "public" within the meaning of [35 U.S.C.A. § 102\(a\)](#). _ Whether the prototype that a patent owner constructed as a testing and advertising device was part of the prior art was held to depend on whether it was commercially marketable. _ Where the discovery was made that undulated length-wise yarn significantly enhanced weave and stretch qualities of the endless belt used on paper-making machines, the fact that some strands of prior art belts may have possessed such quality purely by accident and without intent was deemed not to negate the novelty of an invention which taught making belts of such undulated strands.

A structure that was altered to meet a customer's specifications, then abandoned and thereafter never published or otherwise developed, compels its elimination from consideration as a branch of prior art. _ Similarly, an unexplained, misdesignated representation was deemed not to be effective prior art. _ Nor is an abandoned experiment effective prior art.

A prior art patent may properly be considered an anticipation even though it has never been commercially made.

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35 U.S.C.A. § 102(a)

A person shall be entitled to a patent unless --

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

A patent applicant must convince the Patent & Trademark Office that the invention was not previously known or used by others in the United States, or patented or described in a printed publication anywhere in the world, before the date filing of the patent application.

A patent examiner may test the applicant's claims by asserting prior art to show that the invention was known or used by others in the United States prior to the applicant's filing date. Such a showing requires that the patent examiner demonstrate "identity of invention": "For a prior art reference to anticipate in terms of [35 U.S.C. § 102](#), every element of the claimed invention must be identically shown in a single reference." In litigation, the party seeking to establish that a patent is invalid under [35 U.S.C. § 102\(a\)](#) must meet the same "identity of invention" test.

The prior art used by a patent examiner or by a litigating party to defeat a patent claim must also meet an "enablement test": the reference must be enabling and describe the applicant's invention sufficiently to have placed it in possession of a person of ordinary skill in the field of the invention.

One's own invention, whatever the form of the disclosure to the public, is not prior art against oneself under [35 U.S.C.A. § 102\(a\)](#), even though it has been disclosed to the public in a manner or form which otherwise falls under [35 U.S.C.A. § 102\(a\)](#), unless, of course, the disclosure occurred one year prior to the date of the application and thus constitutes a statutory bar under [35 U.S.C.A. § 102\(b\)](#). The inventor's interim thoughts and writings are also not prior art unless they are in a form that constitutes a statutory bar under [35 U.S.C.A. § 102\(b\)](#). A prior art reference that is not a statutory bar may be overcome by two generally recognized methods: (1) by an affidavit or declaration satisfying the requirements of [37 C.F.R. § 1.131](#); or (2) by showing that the relevant disclosure is a description of the applicant's own work.

The knowledge contemplated by [35 U.S.C.A. § 102\(a\)](#) is *public* knowledge. Knowledge existing only internally within an organization is not public knowledge. However, circulation of information even only among government installations and regular governmental officials constitutes release to the public unless accompanying such distribution there was an intent to limit access to those having some official capacity. Moreover, unpublished internal criteria, even though not technically prior art, may properly be used as an indication of the level of ordinary skill in the art to which the invention pertains.

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35 U.S.C.A. § 102(b)

A person shall be entitled to a patent unless --

...

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

A patent applicant must convince the Patent & Trademark Office that the invention was not patented or described in a printed publication anywhere in the world, or in public use or on sale in the United States, more than one year prior to the date of the patent application in the United States.

Resources at the disposal of the patent examiner may allow the examiner to ascertain whether the applicant's invention was patented or described in a printed publication anywhere in the world more than a year before the filing of the domestic application. However, the patent examiner generally relies upon representations made by the applicant to determine any public use or sale more than one year prior to the filing date of the patent application. The applicant will be motivated to make any relevant disclosure because of the duty imposed by [37 C.F.R. § 1.56](#). In litigation, such disclosure will be motivated by depositions made under oath.

Unlike the prior art used by patent examiners and litigants to defeat patent claims under [35 U.S.C. § 102\(a\)](#), the prior art used under [§ 102\(b\)](#) need not meet an enablement test. However, both patent examiners and litigants must satisfy the "identity of invention" test by establishing that each element of the claimed invention was described in a single patent or a single publication more than one year before the filing date of the patent application.

Under [35 U.S.C.A. § 102\(b\)](#), a patent is barred if the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country more than one year prior to the date of the application for patent in the United States, *regardless of who was responsible for the patenting, publication, any public use, or any placing of*

the invention on sale. In other words, by virtue of [35 U.S.C.A. § 102\(b\)](#), even the inventorship entity's own patenting, public use, or placing of the invention on sale will preclude anyone and everyone from obtaining a valid patent-even the inventorship entity itself-if any of the four acts specified in [35 U.S.C.A. § 102\(b\)](#) occurred more than one year prior to the application filing date in the United States.

Patenting or publication, even outside of the United States, triggers the running of the one-year grace period, whereas mere public use or merely placing of the invention on sale triggers the running of the one-year grace period only if the public use or the placing of the invention on sale occurred within the United States.

United States law between 1839 and 1939 provided a two-year grace period--rather than the present day one-year grace period--under the circumstances recited in [35 U.S.C.A. 102\(b\)](#). The present one-year grace period provided under [35 U.S.C.A. § 102\(b\)](#) must not be confused with the grace period of equal duration provided under [35 U.S.C.A. § 119](#). Most any public disclosure of the invention (e.g., public use, patenting, publication) any place in the world at any time prior to the filing of a patent application will bar a valid patent in many countries, including all those countries adhering to the European Patent Convention. However, once a filing

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has occurred in any country belonging to the Paris Union, the inventorship entity has one year

therefrom in which to file a corresponding application in any other country belonging to the Paris Union. Once a patent application has been filed in any country belonging to the Paris Union, subsequent public disclosure in any manner does not affect the novelty of the invention or otherwise adversely affect the validity of patent rights.

A plethora of court decisions place a judicial gloss that is still less than crystal clear on exactly just what does and does not constitute placing an invention *in public use* or placing it *on sale*. *Experimental use* has been distinguished from public use and a *secret use* may or may not be deemed a public use depending on the particulars. Accordingly, each of the foregoing terms merits separate consideration.

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35 U.S.C.A. § 102(b) --"In public use"

Under [35 U.S.C.A. § 102\(a\) and \(b\)](#), in order for an invention to be barred from patent protection because of a prior *use*, the invention must have been previously reduced to practice. _ A party claiming anticipation under [35 U.S.C.A. § 102](#) because of prior use is put to the strictest of proofs.

Public use is any non-secret use of a completed and operative invention in its natural and intended way open to the public or where any member of the public can see it if such a member so desires. _ It is axiomatic that there can be no public use of an invention before it exists. However, the law seems unsettled as to the point in an invention's development at which an invention may be deemed to have been placed "on sale."

Alleged use of "the invention" when only the concept of the invention is shown to exist is insufficient to establish public use. _ That later embodiments may represent substantial refinements is irrelevant.

Factors to be considered in deciding whether there is a public use include: _ the length of the test period; whether any payment has been made for the device; whether there is a secrecy obligation on the part of the user; whether progress records were kept; whether persons other than the inventor conducted the experiments; how many tests were conducted; and how long the testing period was in relationship to tests of similar devices.

Although the absence of profit does not conclusively negate a public use, it is an important consideration. _ Public use is not synonymous with commercial use.

There is no question that a demonstration of invention at a convention or exhibition falls under the "public use" bar. _ Display of a new product at a trade show has been squarely held to constitute a public use, even where the product did not go on sale for two years thereafter.

Demonstration by one co-inventor to a newspaper's editor in order to gain commercial recognition so as to facilitate marketing of the invention was deemed to constitute a public use, even though the other co-inventors were ignorant of such demonstration. _ The Federal Circuit has upheld a decision that a patent for use in removing rods in automotive steering systems was not invalid for public use because the prototype was used experimentally by selected mechanics in automotive repair shops. The patentee received no payments for the tools, but did receive testing feedback from the mechanics.

To constitute a public use, the user need not even realize that he is using the invention. It is immaterial that the use was without the inventor's consent or that the use was due to factors not his fault and beyond his control, _ unless the invention was gained surreptitiously from the inventor. _ It may be fair to conclude that public use exists where the invention is used by, or exposed to, anybody other than the inventor or persons under an obligation of secrecy to the inventor.

The date on which the one-year "public use" grace period (as opposed to experimental use) commences is sometimes characterized as the *critical date*. Invalidity may be established either by showing non-secret use of the invention prior to the *critical date* or by establishing that the inventor has commercially exploited the invention prior to the *critical date* without

injunction or secrecy. _ The Federal Circuit reversed a district court holding and found that oral testimony from six witnesses was not sufficient by itself to provide the clear and convincing evidence needed to invalidate a patent for prior public use and knowledge. The Federal Circuit has held that the determination of public use is a

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fact based inquiry and has overturned a district court decision that patents for designs of furniture were invalid because the lower court found a "public use" but failed to analyze "the totality of the circumstances" when the furniture designs were exhibited to a limited group of individuals. Once the patent challenger makes a prima facie showing of a public use or an offer to sell or a sale of the claimed invention before the critical date, the defender of the patent has the burden of going forward with convincing evidence to counter the prima facie showing of an invalidating public use or prior sale.

Once evidence in a patent case shows prior "public use" the burden of proof shifts to the inventor to establish that such use was solely for experimental purposes.

Any non-secret use of a completed and operative invention in its natural and intended way is a "public use" within the meaning of [35 U.S.C.A. § 102\(b\)](#).

Public use is a question of law based on underlying facts. On review, the Federal Circuit considers issues of public use *de novo*.

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35 U.S.C.A. § 102(b) --"In public use"--Experimental use

Experimental use, which means perfecting or completing an invention to the point of determining that it will work for its intended purpose, ends with actual reduction to practice. _ Whether a prior use by the inventor was "experimental" or "public" is a question of fact which precludes summary judgment.

The exhibition of a device as a student experiment was held not to be inconsistent with an experimental use. _ The Federal Circuit has held that exhibition of a wrought iron table embodying a design constituted a public

use, as the only possible use for an ornamental design is its exhibition. Thus the experimental use exception is apparently inapplicable to design patent protection.

A use is experimental if the inventor's *motive* is truly the testing and/or perfection of the invention. The law recognizes that the inventor may wish to perfect his idea before applying for a patent. After reduction to practice has occurred, however, unreasonable delay in applying for a patent may be construed to be an abandonment with the consequence that the public is entitled to rights in the invention. _ Whether a use will be held to be experimental or public, is affected by two factors: (1) the intent of the inventor, that is, whether his use was motivated by a desire to experiment or by a desire to profit from his invention; _ and (2) whether and at what point in time the invention was actually reduced to practice. If the motive was primarily to earn a profit, the use cannot be considered experimental. To constitute an "experimental use," as opposed to a public use, the testing must be for the purpose of perfecting the invention's essential qualities. A testing program undertaken primarily to determine merchantability constitutes public use. _ The Federal Circuit recognizes, however, that as commercial purpose underlies virtually every contact between inventor and potential customer, customer contact does not convert an otherwise experimental purpose into a public use.

Indicia of experimentation include: _ (1) whether records or progress reports were made concerning the testing; (2) the existence of a secrecy agreement between the patentee and the party performing the testing; (3) whether the patentee received compensation for the use of the invention; and (4) the extent of control the inventor maintained over the testing. The last factor--control over the testing--is critically important because, if the inventorship entity has no control over the alleged experiment, it is not an experiment. _ Criteria relevant to the determination of whether an invention had been completed and shown to work for its intended purpose at the time of a possible public use or on-sale event have been said by the Federal Circuit to include: _ (1) whether the tests or evaluations that were conducted were reasonably needed to demonstrate the efficacy of the invention; (2) the length of the evaluation period in relation to the nature of the invention; (3) whether testing was systematically performed; (4) whether the evaluation was done by or on behalf of the inventor; (5) whether records were kept; (6) whether payment was received; and (7) other circumstances that illuminate the nature of the activity engaged in before the critical date.

The Federal Circuit has taken the position that there is no separate "experimental use" exception, but rather a single issue: Was there public use under [35 U.S.C.A. § 102\(b\)](#)? The issue must be determined by considering the totality of circumstances. Factors to be considered in deciding whether there

is a public use include, for example, the length of the test period, whether any payment has been made for an embodiment, whether there is a secrecy obligation on the part of the user, whether progress records were kept, whether persons other than the inventor conducted the asserted experiments, how many tests were

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conducted, and how long the testing period was in relationship to tests of other similar embodiments.

Failure to exercise control over an embodiment tends to show that the motivation was not in fact experimental. _ The inventor must maintain control over the experimental use for the experimental use doctrine to apply. _ If neither the inventorship entity nor someone under its control or "surveillance" does these things, there appears to be no reason why the inventorship entity should be entitled to rely upon them to avoid the statute. _ The experimental use doctrine operates in the *inventor's* favor to allow the *inventor* to refine his or her invention or to assess its value relative to the time and expense of prosecuting a patent application. _ The Federal Circuit has also taken the position that testing for the purpose of obtaining the marketing approval of a federal regulatory agency constitutes a public rather than an experimental use.

While for a use to be deemed "experimental," it must be part of an attempt to refine the invention (as opposed to market testing to gauge consumer demand), experiments directed to "fine-tuning," i.e., to features not recited

in the claims, do not constitute "experimental" use. _ The experimental use exception does not include market testing where the inventor is attempting to gauge consumer demand for his claimed invention. Where the inventor made the allegedly public use, he has the burden of going forward with convincing evidence that the public use activities fall within the experimental use exception. Objective evidence may include, inter alia, whether the inventor inspected the invention regularly; whether the inventor retained control over the invention; and whether the commercial exploitation was merely incidental to the primary purpose of experimentation. _ The lack of written progress records of a testing schedule has been taken as circumstantial evidence of a nonexperimental purpose. _ In determining whether sales were made for experimental purposes a court considers the following factors: (1) the necessity for the inventor to transfer the design to an entity with resources or knowledge superior to the inventor's, or similar factors tending to show that the inventor transferred the design to obtain development assistance; (2) the need to protect the public safety by limited and cautious experiments; (3) the stage of completion that the prototype was sold; (4) whether reports of the results of test or experiments were made to the inventor; and (5) whether confidentiality by the buyer was enforced as expected. _ Apparently, industry custom is a factor considered in determining whether the shipping of samples to customers constitutes an experimental use. Evidence of an

established industry practice of having selected customers determine utility militates in favor of their use being deemed "experimental." _ Activity consistent with commercialization is not dispositive of whether or not use is experimental, the issue being whether the activity was *inconsistent* with experimentation.

The law assigns no fixed, arbitrary period of time after which a use can no longer be experimental. The one-year period mentioned in [35 U.S.C.A. § 102\(b\)](#) only commences running when the use has ceased being experimental and becomes a public use. It has been held that a use for as long as six years was experimental and not public use. _ The dominant motive will control. Thus, a sale which is primarily for the purpose of experiment will not bar patentability. _ A pledge of confidentiality by the user is indicative, but not dispositive, of the inventor's continued control. Such control may be established inherently, as by a dentist-patient relationship. _ The mere desire to realize a profit sometime in the future in no way negates the inventor's intent to test his product in the present. _ Absence of profit does not establish experimentation.

The Federal Circuit discerns no distinction in the meaning of "reduction to practice" as such is used in regard to interferences and anticipation, that is, what

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constitutes reduction to practice is the same in the context of an interference and in the context of prior art determination for purposes of establishing anticipation.

Testing, involving sale of embodiments of the invention, the primary purpose of which is to obtain marketing approval from a federal agency constitutes a *public use* rather than an experimental use. _ Marketing "experiments" to test the buying potential of the invention do not fall under the "experimental use exception."

The Federal Circuit has invalidated a pharmaceutical patent based on non-experimental use and held that a pharmaceutical company's testing of an antidepressant was not an experimental use but rather a public use because the testing was not directed to a claimed feature of the drug.

The Federal Circuit has also held that a university research program may not successfully defend its use of one its researcher's patents based on the "experimental use" defense when the use of the patented technology furthered projects for the university's business objectives.

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35 U.S.C.A. § 102(b) --"In public use"--Secret use

It has been said that a purpose of [35 U.S.C. § 102\(b\)](#) is to prevent an inventor from exploiting the invention in secret and subsequently seeking exclusive legal rights thereon only when confronted with the prospect of competition.

Commercial use of an invention is deemed a public use even if kept secret. _ This kind of use has been characterized as "noninforming" public use and has been said to defeat a claim of concealment, at least where the public benefits.

Not all *attempts* at secrecy render a prior use secret. _ Whether use of an invention is "public" does not necessarily depend upon the number of persons to whom its use is known.

Perhaps the most perplexing problem posed by the language of [35 U.S.C.A. § 102](#) is the effect of a prior secret use. To illustrate, consider the following situation:

A makes an invention, about which he tells his wife, *W*. She convinces him to forget about it. *B*, working independently and without knowledge of what *A* has accomplished, makes the very same invention some time later.

(1) But for the fact that another, namely *B*, entered the field, *A* would not be barred from obtaining a patent at some indefinite time in the future.

(2) *A*'s invention does not constitute an anticipation of *B*'s invention. Although *B*'s invention was literally known by others, namely *A* and *W*, [35 U.S.C.A. § 102\(a\)](#) has been construed as requiring *public* knowledge or use.

(3) *B* is entitled, not only to make and use his invention, but to a patent therefor and, thus, to exclude *A* from practicing it. _ A subsequent inventor who has diligently pursued his labors to the procurement of a patent in good faith and without any knowledge of the preceding discoveries of another, shall, as against that other, who has deliberately concealed the knowledge of his invention from the public, be regarded as the real inventor and as such is entitled to a patent.

If *A* had not "forgotten" about or otherwise concealed or suppressed his invention, but had instead diligently continued to perfect it, albeit in secret, *A* would be deemed the first inventor. See Ch 10, *infra*.

To illustrate how intricate and interwoven are the provisos comprising [35 U.S.C.A. § 102](#), consider the following situations:

Suppose further that *A* had invented a process and had decided (1) to carry out the practice of that process in secret; and (2) to sell the product so produced. Even though, from an examination of the product, it would not be possible to discern the process by which it was made, the sale of the product for more than one year would bar anyone, including *B*, from patenting either the product or the process. Accordingly, if *A* had sold the product for a period of more than one year before *B* filed an application for a patent, *B*'s patent would be invalid, being barred by [35 U.S.C.A. § 102\(b\)](#). Though a use is hidden from view, it is nonetheless generally regarded as a public use. _ The Federal Circuit has held that while placing the product of a process in public use or on sale for more than one year prior to the filing of a patent application bars the person(s) engaged in such practice from patenting the process, even though how the product is made is not evident from analysis or examination of the product, _ such practice does not bar one not connected with such use from patenting the process. _ Accordingly, a district court held that the sale of printing plates that did not disclose the process by which they were made did not constitute an anticipation of patent claims drawn to such process by another.

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Thus, absent prior user rights, not only can a later inventor of a previously invented secret process patent the process, but he can enforce that patent against the prior inventor/secret user. Allowing a subsequent inventor to

patent a process previously invented by another, but practiced in secret, serves the public by encouraging public disclosure. Nevertheless, the patent laws of many foreign countries have long recognized prior user rights.

The so-called " First Inventor Defense Act of 1999," _ effective November 29, 1999, recognizes prior user rights, but only to the extent that making "commercial" use of a *method of doing business* _ at least one year before the effective filing date of the patent constitutes a *defense* to a charge of infringement of one or more method claims of such patent. The First Inventor Defense Act of 1999 immunizes from patent infringement liability not only continued practice of the method of doing business, but also any "end product" produced by the patented method:

Exhaustion of Right.--The sale or other disposition of a useful end product produced by a patented method, by a person entitled to assert a defense under this section with respect to that useful end result, shall exhaust the patent owner's rights under the patent to the extent such rights would have been exhausted had such sale or other disposition been made by the patent owner.

A person asserting the defense of prior user rights has the burden of establishing the defense by *clear and convincing* evidence. _ If the defense of prior user rights is unsuccessfully asserted without a reasonable

basis for its invocation, the case will be deemed "exceptional" for the purpose of awarding attorney fees.

A would not, under any of the circumstances set forth above, be entitled to a patent for his invention, as his conduct amounted to a suppression and concealment, and thus, in contemplation of law, to an abandonment of his invention and of a right to a patent therefor. _ [Section 102\(c\)](#) says that an applicant is not entitled to a patent if he has abandoned his invention.

Now consider the following situation: *X* applies for a patent, but the Examiner rejects all the claims as unpatentable over the cited prior art. *X* abandons his application. *Y* makes the very same invention independently of and subsequently to *X*. Some time after *X* abandons his application, *Y* files an application disclosing and claiming the very same invention. *Y*'s application is allowed and he receives a patent. What are the rights of *X* and *Y*? Mere abandonment of a patent application disclosing and claiming an invention does not constitute an abandonment of the underlying invention. _ Communication of an invention to the Patent & Trademark Office in the form of a filed patent application does not constitute public knowledge. _ Accordingly, *X* could still assert his right to a patent as the prior inventor. _ See Ch 10, *infra*.

Memoranda or other information kept "in-house" and never made available to anyone outside the organization whence it originated does not constitute prior art. _ Communication, in confidence, to members of an organization does not constitute "public disclosure," as an organization only acts through its agents. "In-house" information has been taken, however, as evidence of the level of ability of the average person working in the field.

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35 U.S.C.A. § 102(b) --"On sale"

The "on sale" bar and one year grace period are Congress' attempt to balance the inventor's interests with the public interest. Congress was concerned lest inventors would have insufficient time to determine whether a patent is desired following sale and to have a patent application prepared and filed.

A consummated sale is not necessary for an invention to be "on sale," within the meaning of [35 U.S.C.A. § 102\(b\)](#). _ A single offer to sell is enough to bar patentability whether or not the offer is accepted. _ Even if no delivery was made the existence of a sales contract or the signing of a purchase agreement has been held to demonstrate an "on sale" status for the invention. _ While the policies underlying the on sale bar concentrate on the inventor's attempt to exploit his invention rather than the potential purchaser's cognizance of it, the inventor's attempted exploitation must be objectively manifested as a definite sale or offer to sell the invention. A mere subjective, uncommunicated intention, however clear, is insufficient to place the invention "on sale."

The Federal Circuit has further held that reduction to practice of the invention is not necessary to trigger the running of the "on-sale" bar if a conception of the invention existed at the time that an offer to sell was made. _ The invention, however, must be more than just a mere idea.

According to the Supreme Court:

[T]he on-sale bar applies when two conditions are satisfied before the critical date. First, the product must be the subject of a commercial offer to sell. ...

Second, the invention must be ready for patenting. That condition may be satisfied in at least two ways: by proof of reduction to practice before the critical date; or by proof that prior to the critical date the inventor had prepared drawings or other descriptions of the invention that were sufficiently specific to enable a person skilled in the art to produce the invention.

In short, for purposes of triggering commencement of the one- year on-sale grace period, there is an "invention" from the time of its conception. _ According to the Federal Circuit, _ the Supreme Court's "ready-for-patenting" approach represented a departure from the Federal Circuit's own "totality of the circumstances" approach.

Under the Federal Circuit's "totality of the circumstances" approach, no single factor was regarded as being the *sine qua non* in determining whether the "on-sale" had been violated. _ Instead, the "totality of the circumstances" approach was seen as being necessitated by the policies underlying the "on sale" bar. _ These policies included:

discouraging removal of inventions from the public domain that the public reasonably has come to believe are freely available; favoring the prompt and widespread disclosure of inventions; allowing the inventor a reasonable amount of time following sales activity to determine the potential economic value of a patent; and prohibiting the inventor from commercially exploiting the invention beyond the statutorily prescribed time.

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The nuanced approach followed by the Federal Circuit was rejected by the Supreme Court in order to provide "inventors with a definite standard for determining when a patent application must be filed." _ However, the Federal Circuit has faithfully applied the ready-for-patenting approach, _ and has overturned a decision of the U.S. Court of Federal Claims that a patents for sonobuoys used to detect submarines were invalid in view of a commercial offer for sale because the offer for sale called for a "multi-piece release plate" which was not described in the patents so that in fact the sold items were not ready for patenting. [\[.1\]](#)

If a sale does not occur within the territorial limits of the United States, then it is outside the scope of [35 U.S.C.A. § 102\(b\)](#), unless substantial activity prefatory to a sale occurs in the United States. _ "Substantial activity" refers to sales activity rather than to product development. _ The "on sale" bar applies even to an offer to

sell made by a foreign national situated abroad if directed to a person situated in the United States.

An invention is deemed to be "on sale" even though production quantities were not in existence, where samples were shown or sales were made under secret military contract.

All of the circumstances surrounding the offer to sell, including the stage of development of the invention must be considered. _ If the inventor had merely a conception or was working towards development of that conception, it can be said there was not any invention which could have been placed on sale, at the time of the offer. _ Distribution of samples, in order to generate sales, is sufficient to support a finding that the invention was on sale within the meaning of [35 U.S.C.A. § 102\(b\)](#). Thus, the fact that the patent owner cannot fully meet customer demand does not mean that its product is not "on sale."

An invention is "on sale" if it is sold, whether or not the patent owner has knowledge that the sale actually includes an embodiment of the patented invention. Suppose the invention is a new botanical plant variety. Would the sale of land on which a plant of such variety is growing constitute a placing of the invention "on sale?"

Does sale of an embodiment by one joint inventor to another place the invention "on sale?" While an invention can be placed "on sale" by one co-

inventor, even if another co-inventor felt that the invention was not reduced to practice, _ co-inventors are exempt from the "on sale" bar with respect to any consideration passing between or amongst themselves, i.e., the sale of an embodiment of the invention by one co-inventor to another does not constitute a placing of the invention "on sale." _ Any "joint development exception" applies only to actual co-inventors and does not extend to entities related merely by financial or other contractual ties, as that between the inventorship entity and a commercial sponsor.

A single public use or sale or even an offer to sell may trigger the running of the time limit for filing a patent application. _ This statutory bar is absolute and operates even if filing of a patent application occurred a day after expiration of the one-year grace period. _ Use of a device under conditions of limited public access (as a sterile operating room) may nonetheless result in a holding of public use or "on sale." Filing a design in a county building and zoning department office in connection with the erection of the structure constitutes a public use of the structure. _ An invention is "on sale" even though the only sale was a "private" one. _ It is not entirely clear whether a sale that is not an arm's length transaction does constitute a "sale" within the meaning of [35 U.S.C.A. § 102\(b\)](#). The Federal Circuit has indicated that sales to a close friend did trigger the "on-sale" bar of [35 U.S.C.A. § 102\(b\)](#). _ The sale of

the product of a process constitutes a public use of the process. _ An invention is deemed to be "on sale" when an embodiment incorporating the invention exists in its

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ordinary or contemplated usable form. _ In some jurisdictions, an invention was not deemed to be "on sale" until a completed embodiment was on hand and ready to be delivered. _ Another court at least suggested that where the embodiment was tailor-made it did not have to be "on hand" to constitute a placing of the invention "on sale." _ Other courts regarded the fact that an embodiment of the invention was on hand as immaterial and instead used three criteria to determine whether an invention was "on sale": (1) whether the complete invention as claimed has been embodied in or is obvious in view of the embodiment offered for sale; (2) whether the invention has been tested sufficiently to verify that it is operable and commercially marketable, i.e., that means that the invention must have been actually reduced to practice; (3) whether the sale was primarily for profit rather than for experimental purposes.

While the mere manufacture of prototypes is neither a sale nor a placing on sale, dispatching prototypes to salesmen for the purpose of soliciting orders has been said unquestionably to amount to placing the invention "on sale." _ It has also been held that a device was not on sale before the date of invoice and first shipment, where the purchase order dated some ten months earlier was part of a transaction in which a third party attempted in

advance to tie up, on an exclusive basis, the patent owner's "patented" goods that were almost final but not on production run.

The Federal Circuit has taken the position that the claims must be functional on the critical date for the "on sale" bar to apply.

Delivery of two devices, by a patent owner who wished to test commercial size devices under actual use, to the potential customer who accepted them on the basis that it would not pay for them until the devices had yielded average life and that after usage they would be returned to manufacturer for its own purpose, was deemed not a public use. _ The mailing of the annual price list to dealers after conception of the invention and completion of a test model embodying the underlying principle, but before development of an operative prototype and newsletter to customers with a brief description of the invention and a picture mock-up, was not sufficient to support a finding that the invention was sufficiently completed for purposes of determining the critical date. _ The product for sale and the patented invention need not be exactly the same. _ While complete identity between the product sold or offered for sale and product as claimed in the patent is not required under [35 U.S.C.A. § 102\(b\)](#), _ a public use must involve the very invention patented. _ To trigger the on-sale bar as of the date of an offer to sell or of a contract to sell with delivery at a future date, the seller must intend to sell and deliver an embodiment corresponding to

the claimed invention. _ Once it is established that a use occurred, the burden is upon the inventor to demonstrate that such use was not of a functionally operative device or that such use was for experimental or testing purposes. _ The presence of an extra, unclaimed feature in what was sold would not preclude such sale from being a "sale" within the meaning of [35 U.S.C.A. § 102\(b\)](#). _ However, the failure of the allegedly anticipatory drawing to show a configuration expressed in an essential clause of a claim prevents the drawing from constituting an anticipation. _ A price quotation, if sufficiently concrete, may constitute an offer to sell. _ Possibly even an invitation to make an offer, as through a newspaper advertisement, may suffice. The existence of a sales contract or the signing of a purchase agreement prior to the critical date has been said to be sufficient to establish that the claimed subject matter was "on sale."

Distribution of a brochure which offered embodiments of the invention for sale, which invention at the time had been reduced to practice, was deemed to constitute the placing of the invention "on sale" within the meaning of [35 U.S.C.A. § 102\(b\)](#).

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Where there is no sale, a definite offer to sell is an essential requirement of the on-sale bar, but a definite offer is not made indefinite because it concerns experimental work.

Application of the "on-sale" bar requires clear and convincing evidence.

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35 U.S.C.A. § 102(b) --Comparison of 35 U.S.C.A. § 102(a) and 35 U.S.C.A. § 102(b)

Section 102(a) does not apply to the inventor _ (i.e., it does not apply to the inventorship entity that applied for the patent the novelty of which is being considered), whereas [35 U.S.C.A. § 102\(b\)](#) applies to everyone, including the inventor. Placing an invention "on sale" by anyone, including one other than the inventor, for more than one year precludes the filing of a patent application thereon whether or not the placing "on sale" informed the public how to make or use the invention.

The activities enumerated in [35 U.S.C.A. § 102\(b\)](#), that is, public use, sale, publication, or patenting more than one year prior to the date of application for patent, will bar a patent regardless of whether the applicant or another carries them out. The activities recited in [35 U.S.C.A. § 102\(a\)](#), as negating novelty, clearly do not apply to the applicant himself, as this proviso states that they must have been committed by "*others ... before the invention by the applicant for patent ...*" [Section 102\(b\)](#) draws no such distinction: patenting is barred if *anyone* (including the applicant himself) has engaged in any of the proscribed activities for a period of more than one year prior to the day on which the applicant files a patent application. The pivotal event in [35 U.S.C.A. § 102\(b\)](#) is the applicant's filing date; the

pivotal event in [35 U.S.C.A. § 102\(a\)](#) is the date of applicant's invention. For both [35 U.S.C.A. § 102\(a\)](#) and [§ 102\(b\)](#), the enumerated activities only militate against novelty for the applicable period prior to the occurrence of the pivotal event. The occurrence of the pivotal event tolls the statute in the sense that what activities transpire after the occurrence of the pivotal event are immaterial--none can thereafter negate novelty. It must be borne in mind, too, that once an invention becomes publicly known, it is impossible to restore it to secrecy--the act of disclosure is irreversible. Accordingly, though the public use be momentary, if it occurred more than one year prior to filing, the invention would lack novelty.

In [35 U.S.C.A. § 102\(a\)](#), the period is *any time* before the invention by the applicant. This is merely a more formal way of saying that the applicant must be the first inventor, that none preceded him. In [35 U.S.C.A. § 102\(b\)](#) the period is the one year prior to the date application for patent is made. This length of time is a grace period which allows the inventor to file an application for patent up to a year after he has made public his invention. During the grace period the inventor may engage in any activity without prejudicing his right to a patent. It should be noted that in some countries a grace period exists only for certain specified activities, as, for example, disclosure to a learned society or at an exhibition of a scientific nature. United States law imposes no such narrow limitations or restrictions during the

one-year grace period. The patent act which preceded the one presently in force provided for a grace period of two years.

As mentioned earlier, under [35 U.S.C.A. § 102\(a\) and \(b\)](#), in order for an invention to be barred from patent protection because of a prior use, the invention must have been previously reduced to practice.

To establish dates of conception, actual reduction to practice, and diligence, corroboration by at least one person other than the inventor(s) is necessary. Communication for the purpose of corroboration is obviously not knowledge or disclosure contemplated either by [35 U.S.C.A. § 102\(a\) or \(b\)](#). Such knowledge or disclosure is not (public) knowledge contemplated by [35 U.S.C.A. § 102\(a\)](#), since the

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person(s) to whom the information was communicated would not possess it until after it became known to the inventorship entity, for which reason alone (i.e., even apart from it not being public knowledge) the bar of [35 U.S.C.A. § 102\(a\)](#) would be inapplicable. As [35 U.S.C.A. § 102\(b\)](#) requires public use, "sale," or patenting or description in a printed publication, mere oral communication would not trigger the bar of [35 U.S.C.A. § 102\(b\)](#).

The language "patented or described in a printed publication in this or a foreign country ..." appears in both [35 U.S.C.A. § 102\(a\)](#) and [§ 102\(b\)](#). In [35 U.S.C.A. § 102\(b\)](#) "in public use or on sale in this country ..." replaces the "known or used ... in this country ..." phrase of [35 U.S.C.A. § 102\(a\)](#).

Absent a statutory bar under [35 U.S.C.A. § 102\(b\), \(c\), or \(d\)](#), an applicant's own invention cannot be "prior art" to him.

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Abandonment (35 U.S.C.A. § 102(c))

A person shall be entitled to a patent unless --

...

(c) he has abandoned the invention, or...

Section 102(c) declares that a person is not entitled to a patent if he has abandoned his invention. Abandonment does not render a successful prior use nonanticipatory. _ Thus, [35 U.S.C.A. § 102\(c\)](#) only bars the very inventor who abandoned the invention from a patent thereon. Abandonment means that the original inventor has voluntarily terminated any effort to exploit the invention. _ The statute gives no indication of the nature of the acts which would constitute an abandonment of an invention. While failure to file,

or even delay in filing, a patent application may support a conclusion of "suppression or concealment," it is not clear whether such shows abandonment. _ It must be emphasized that there is a distinction between abandoning a patent application and abandoning the underlying invention disclosed in a patent application. _ By merely abandoning a patent application, the applicant does not abandon any invention disclosed therein. Consequently, he may file another patent application which discloses and claims the very same invention that was disclosed and claimed in an earlier filed, abandoned patent application.

Actual abandonment under [35 U.S.C.A. § 102\(c\)](#) requires that the inventor *intend* to abandon the invention, and intent can be implied from the inventor's conduct with respect to the invention.

PATENT LAW BASIC

Earlier, foreign-filed patent application (35 U.S.C.A. § 102(d))

A person shall be entitled to a patent unless --

...

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

Section 102(d) precludes from patent protection in the United States an invention that was the subject of an earlier, foreign-filed patent application, which foreign filing (1) occurred more than twelve months prior to the United States filing date, and (2) matured into a patent before an application

therefor was filed in the United States, but (3) only where the inventorship entity of the foreign patent is identical with the inventorship entity that made application in the United States, or is the legal representative or assignee thereof.

Section 102(d) evolved in stages from section 25 of the Patent Act of July 8, 1870, which, inter alia, limited the term of a U.S. patent on any invention first patented in a foreign country to the earliest date of expiration of any foreign patent(s). The idea was to deny patent protection in the United States to any invention which had passed into the public domain anywhere abroad by reason of expiration of a foreign patent. To put the United States in compliance with its obligations under the Paris Convention of which the United States became a member in 1887, Congress in 1903 amended section 25 to make its prohibition applicable only to inventions for which patent applications were filed in the United States more than twelve months after the filing of application abroad.

A patent applicant must convince the Patent & Trademark Office that the invention was not patented or the subject of an inventor's certificate granted to the applicant in a foreign country on an application filed more than twelve months before the filing of the patent application in the United States.

Resources at the disposal of the patent examiner may allow the examiner to ascertain whether the applicant's invention was patented or the subject of an inventor's certificate granted to the applicant in a foreign country on an application filed more than twelve months before the filing of the domestic application. However, the patent examiner may need to supplement these resources with representations made by the applicant to determine if the invention was patented or the subject of an inventor's certificate granted to the applicant in a foreign country on an application filed more than twelve months before the filing of the application in the United States. The applicant will be motivated to make any relevant disclosure because of the duty imposed under [37 C.F.R. § 1.56](#). In litigation, such disclosure will be motivated by depositions made under oath.

The [35 U.S.C. § 102\(d\)](#) bar is effective even if the foreign patent claims less than the U.S. domestic patent. The ultimate validity or invalidity of the foreign patent is irrelevant to [35 U.S.C. § 102\(d\)](#) as a bar to a patent in the United States.

The word "patented" as used in [35 U.S.C.A. § 102\(d\)](#) has been construed to mean the date on which the patent is formally granted and not the earlier date from

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which the patent owner has a right to recover damages for infringement. _ Thus, an application for a British or Swedish design patent does not give rise to a [35 U.S.C.A. § 102\(d\)](#) claim until the right to institute proceedings for damages for its infringement begins, though the date on which damages begin to accrue is earlier.

The word "invention" as used in [35 U.S.C.A. § 102\(d\)](#) has been construed to mean the invention *disclosed* in the foreign patent rather than the invention claimed in the foreign patent.

For designs, the twelve-month period mentioned in [35 U.S.C.A. § 102\(d\)](#) is only *six* months. _ In fact, [35 U.S.C.A. § 102\(d\)](#) makes the fate of such a late United States filing dependent upon what has happened to any earlier filed foreign applications. If any foreign-filed application issues as a patent or becomes the subject of an inventor's certificate at anytime before the date of actual filing in the United States, [35 U.S.C.A. § 102\(d\)](#) declares that no United States patent may validly issue on that invention.

Interesting questions involving the interplay of United States law with the patent laws of foreign countries sometimes arise in attempting to determine at just what point an invention with an application filed in a foreign patent office becomes "patented" there within the meaning of [35 U.S.C.A. § 102\(d\)](#). It seems settled that publication is not determinative. For the purposes of [35 U.S.C. § 102\(d\)](#), the Federal Circuit has held that it is irrelevant whether the foreign patent was publicly available prior to the filing date in the United States. _ What is controlling is the point in time at which exclusive rights are deemed to commence _ or, by virtue of an amendment to [35 U.S.C.A. § 102\(d\)](#) in 1972, _ the point in time at which the application became the subject of an inventor's certificate. The amendment to

[35 U.S.C.A. § 102\(d\)](#) mentioning "inventor's certificate" was part of a legislative package that also accords an inventor's certificate a right of priority under [35 U.S.C.A. § 119](#). This legislation carried into effect a provision of the Paris Convention as revised at Stockholm on July 14, 1967, which provision was inspired by the then prevalent policy of *detente*. The legislative thinking was that according such type of application the benefits of [35 U.S.C.A. § 119](#) should carry with it the burden imposed by [35 U.S.C.A. § 102\(d\)](#), or, as one court stated, the same construction should be placed on the word "patent" in both [35 U.S.C.A. § 102\(d\)](#) and [§ 119](#).

Under [35 U.S.C.A. § 102\(d\)](#), exclusive rights are deemed to arise even though the time to enforce such right may by law be deferred until some later date.

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Prior art as of filing date (35 U.S.C.A. § 102(e))

A person shall be entitled to a patent unless --

...

(e) The invention was described in --

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a); or...

A patent applicant must convince the Patent & Trademark Office that they were the first to invent the subject matter of the patent and that their invention predates the filing date of any prior art patent reference which may be used by the patent examiner to assert that the invention was already known. Comparably, any litigant seeking to assert that a patent is not valid because it is not novel under [35 U.S.C. § 102\(e\)](#) must show that the invention was already the subject of a patent whose application date predates the filing date of the patent application in question.

The origins of [35 U.S.C. § 102\(e\)](#) may be traced to a Supreme Court case _ which held that a United States patent is effective as a reference against a subsequently filed United States patent application of another as of its filing date, and not as of the date that it issued as a patent. Thus, the date as of which the specifications of United States patents become prior art relates back to their filing dates--a date on which their disclosures were not actually available to the public. Because as of such date the content of a U.S.

patent application is not actually available to the public, such prior art has been called "secret prior art." _ Unless a U.S. patent is in interference, its effectiveness as prior art is its filing date in the United States.

"Another" as used in [35 U.S.C.A. § 102\(e\)](#) means an entity other than "the applicant(s)."

The concept underlying [35 U.S.C.A. § 102\(e\)](#) is that a complete description of an applicant's invention in an earlier filed application of another, which subsequently matures into a patent constitutes prima facie evidence that the applicant is not the first inventor of the invention in controversy. _ Even though an application and a patent have been conceived by different inventorship entities, if they share one or more persons as joint inventors, the [35 U.S.C.A. § 102\(e\)](#) exclusion for a patent granted to "another" is not necessarily satisfied. _ For example, the incidental disclosure of the joint invention of A and B in an application addressed to the sole invention of A does not constitute "prior art" to the joint invention of A and B, even

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though A, as sole inventor, has the legal status of "another" under [35 U.S.C.A. § 102\(e\)](#).

[Section 102\(e\)](#) is an exception to the general rule that prior art knowledge must be public in order to defeat another's patent rights. The Supreme Court was of the opinion that administrative delays in the Patent Office should not detract from the anticipatory effect of what was actually done.

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Applicant did not invent invention (35 U.S.C.A. § 102(f))

A person shall be entitled to a patent unless --

...

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

A patent applicant must affirm to the Patent & Trademark Office that they are the original inventor of the subject application and did not derive their invention from some other source or person. The applicant uses an oath or declaration to make this representation to the Patent & Trademark Office. Misrepresentations concerning the number of inventors, either by adding an inventor or by deleting an inventor, may be fatal to a resulting patent's validity.

Parties contesting the validity of a patent in infringement actions will examine the oath and declaration in the patent's prosecution history to determine whether inventors have been added or omitted. The Federal Circuit has held that inadvertent misrepresentation of the identity of the inventors does not render the patent invalid. On the other hand, deliberate

misrepresentation would constitute inequitable conduct before the Patent & Trademark Office and would invalidate the patent.

Examiners are required to reject applications under [35 U.S.C.A. § 102\(f\)](#) on the basis of improper inventorship. [Section 102\(f\)](#) traditionally is applicable where an applicant has derived the invention from another.

The authorship of an article, by itself, does not raise a presumption that a correspondence exists between such authorship and that of inventorship of subject matter disclosed therein. However, it is incumbent upon one asserting such lack of correspondence to provide a satisfactory showing which would lead to a reasonable contrary conclusion.

Where an applicant by oath or declaration states that he is the sole inventor of a particular invention, strong evidence is required to reach a contrary conclusion. A publication, particularly one dated more than a year after the applicant's filing date, which merely lists as literary coauthors three individuals in addition to the applicant is not sufficient evidence to establish that the applicant is not the sole inventor of claimed subject matter. While [35 U.S.C.A. § 102\(f\)](#) does not expressly include a reference to dates of invention or relative timing of the events presented by the evidence, relative dates of the events are material in deciding the issue of derivation.

The requirement that the applicant for a patent be the inventor is a characteristic of United States law that is not generally shared by other countries. The United States requires that the application be filed in the inventor's name; however, it may be assigned to a corporate entity. Many foreign countries allow a corporate entity to file the patent application in its own name. Consequently, foreign applicants may misunderstand United States law regarding naming of the actual inventors. A request under 37 C.F.R. § 148(a) is required to correct any error in naming the inventor in an application filed in the United States. Applicants claiming foreign priority under [35 U.S.C. § 119](#) should be aware that [§ 102\(f\)](#) requires the same inventive entity for both the foreign priority and the application in the United States.

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Earlier making of invention by another (35 U.S.C.A. § 102(g))

A person shall be entitled to a patent unless --

...

(g) (1) during the course of an interference conducted under section 135 or section 291, another inventor involved therein establishes, to the extent permitted in section 104, that before such person's invention thereof the invention was made by such other inventor and not abandoned, suppressed, or concealed, or (2) before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

An applicant seeking a U.S. patent must convince the Patent & Trademark Office that the subject matter of the patent application has not been reduced to practice by another party before the applicant's date of invention and that the applicant has not abandoned, suppressed, or concealed the invention. The examiner, in testing whether the applicant's claims are subject to [35 U.S.C. § 102\(g\)](#), will assert prior art against the claims to show prior reduction to practice. However, to qualify as prior art, there must be evidence that the subject matter of the prior art was actually reduced to practice.

Parties litigating the validity of a granted U.S. patent may assert [35 U.S.C. § 102\(g\)](#) as the basis for a prior invention, thus rendering the disputed patent invalid. An allegation under [35 U.S.C. § 102\(g\)](#) in a civil action requires that the party alleging invalidity demonstrate that the patented subject matter had been invented and reduced to practice prior to the filing date of patent with no abandonment, suppression, or concealment of the invention.

[Section 102\(g\)](#) negates novelty where the same invention was made earlier by another inventorship entity in the United States and such earlier inventorship entity is deemed not to have abandoned, suppressed, or concealed

the invention. [Section 102\(g\)](#) does not require that there have been any public knowledge of the earlier invention.

PIC 1

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TABULAR OR GRAPHIC MATERIAL SET AT THIS POINT IS NOT DISPLAYABLE

[Section 102\(g\)](#) is the basis for (1) an inter partes proceeding, known as an interference, to determine priority of invention; it may also form the basis of (2) a defense in a suit for patent infringement. [Section 102\(g\)](#) has been applied in (3) ex parte patent prosecution in the following manner: The Patent & Trademark Office rejected an applicant for patent on the basis of an earlier filed U.S. patent specification as prior art. While the filing date of the patent specification relied upon as prior art was earlier than the applicant's U.S. filing date the applicant proffered an affidavit under [37 C.F.R. § 1.131](#) to antedate the patent specification as a prior art reference. The position of the Patent & Trademark Office, which was upheld by the Court of Customs & Patent Appeals, was that though the affidavit had overcome the patent reference as prior art under [35 U.S.C.A. § 102\(e\)](#) it was insufficient to overcome the patent reference under [35 U.S.C.A. § 102\(g\)](#). This is because

the invention disclosed in the patent specification must have been made at a point in time prior to its filing date.

[Section 102\(g\)](#) is the basis for a proceeding known as "an interference." An interference is used to determine who the first to invent as among the pertinent parties. The need for interference proceedings comes about because the United States, unlike all other countries, has a first-to-invent rather than a first-to-file patent system. An interference may involve (a) two or more pending patent applications naming different inventors; or, (b) one or more pending applications together with one or more unexpired patents naming different inventors. Under [35 U.S.C. § 102\(g\)](#), the first party to reduce an invention to practice will be the sole party to obtain a patent unless another party was the first to conceive and reduce the invention to practice without abandonment, suppression, or concealment.

Challenges to patents made under [35 U.S.C. § 102\(g\)](#) are based on prior art showing the invention by another who did not abandon, suppress, or conceal the invention. Under the no abandonment, suppression, or concealment requirement, the de facto last inventor who did not abandon, suppress, or conceal his invention is treated for legal purposes as the first-to-invent, while the de facto first inventor who abandoned, suppressed, or concealed his invention is treated as the last-to-invent. The de facto first inventor, by his suppression or concealment, loses the right to rely on his actual date of

invention. The Federal Circuit has held that an invention, even though completed, is deemed abandoned, suppressed, or concealed if, within a reasonable time after completion, no steps were taken to make the invention publicly known. The following inactions have been held to constitute abandonment, suppression, or concealment of the invention: failure to file a patent application, failure to describe the invention in a publicly disseminated document, or failure to use the invention publicly.

To reject in ex parte practice under [35 U.S.C.A. § 102\(g\)](#), the evidence of prior invention by another must be clear and conclusive. The invention by another, to be prior art under [35 U.S.C.A. § 102\(g\)](#), must be completed, i.e., reduced to practice; mere conception is simply insufficient. The Federal Circuit has also held that parties alleging invalidity under [35 U.S.C. § 102\(g\)](#) will not succeed unless they can show that the challenging inventor recognized and appreciated the feature of his invention that corresponds to the patented invention.

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Late claiming and intervening rights--Statutory time limitations on claiming

Is the filing date of the application effective to protect all patentable subject matter disclosed in the application regardless of when claims addressed thereto are first introduced in the case? Stated in other words--At what point in time is the applicant or patent owner barred from obtaining claims addressed to otherwise patentable subject matter disclosed in the application?

In three situations, the right of a patent owner to exclude others is subject, by virtue of *explicit* statutory language, to the intervening rights of third parties. Intervening rights of third parties can arise by virtue of claims first introduced after a patent has issued, either through (1) reissue or (2) reexamination. Another statutory provision provides explicitly for intervening rights in regard to a patent that has been restored after having lapsed for nontimely payment of a required maintenance fee.

The only other provision in the Patent Act that expressly places a time limitation on presenting a claim relates to patent interferences. It imposes a one-year limitation after a patent issues in which a claim that is the same or substantially the same as a claim in the issued patent may be first introduced in a patent application.

Late claiming and intervening rights--Nonstatutory doctrine of late claiming

Are there circumstances other than those explicitly covered by statute which can engender intervening rights by the public? In other words--Is there extant a viable nonstatutory doctrine of late claiming?

The principal basis on which it can be argued that there is extant a nonstatutory doctrine of late claiming is a Supreme Court case holding patent claims invalid which were not first presented until subsequent to the expiration of two years after a device embodying such claims was in public use (the statutory nonnegating novelty period of public use at the time being two years), accompanied by comments suggesting that the basis for the Court's holding was prior public use:

We think the conclusion is inescapable that there was public use, or sale, of devices embodying the asserted invention more than two years before it was first presented to the Patent Office.

However, the claims held invalid were clearly not fully supported by the original disclosure, the specification having been amended after filing to provide sufficient support for the claims that ultimately were held invalid.

Thus, there is no doubt that the claims were invalid because they relied for support on "new matter."

Lower courts, including the Federal Circuit, with almost unanimity have interpreted the Supreme Court precedent as merely restating the statutory prohibition against "new matter."

Late claiming and intervening rights--Intervening rights

Circumstances surrounding reissue, reexamination or restoration of a patent that temporarily lapsed for nontimely payment of a required maintenance fee can give rise to third party intervening rights which are explicitly provided for by statute. In regard to reissues, the relevant statute is [35 U.S.C.A. § 252](#).

The second paragraph of [35 U.S.C.A. § 252](#) has been said to provide two distinct defenses under the rubric "intervening rights": - (1) *absolute* intervening rights, which arise under the first sentence, absolutely protect the right of an infringer of a reissued patent to use or sell specific things which were actually made, purchased or used before the grant of the reissue patent; and (2) *equitable* intervening rights, established under the second sentence of the second paragraph of [35 U.S.C.A. § 252](#).

Equitable intervening rights are an affirmative defense, which is deemed waived if not pleaded or at least raised at trial during the *liability* phase of the case.

Absolute intervening rights are not deemed waived even where

this defense and/or the defense of equitable intervening rights were not raised until after the issue of liability was determined.

Utility

Courts have stated that the three requirements for patentability are novelty, utility, and nonobviousness, which are taken from [35 U.S.C.A. §§ 101, 102, and 103](#) respectively. For plants, however, the requirement for distinctiveness replaces utility and the additional requirement of asexual reproduction is introduced. _ For designs, the requirement of ornamentality replaces utility.

Utility as a requisite of patentability

If novelty is the sine qua non of invention, then utility is its raison d'être. Indeed, the Constitution speaks specifically not of novelty or invention, but rather of the *useful arts*, inventors, and their discoveries.

As will be presently demonstrated, the words "useful" and "utility" encompass a spectrum of concepts. And while, from the very first patent act, protection has been promised in regard to useful inventions, no statute has gone much beyond these words in defining the nature of the showing required. In fact, practically the only mention made of utility has been at the outset of each act, and there in general language, which essentially paraphrases the constitutional provision.

The question of utility is considered a question of fact.

"Useful" versus "how to use"

In the present act, the word "useful" appears in [35 U.S.C.A. § 101](#):

Whoever invents or discovers any new and *useful* process, machine, manufacture, or composition of matter, or any new and *useful* improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title (emphasis added).

The first paragraph of [35 U.S.C.A. § 112](#) further states:

The specification shall contain a written description of the invention, and of the manner and process of making and *using* it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and *use* the same. (emphasis added).

[Section 112](#) incorporates [35 U.S.C.A. § 101](#). _ The Patent and Trademark Office's "Examination Guidelines for the Utility Requirement" set out the procedures to be used by Examiners to assess compliance with the utility requirements of [35 U.S.C.A. § 101](#) and [35 U.S.C.A. § 112](#), first paragraph.

In order to satisfy the utility requirement of [35 U.S.C.A. § 101](#), a significant use for the invention claimed must exist. _ Moreover, at least in regard to drugs, "useful"

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as used in [35 U.S.C.A. § 101](#) has been construed to include a certain minimum level of *safety* as well as efficacy. _ However, in examining an application, the Patent & Trademark Office will focus almost exclusively on efficacy and will almost always defer to an assessment made by the Food & Drug Administration regarding safety.

Although the utility requirement of [35 U.S.C.A. § 112](#) has sometimes been characterized as the "how-to-use requirement," the Federal Circuit has emphasized that this requirement is fulfilled if the specification enables one skilled in the art on how to use the invention without undue experimentation. _ Thus, in evaluating whether there has been compliance with the utility

requirement of [35 U.S.C.A. § 112](#), what those skilled in the relevant art already knew or were presumed to have known from the disclosures available to them before the filing date of the specification under consideration must be evaluated. _ Absence of asserted utility may lead to a rejection under either [35 U.S.C.A. § 101](#) or [35 U.S.C.A. § 112](#). The Federal Circuit has upheld the Patent & Trademark Office's rejection of the applicant's claims based on both lack of utility and lack of enablement in the following terms:

because it is for the invention as claimed that enablement must clearly exist, and because the impossible cannot be enabled, a claim containing a limitation impossible to meet may be held invalid under [§ 112](#). Moreover, when a claim requires a means for accomplishing an unattainable result, the claimed invention must be considered inoperative as claimed and the claim must be held invalid under either [§ 101](#) or [§ 112 of 35 U.S.C.](#)

The foregoing two provisos are the only ones of the present act which make mention of utility. Nevertheless, courts have almost uniformly regarded an exhibition of utility--along with novelty and unobviousness--to be the affirmative requisites of every valid patent. It is submitted, however, that the inclusion of the word "useful" in the patent statute is a direct carry-over

from the broad brush language employed by the framers of the Constitution, who associated usefulness with inventions more as a conviction than as a condition.

Thus, in a celebrated opinion, Justice Story couched the utility requirement in the form of a negative rule:

By useful invention, in the statute, is meant such a one as may be applied to some beneficial use in society, in contradistinction to an invention, which is injurious to the morals, the health, or the good order of society. It is not necessary to establish, that the invention is of such general utility, as to supercede all other inventions now in practice to accomplish the same purpose. It is sufficient, that it has no obnoxious or mischievous tendency, that it may be applied to practical uses, and that so far as it is applied, it is salutary. If its practical utility be very limited, it will follow that it will be of little profit to the inventor; and if it be trifling, it will sink into utter neglect. The law, however, does not look to the degree of utility; it simply requires, that it shall be capable of use, and that the use is such as sound morals and policy do not discountenance or prohibit.

Justice Story's discourse touches upon the shades of meaning implicit in the word "useful." At one extreme, useful means merely operative, that the invention is capable of some beneficial use. This is essentially the standard

which Justice Story felt the statute imposed. It is the standard which has been consistently applied by the overwhelming majority of American courts. Occasionally, however, a court may suggest that an "advance" over the prior art _ or

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a "step forward" is necessary. "Technical progress," a specific requirement of *former* West German law, is not a requisite of patentability in the United States. It is not incumbent on an applicant to establish the existence of "advantages" or "advantageous results" over the prior art with respect to admittedly novel subject matter, since there is no such requirement in the statutes. Advancement in the art is, however, an indication of nonobviousness.

Operability

A patented invention to have utility must set forth and claim an invention which is operative for a purpose set forth in the patent. _ Operativeness or operability is a requirement implicit within the rubric both of [35 U.S.C.A. § 101](#) _ and of 35 U.S.C.A. § 112.2 _ A patent claim which in fact is inoperative for the purpose alleged in the specification has been deemed not to comply with [35 U.S.C.A. § 112](#), *second paragraph*. _ However, to satisfy the utility requirement, the claimed invention need not be unerringly effective in its operation; all that is required is usefulness in some instances.

The distinction between the *operative* and the *operational* should be noted. The patentable utility requirement is fully satisfied if the invention as claimed is merely *operative*, i.e., if it functions for its intended purpose. While there is no requirement that the invention be *operational* (in the sense of the existence of a marketable embodiment), commercial success has been taken as compelling evidence of operability--even in the face of the inventor's assertion of its inoperability.

Whether a patented device or process is operable is an inquiry different from whether a particular claim is enabled by the specification.

That an invention possesses "potencies and values more important than the uses that were immediately apparent" _ does not adversely affect patentability. It is immaterial that additional applications are recognized after the patent application thereon is filed. It has been said that the inventor of an apparatus is entitled to the benefit of every use of the patented device. _ An inventor is not charged with a prophetic understanding of the entire field of its usefulness. _ A claim need not recite every function of a working device, but rather may specify improvements in one function without reciting the entire machine with its many functions. _ There is no obligation upon the inventor to catalog all of the function's properties, or uses of his invention.

A claim which covers inoperative as well as operative subject matter is invalid. Claims which include a substantial measure of inoperability are fairly rejected under [35 U.S.C.A. § 112](#). _ A showing that it is *possible* to operate within the patentee's disclosure without obtaining his results is not sufficient to overcome the strong presumption that the process

of a patent if used by one skilled in the art will produce results alleged by the patentee. _ A distinction is recognized between an incorrect idea or theory: (1) that is merely mentioned in the description of the invention that precedes the claims; and (2) expression of such in a claim. _ While a patent covering a meritorious invention should not be struck down because the patentee has misconceived the scientific principle of his invention, the error cannot be overlooked when the misconception is embodied in a claim of the patent. _ When an incorrect or questionable theory of operation is included in a patent claim, that claim is invalid. _ When a claim requires a means for accomplishing an unattainable result, the claimed invention must be considered inoperative as claimed and the claim must be held invalid. _ The mere possibility that a claim and/or the supporting disclosure may encompass inoperative embodiments has been deemed an insufficient basis for rejecting such a claim.

It has been held that the inability of claimed structure to accomplish one or more of the disclosed objects set out in the specification does not vitiate the patent, so long as what is claimed is capable of accomplishing at least one of the recited

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objects. _ The defense of non-utility cannot be sustained without proof of total incapacity.

To make out a prima facie case of lack of utility, the Patent & Trademark Office must do more than merely question operability--it must set forth *factual*

reasons that would lead one skilled in the art to question the objective truth of the statement of operability. _ It is only after the Patent & Trademark Office has presented evidence establishing that one skilled in the art would reasonably doubt the asserted utility that the burden shifts to the applicant to provide a rebuttal.

Where the Patent & Trademark Office presents substantial evidence to indicate that those skilled in the relevant art would reasonably doubt the operability of an invention, the applicant must submit persuasive objective evidence to rebut that doubt. _ The Federal Circuit has held that the Patent & Trademark Office met its burden by providing several references to show that an applicant's claimed results in the area of "cold fusion" were irreproducible, thus providing substantial evidence that those skilled in the art would "reasonably doubt" the asserted utility and operability of the claimed invention.

An inventor need not carry his invention to the highest degree of perfection to be entitled to a patent therefor.

Instability in and of itself apparently does not negate utility.

PATENT LAW BASIC

Immoral or illegal

An inventor is free to choose any field which may strike his fancy. Even toys and games, at least in the sense of patent law, are deemed useful. _ Games have long been a favorite and fruitful field for invention, one of the most valuable patents ever issued being that on the game Monopoly.

To the general rule that most things useful, novel, and nonobvious are eligible for patent protection, courts in the past carved out an exception in regard to those inventions which have been deemed to be immoral and/or illegal. The source of this view in American patent jurisprudence can be traced to a decision by Justice Story, where he stated that inventions "injurious to the well-being, good policy, or sound morals of society" _ are ineligible for patent protection. Justice Story listed "a new invention to poison people, or to promote debauchery, or to facilitate private assassination" _ as

examples of such unpatentable inventions. An invention incapable of a legal use lacks utility. _ What is immoral varies from generation to generation. Accordingly, it should be borne in mind that cases denying the protection of the law on the ground of immorality are not of this generation. _ Inventions capable of some legal and moral use have generally been enforceable. _ This certainly includes patents covering an artificial or simulated product. _ The U.S. Patent & Trademark Office has declined to deny a patent on an invention because it is useful solely in gambling. _ A patent covering a radar signal detector was held not lacking in patentable utility even though the court recognized that the invention had as its primary and almost exclusive utility circumvention of law enforcement.

Congress has not given the Patent & Trademark Office responsibility for protecting the public by refusing a patent for any device which may be dangerous to use. Safety is not a criterion for patentability.

In *Juicy Whip v. Orange Bang*, _ the Federal Circuit reversed and remanded a district court's determination that a patented device lacked utility because one of its purposes was to deceive consumers. The device in question mixed syrup and water as the beverages were being dispensed while making it appear that these beverages were being drawn from a reservoir of already mixed liquid. The aim of the invention was to preserve the consumer appeal of the beverage reservoir while eliminating its limited capacity and susceptibility to

bacterial contamination. After noting that "the principle that inventions are invalid if they are principally designed to serve immoral or illegal purposes has not been applied broadly in recent years," _ the Circuit Court went on to conclude that the utility requirement of [35 U.S.C.A. § 101](#) was not created by Congress as "a directive to the Patent and Trademark Office or the courts to serve as arbiters of deceptive trade practices" _ -- duties that Congress had delegated to others.

In light of the Federal Circuit's decision in *Juicy Whip v. Orange Bang*, it would seem that immorality or illegality is no longer a bar to an invention's eligibility for a U.S. patent. It should be noted that this state of affairs contrasts sharply with the approach of Article 53(a) of the European Patent Convention, which mandates that patents be refused where the inventions that they would protect violate public order or morality.

Standard for mechanical-type inventions

The utility of most mechanical inventions is apparent from an examination of their structures. Consequently, their utility (or, more precisely, their operativeness) is presumed. _ An exception, perhaps an obvious one, exists in regard to perpetual motion machines. Here proof may be required. _ The Federal Circuit has found process claims in an issued patent inoperable--and hence invalid--on the ground that they violate the principle of conservation of mass. _ Apparently the burden is not insurmountable. _ The Patent & Trademark Office has been criticized in a learned scientific journal for having issued a patent on a device with claims that "would challenge some basic notions of modern physics if they worked as advertised." _ The Patent & Trademark Office is entitled to reject an application for insufficient proof of utility when a device by its nature occasions reasonable skepticism as to its operativeness under [35 U.S.C.A. § 101](#). _ A well known example of such a rejection occurred in a case where the inventor tried unsuccessfully to claim an "Energy Generation System Having Higher Energy Output than Input." _ While a working model may be required for the purpose of testing to overcome such skepticism, such testing may not include destruction or even dismantling of a proffered device. Nevertheless, it is customary to recite in patent specifications a number of objects which the invention can accomplish or advantages or utilities which it possesses.

Evidence of a demonstrable difference in effect as a result of treatment with a claimed apparatus or by a claimed process may be necessary to satisfy the utility requirement.

Standard for chemical-type inventions

The utility requirement with respect to inventions relating to compositions of matter and to processes of making the same is not quite so liberal. Some practical utility for the product of a chemical process must either be apparent to one skilled in the art or be disclosed in the specification for a patent application with claims directed to such process to satisfy the utility requirement. _ This rule applies a fortiori to product claims. _ It also applies in regard to the right of foreign priority under [35 U.S.C.A. § 119](#), the benefit of an earlier foreign filing date not being accorded where the foreign application lacks a teaching of how to use a product claim. _ By "practical utility" is meant a specific, chemical utility. The requirement that a specific utility must be disclosed is directed to one skilled in the art, so that a specific utility need not be expressly stated in the specification if such would be obvious to a person skilled in the art.

Not only must the requisite utility exist, but this must either be disclosed in the specification or be predictable. The Supreme Court found as insufficient the fact that another compound of the same class to which that under consideration belonged was known to possess tumor inhibiting properties. _ Where an allegation of a specific utility is not mentioned in the

specification and such is unknown to the prior art, the Patent & Trademark Office may refuse to consider evidence thereof, on the ground that it would constitute new matter.

Where an allegation of a specific utility has been made in the specification, an applicant may submit evidence to prove such statements.

Where a specification contains a description of utility which corresponds in scope to the subject matter sought to be patented, it must be taken as sufficient to satisfy the utility requirement of [35 U.S.C.A. § 101](#) for the entire claimed subject matter, unless there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope. _ While the scope of a claim and the number of compounds included within the scope are not irrelevant to a [35 U.S.C.A. § 101](#) and/or [35 U.S.C.A. § 112](#), first paragraph analysis, _ a claim is not unpatentable under [35 U.S.C.A. § 101](#) or [35 U.S.C.A. § 112](#), first paragraph, merely because compounds within its scope have different reactivities.

Where extravagant or incredible allegations of utility have been made in the specification, the applicant may be required to submit proof thereof. _ The Patent & Trademark Office has the initial burden of challenging a patent applicant's presumptively correct assertion of utility. If the Office provides evidence showing that one of ordinary skill in the art would reasonably doubt the asserted utility, as by providing references indicating that those skilled

in the art would "reasonably doubt" the asserted utility and operability, the burden shifts to the applicant to submit evidence sufficient to convince such a person of the invention's asserted utility. _ A method of vaccinating humans or animals to achieve immune protection against pathogenic *E. coli* was deemed sufficiently unusual in 1987 to justify an Examiner's requiring substantiating evidence. _ The mere fact that the art of cancer chemotherapy is highly unpredictable places the burden on applicants to provide a basis for believing speculative statements that applicants place in the specification in the form of positive assertions. _ Noting that contemporary knowledge in the art of cancer therapy has far advanced since the days when any statement of utility in treating cancer was per se "incredible," a panel

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of the Patent & Trademark Office Board of Patent Appeals & Interferences has held that asserted improvement in the known effectiveness of interferon in the treatment of certain neoplastic conditions by substantially simultaneous administration of another compound which inhibits a substance known to denature interferon does not amount to an incredible statement of utility. _ While incredible allegations of utility must be supported by evidence, proof of absolute safety or effectiveness is not necessary to satisfy the utility requirement. _ Amelioration of the symptoms or even cure of cancer is no longer considered to be "incredible." _ Whatever might have been the case earlier in the 20th Century, in 1992, the notion that a chemical compound might be useful in treating cancer was not inherently incredible. _ However, a cure for both the symptoms and the cause of arthritis involving merely placing a solution of lactic acid and water on one's skin is, on its face, "incredible." _ Nonetheless, decisional law would seem to indicate that such utility is sufficiently unusual to justify an examiner's requiring substantiating evidence.

Whether or not testing of an invention is required to establish utility, and if so, the nature and extent of such testing, depends on the facts of the particular case. No a priori rules can be formulated to meet the exigencies of each case.

Accompanying the Guidelines for Examination of Biotechnology Applications is a narrative "Overview of Legal Precedent Governing the Utility Requirement." This Overview contains a section on *in vitro* and animal testing, which states:

Data generated using in vitro assays and testing in animals almost invariably will be sufficient to support an asserted therapeutic or pharmacological utility. In no case has a Federal court required an applicant to support an asserted utility with data from human clinical trials.

If an applicant provides data from in vitro and animal tests to support an asserted utility, the Examiner should determine if the tests, including the test parameters and choice of animal, would be viewed by one skilled in the art as being reasonably predictive of the asserted utility. If so, and the data supplied is consistent with the asserted utility, the Examiner should not maintain a rejection under [§ 101](#). This approach is to be followed not only in cases where there are art-recognized animal models for assessing utility in human disease and treatment, but also where no such validation of a specific test has been performed. Thus, if one skilled in the art would accept the animal tests as being reasonably predictive of utility in humans, they should be considered sufficient to support the credibility of the asserted utility. Examiners should be careful not to find evidence unpersuasive simply because no animal model for the human disease condition had been established prior to the filing of the application.

The Patent & Trademark Office had previously been criticized for its reluctance to accept *in vitro* and animal testing as proof of utility for an invention related to treatment of human disorders.

By virtue of the Federal Food, Drug and Cosmetic Act, the Federal Food & Drug Administration requires that it be demonstrated to its satisfaction that all new drugs, before the same can be marketed, are safe and effective for their intended uses. So as not to prejudice the results, the testing protocol

required by the Federal Food & Drug Administration is generally "double blind," i.e., neither the persons administering the drug nor the persons receiving the drug knows exactly what is being administered. It may be the drug, another drug that is believed the equivalent thereof, or a placebo. In single-blind tests, it is only the

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patient that is unaware of the exact nature of what is being administered. _ Double-blind tests are not necessary to establish the utility required by the Patent Act. _ The Court of Customs & Patent Appeals rejected attempts by the Patent & Trademark Office to equate the utility requirement of the Patent Act with the safety and effectiveness standard of the Federal Food, Drug and Cosmetic Act. _ However, a disclosure that lacks any information as to the host, the dosage level, mode or routes of administration or how to prepare the composition for administration would not satisfy the enablement requirement of [35 U.S.C.A. § 112](#), first paragraph.

The Federal Food & Drug Administration standard of effectiveness is the marketability standard and not the invention standard. _ The drug Thalidomide, while patented in the United States, _ never received marketing approval from the Food & Drug Administration.

If human use is not alleged, it need not be proved, veterinary utility being sufficient _ even where the animals on which the tests are conducted are not generally used either for food or as pets. Substantiating evidence may

be in the form of animal tests that constitute recognized screening procedures with clear relevance to utility in humans. _ In vitro experiments may suffice to establish patentable utility provided the record demonstrates a correlation between such in vitro experiments and a practical utility. _ When an applicant for a patent has alleged in his patent application that a new and unobvious chemical compound exhibits some useful pharmacological property and when this property has been established by statistically significant tests with "standard experimental animals," sufficient statutory utility for the compounds has been presented.

A certain minimum level of safety must be demonstrated even to satisfy the utility requirement of [35 U.S.C.A. § 101](#). Basically this standard is that there be no harmful side effects when the claimed composition is properly used. _ Proof of safety is required by the Patent & Trademark Office only in those cases where adequate reasons can be advanced by the Examiner for believing that the drug is unsafe, and the evidence submitted will be accepted if it establishes *a reasonable probability* of safety. _ The documentation required by the Food & Drug Administration would seem to far exceed that necessary to establish utility. The Patent & Trademark Office may request information on the conduct of research relating to drugs, with respect to patent applications, from the Secretary of Health & Human Services.

Nonobviousness

The formulation of determinations of obviousness with prior art references is presented in Ch 15, *infra*.

Invention, by its very nature, defies positive definition, _ for if invention could be precisely defined, there would be no such thing as invention! This paradox, no doubt, has lent a certain aura, if not mystery, to the subject. The reality of invention and its contributions to the amelioration of our civilization, however, are everywhere evident.

Once an invention has been disclosed, little mystery about it remains. There has not been an invention yet made which defies a law of nature. Humans do not create from nothing; they must employ the principles of engineering and physics and their experience. _ It cannot be the law that the only inventions patentable are those that cannot be explained by any known principles of engineering or physics. _ As courts have noted, _ all machines function according to the laws of physics. Even second-rate scientists can formulate accurate theoretical explanations, in terms of known and accepted physical laws, of why an invention works, once its efficacy has been demonstrated. There is a distinction between making and doing something, on one hand, and offering an explanation therefor, on the other. The trick to making an invention is to so combine existing structures and/or operations as to yield a new and different effect or result.

Although it is not possible to define, in positive terms, all of the elements sufficient to constitute an invention, it is possible to specify some that are necessary and indispensable therefor. Prominent among these are novelty and utility. The law, however, has segregated novelty and utility from whatever else of substance it deems necessary to constitute a patentable invention and has elevated this something else to the status and dignity of a discrete and independent condition of patentability, to which the confusing title "invention" had been applied, and which has been characterized as the "sine qua non of patentability." _ Nonobviousness is also a requirement for design patents, and is not to be equated with the "distinctiveness" of the design.

The rationale for the imposition of this tertian quid is that all that is novel and useful may not be worthy of patent protection. The difference between what is old and what is merely technically or literally new may be so slight and trivial as to be readily, and perhaps even spontaneously, deducible upon demand from what is old and already known. There is a distinction between being different merely for the sake of being different and being different for a purpose.

While novelty and utility are requirements of patentability separate and apart from invention, these three qualities so overlap, and are so interrelated, as to be incapable of being entirely segregated from one another. Justice Sandra Day O'Connor, writing for a unanimous Supreme Court has stated that "[t]aken together, the novelty and nonobviousness requirements express a congressional determination that the purposes behind the Patent Clause are best served by free competition and exploitation of either that which is already available to the public or that which may be readily discerned from publicly available material." _ Lack of novelty has been characterized as the epitome _ or ultimate _ in obviousness. Anticipation and obviousness are related, obviousness being a broader, more general condition of patentability. _ Obviousness has been said to follow ipso facto from anticipation, although they are separate and distinct concepts. _ A patent claim that is invalid due to anticipation under [35 U.S.C.A. § 102](#) would also be invalid due to obviousness

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under [35 U.S.C.A. § 103](#). _ Indeed, some have suggested equating invention with the degree or quantum of novelty required for patentability. _ There is no authority in [35 U.S.C.A. § 103](#) for treating "improvement" inventions, or inventions differing from the prior art only "in matter of degree," any differently from other types of inventions. _ In the analysis of obviousness, it is the magnitude of such differences rather than their

existence which dictates the result. _ While *how different from the prior art that which is novel must be to be patentable* is definitely a factor in determining whether invention is present, the degree of difference is not to be measured by structure alone. Caution should be used in applying such a yardstick, for experience has taught that many of the very greatest advances differed structurally only very slightly from the prior art. Edison's incandescent lamp, _ the Wright brothers' airplane, _ And Bell's telephone, _ are but a few of the many, many illustrations of this phenomenon. Laws, be they of physical or judicial origin, are but generalizations drawn from empirical observations and intuitive notions. To be acceptable, they must conform to these realities. Accordingly, the doctrine of small structural or physical change evolved. It was best articulated by Justice Learned Hand in the following words:

Very slight structural changes may be enough to support a patent, when they presuppose a use not discoverable without inventive imagination. We are to judge such devices, not by the mere innovation in their former material, but by the purpose which dictated them and discovered their function.

Claims drawn to an alloy which call for the inclusion of a small but specific amount of a metallic element in an otherwise old composition whereby there is a substantial improvement in one property without sacrifice of other desirable alloy properties were held patentable. _ The doctrine of small structural change has been held to be inapplicable in regard to the use of commonplace materials applied in a commonplace, long-established manner.

The doctrine of small structural change is, nevertheless, still viable _ and must continue to be applied if the law is to conform both to experience and to the intuitively accepted standard of what constitutes invention. A perhaps dramatic illustration of this doctrine is the case in which the Supreme Court found invention merely in a change in the angle of inclination of a prior art structure. _ That case involved an improvement in the art of paper-making machines directed toward increasing the life span of the endless belt of wire mesh on which the paper is formed. A district court found unobvious another improvement in paper-making machines which had the same object. In reaching its conclusion, the court found it unnecessary to determine whether or not the invention resulted from a combination of old elements. The invention was based on the discovery that employing strands possessing an undulant shape in the wire mesh belt significantly enhanced the wear and stretch qualities of the belt. Belts designed accordingly had a significantly lengthened life span and had been widely adopted in the industry. This the court found constituted a

synergistic result. _ It is important to bear in mind, however, that there must be some physical, i.e., structural difference between the prior art and what is claimed. It is not invention merely to perceive that a method that others discovered had qualities that they failed to detect.

The proposition that perceiving a solution does not entail the recognition of a problem is unacceptable. The failure of others to discern the concept in the prior art is not preclusive evidence of nonobviousness. If it were, the distinction between novelty and nonobviousness would be blurred.

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Expressed in more direct, albeit homelier, terms: *It is not the difference, but the difference the difference makes that counts.* This formulation suggests an interrelation between the elements of novelty ("the difference") and utility ("the difference the difference makes"). It indicates, moreover, that "the difference" is to be placed in the perspective of the prior art. While suggesting that "the difference" must be significant, the foregoing illustrations and abstractions drawn therefrom offer no concrete clues as to the way or ways in which "the difference" must be significant. This is the point at which invention eludes more precise analysis in positive terms. What it takes to make that which is both new and useful as an "invention" has been characterized by some courts as that "impalpable something."

Plenary review of patent cases by the Supreme Court has been infrequent since such review was made a matter of the Court's discretion.

Nevertheless, since the mid-1930s, on those occasions when the Supreme Court has considered patent issues on the merits, it has taken the opportunity to suggest that patentable "invention" is not an easy standard to satisfy, with such comments as "He who seeks to build a better mousetrap today has a long path to tread before reaching the Patent Office." _ Ironically, thereafter, the Eighth Circuit which had never before held a patent valid since enactment of the Patent Act of 1952, held valid and infringed a patent on an animal trap!

The negative rules of invention

Although the word "invention," and the concept underlying it, cannot be defined in such a manner as to afford any substantial aid in determining whether a particular device involves an exercise of the inventive faculty or not, there gradually emerged from the myriad of court decisions grappling with the requirement of invention, a number of recurring situations in which the baffling quality of invention was rather consistently found to be wanting. If a contribution could be characterized as corresponding to any of these situations it was prima facie deemed to lack invention. Thus, invention came to be defined in negative terms, that is, in terms of what it was not. The set of judicial pronouncements on the subject was often referred to as the "negative rules of invention." A list of the more significant of these negative rules follows:

- (1) The exercise of ordinary mechanical skill does not amount to invention.
- (2) Mere perfection of workmanship does not amount to invention.
- (3) That which is logically deducible from the teachings of the prior art does not amount to invention.

- (4) The mere carrying forward of an old idea does not amount to invention.
- (5) That which would have been obvious to persons skilled in the art to which the subject matter relates does not amount to invention.
- (6) The substitution of a known equivalent for one of the elements of an old structure does not amount to invention.
- (7) Mere enlargement or change in size, degree, or form does not amount to invention.
- (8) Unification or multiplication of parts does not amount to invention.
- (9) Omission of an element and its attendant function, unless the omission produces a new result, does not amount to invention.
- (10) The application of an old process or machine to an analogous subject, with no change in the manner of application, and no new result, does not amount to invention.
- (11) Merely carrying out a prior art process in a continuous manner is not invention.
- (12) Absent a new or different result, a combination of old elements is not invention.
- (13) The mere substitution of one material for another is not invention.

- (14) One may not patent as an invention the making into one part of what formerly was in two.

The negative rules of invention were never invoked uniformly or consistently by the courts. There was no statute mandating their application. One difficulty in applying them to concrete situations lay in casting a contribution in terms of such indicia as "a change in degree," "a new result," etc. What constitutes ordinary skill in a given art? What might be obvious to one person, might be unobvious to another. Moreover, from time to time the courts invoked even more elusive and abstruse criteria. For example, on occasion, judges, including Justices of the Supreme Court, have decried the granting of patents for mere "gadgets." What is a gadget? There was a time when many people regarded the telephone and phonograph as gadgets; perhaps some still do!

In regard to the "invention" test Judge Learned Hand once observed:

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When all is said, we are called upon imaginatively to project this act of discovery against a hypostatized average practitioner, acquainted with all that has been published and all that has been publicly sold. If there be an issue more troublesome, or more apt for litigation than this, we are not aware of it.

Some courts used the negative rules only as rough rules for guidance, allowing rebuttal evidence.

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The nonobviousness standard of 35 U.S.C.A. § 103

In an attempt to foster the establishment of at least a modicum of certainty and consistency, the following provision was incorporated into the 1952 Patent Act:

[35 U.S.C.A. § 103](#). *Conditions for patentability; non-obvious subject matter.*

(a) 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 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 negated by the manner in which the invention was made.

(b)(1) Notwithstanding subsection (a), and upon timely election by the applicant for patent to proceed under this subsection, a biotechnological process using or resulting in a composition of matter that is novel under section 102 and nonobvious under subsection (a) of this section shall be considered nonobvious if--(A) claims to the process and the composition of matter are contained in either the same application for patent or in separate applications having the same effective filing date; and (B) the composition of matter, and the process at the time it was invented, were owned by the same person or subject to an obligation of assignment to the same person. (2) A patent issued on a process under paragraph (1)--(A) shall also contain the claims to the composition of matter used in or made by that process, or (B) shall, if such composition of matter is claimed in another patent, be set to expire on the same date as such other patent, notwithstanding section 154. (3) For purposes of paragraph (1), the term 'biotechnological process' means--(A) a process of genetically altering or otherwise inducing a single- or multi-celled organism to--(i) express an exogenous nucleotide sequence, (ii) inhibit, eliminate, augment, or alter expression of an endogenous nucleotide sequence, or (ii) express a specific physiological characteristic not naturally associated with said organism; (B) cell fusion procedures yielding a cell line that expresses a specific protein, such as a monoclonal antibody; and (C) a method of using a product produced by a process defined by subparagraph (A) or (B), or a combination of subparagraphs (A) and (B).

(c) Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of [35 U.S.C.A. § 102](#), shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

At least by implication, [35 U.S.C.A. § 103](#) of the Patent Act of 1952 equates the word "invention" merely with what an applicant claims, rather than with a condition or criterion of patentability.

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The nonobviousness standard of 35 U.S.C.A. § 103 --The mental state of the inventor is irrelevant to patentability

The second sentence of [35 U.S.C.A. § 103](#) was written into the statute to repudiate language in a Supreme Court opinion which could be interpreted as saying that the mental state of the inventor was significant in determining whether a contribution satisfied the invention requirement. What the opinion actually said was: "[T]he new device, however useful it may be, must reveal the flash of creative genius, not merely the skill of the calling."

If indeed the Court's position was that the mental state of the inventor is material, it was clearly at odds with reality and with the prior law which recognized:

Invention is not always the offspring of genius; for frequently it is the product of plain hard work; not infrequently it arises from accident or carelessness; occasionally it is a happy thought of an ordinary mind; and there have been instances where it is the result of sheer stupidity. It is with the inventive concept, the thing achieved, not with the manner of its achievement or the quality of the mind which gave it birth that the patent law concerns itself.

In putting aside the "flash of genius" concept, Congress has recognized what Thomas Alva Edison said long ago, that invention is composed of 1 percent inspiration and 99 percent perspiration.

The second sentence of [35 U.S.C.A. § 103](#) merely makes explicit a point that is implicit in the first sentence, namely, that nonobviousness is the sole standard and, accordingly, considerations that cannot be subsumed under nonobviousness, such as the mental state of the inventor, are irrelevant and immaterial. While doubts may linger in the minds of a few courts, the overwhelming majority, including the Supreme Court, _ interpret the second sentence of [35 U.S.C.A. § 103](#) as rejecting a "flash of creative genius" as a condition of patentability. _ Nevertheless, the obviousness of a patent on a plastic bag that was marketed as a waterbed was upheld, the court observing that there is no inventive genius in putting water into a container that does not leak. _ The Federal Circuit has found that a district court's mere reference to "genius" did not require reversal. _ The Federal Circuit has also held that it is not relevant how inventors achieved their invention, whether through exhaustive study or in complete isolation, because the inquiry into obviousness to one of ordinary skill in the art is independent of inventors' motivation. _ That a startling discovery resulted from doing what was said to be stupid has been taken as evidence of nonobviousness. _ Serendipity has been said to be consistent with nonobviousness.

While the fact that a flash of creative genius did not accompany the making of an invention may not be used to negate patentability, the presence of a "flash of brilliance," apparently may help establish patentability. _ While the state of mind of the inventor at the time of making the invention may not be used to negate nonobviousness, the opinion of the inventor that his invention was obvious has been taken as "most indicative" of its obviousness. _ The content of commercial advertisements by the patent owner has been deemed not determinative of what constitutes relevant prior art. _ The amount of time and effort devoted to development do not contribute to patentability. _ The slow but inevitable progress of an industry through trial and error and the persistent and intelligent search for improvement are insufficient to support a patent. _ Nevertheless, it is reversible error for a court, in determining whether there has been compliance with [35 U.S.C.A. §](#)

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[103](#), to give any weight to the fact that the claimed subject matter was arrived at by experimentation.

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Proper application of 35 U.S.C.A. § 103

Section 103 makes patentability depend upon, in addition to novelty and utility, the nonobvious nature of the "subject matter sought to be patented." The first sentence of this section requires that: (1) the scope and content of the prior art be determined; (2) the differences between the prior art and the claims in issue be ascertained; and (3) the level of ordinary skill in the pertinent art be resolved. Against this background, the obviousness or nonobviousness of the subject matter is to be determined.

The Federal Circuit has added evidence of "secondary considerations" as a fourth factual inquiry. _ According to the Federal Circuit, the term "secondary considerations" includes evidence of unexpected results and commercial success.

Making antecedent factual determinations under 35 U.S.C.A. § 103

Questions of obviousness are not resolved in a vacuum but in the perspective of the prior art.

Art applicable to a particular inquiry under [35 U.S.C.A. § 103](#) must satisfy two conditions: (1) it must be deemed *pertinent* or relevant to the claimed subject matter and (2) it must be deemed *prior* in time to the date the claimed invention was made.

The *scope* of art pertinent or relevant to a [35 U.S.C.A. § 103](#) determination includes within its purview not only subject matter falling into the same category of technology as that claimed but extends to subject matter "analogous" thereto. What constitutes analogous art is discussed in § [9:21](#), *infra*.

The *content* of prior art under [35 U.S.C.A. § 103](#) encompasses, but is not limited to, all statutory prior art material named in [35 U.S.C.A. § 102](#) that would be considered in determining novelty. _ This includes prior invention under [35 U.S.C.A. § 102\(g\)](#). _ Evidence adduced in support of a [35 U.S.C.A. § 102](#) defense can be probative on the issue of level of skill in the pertinent art. _ Circumstances that have preceded, attended, and succeeded an alleged invention have been said to be strong evidence of the level of ordinary skill in the art.

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The nonobviousness standard of 35 U.S.C.A. § 103

In determining obviousness, the invention must be considered "as a whole," i.e., in its entirety rather than piecemeal. _ Therefore, the process of determining obviousness has been characterized as not one of merely comparing the claims and the accused embodiment detail for detail to see if they match, but rather one of examining the claimed subject matter as a whole to see if, in light of the prior art, it would have been obvious to one skilled in the art.

Determinations of unobviousness are to be predicated not only upon what is literally recited in the claims, but also upon those properties of the claimed subject matter that are inherent in what is claimed and are disclosed in the specification.

While determinations of the obviousness or unobviousness of a claimed invention are to be based upon "the subject matter as a whole," where unobviousness is predicated upon an unusual or surprising result or advantage, such result or advantage must at least be mentioned in the specification. _ Accordingly, a prima facie obvious product could not be rendered nonobvious by resorting to product advantages not disclosed in the specification. _ Similarly, it was held that the patentee could not support the patent by the fact that the actual device, as made and sold, was superior in ways neither related to nor shown on the record to follow from the patent claims. _ Discovery of the source of the problem is part of the "subject matter as a whole" inquiry. _ Patentability may not be based on an undisclosed "inherent" feature that could be discovered only by building the assembly described in the patent specification and testing it. _ To be entitled to consideration, the existence of a synergistic effect apparently must be mentioned in the patent application. Putting such forward for the first time when validity of the patent is being tested in court will not suffice. _ Where the inventor asserts nonobviousness based upon an unusual or surprising result, such result must at least be mentioned in the specification. _ At least one court has gone so far as to strongly suggest that the advantage or unexpected result upon which unobviousness is based must not only be adverted to in the specification but must also be mentioned in the claims,

although another court has suggested that it will suffice if the advantage upon which patentability is predicated is merely brought to the attention of the examiner during the course of prosecuting the application before the Patent & Trademark Office. _ The Federal Circuit reversed the Board of Appeals and held that data in a patent specification should have been considered as evidence of nonobviousness because it was offered as illustrative of an advantageous property of the claimed invention. The Circuit Court found that although the measurement of a physical property may not of itself impart patentability to otherwise unpatentable claims, these measurements are relevant when they point out advantages over the prior art.[\[..1\]](#)

To illustrate how the scope and content of the prior art are to be determined and any differences between such prior art and the claims in issue are to be ascertained, it is instructive to consider the technology involved in the first Supreme Court interpretation of [35 U.S.C.A. § 103](#), _ which is considered definitive by the Federal Circuit, _ by a majority of other federal courts, _ and by the Patent & Trademark Office.

The case involved an agricultural implement, specifically a plow. Material to the issue of obviousness were three components of the plow: (1) the shank with an attached chisel; (2) the hinge plate; (3) the plow frame. See Figure 9-1. The prior art taught the use of these components, but arranged such that the

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hinge plate was below the shank, the shank being disposed between the hinge plate and the plow frame. The claims in issue called for the disposition of the hinge plate between the shank and plow frame, the shank being disposed below the hinge plate. Although plows embodying the claimed combination of components had improved flexing qualities over the aforementioned prior art, the Supreme Court held the claims obvious and invalid, perhaps because the greater flexing qualities of the claimed invention had not been urged in the course of the prosecution of the application before the Patent & Trademark Office.

The foregoing conclusion is reinforced by language in another Supreme Court opinion that was handed down on the same day, in which claims to a battery were held valid and infringed. In that case, the court decided that what in effect amounted to the substitution of magnesium for zinc and cuprous chloride for silver chloride, as the battery's electrodes, satisfied the nonobvious standard because such substitution resulted in a battery having a number of operating advantages which could not be predicted by resort to the prior art and because such advantages had been recognized and argued at the patent application stage and thus were said not to be "the afterthought of an astute patent trial lawyer."

Pic 2

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TABULAR OR GRAPHIC MATERIAL SET AT THIS POINT IS NOT DISPLAYABLE

Under [35 U.S.C.A. § 103](#), the frame of reference is the person having ordinary skill in the pertinent art. The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry. _ The level of skill in the art is measured as of the time the invention was made. _ Basing a determination of obviousness upon "general engineering principles and general principles of physics and the common experience of mankind" rather than on the level of skill of a person of ordinary skill in the art is improper. _ A person of ordinary skill in the art is presumed to be one who thinks along the line of conventional wisdom in the art and is not one who undertakes to innovate, whether by patient and often expensive, systematic research or by extraordinary insights. _ Awareness within the art of all of the aspects of the claim does not alone constitute obviousness. A person of ordinary skill in

the art has sometimes been characterized as a routinier. _ In considering the testimony of those skilled in the pertinent art, care must be exercised lest the witness be too expert and base his conclusions not upon ordinary but upon extraordinary skill in the art. _ In the obviousness analysis, the persons to focus on are those in the "trenches," actually attempting to produce commercial products rather than on persons of superior skill, intellect, and insight, who are leading authorities in the field. _ Where the general level of skill in the art is found to be low, even minor nonobvious advances in the art are patentable. _ The standard is whether the invention would have been obvious to a person having ordinary skill in the art, not whether it would have been obvious to the court, _ and not whether it would have been obvious to the inventor. _ The actual inventor's skill is irrelevant to the inquiry. _ What might appear obvious to one unfamiliar with an art, may well be demonstrated to be nonobvious subject matter, as by a clear showing of obstacles which the art had theretofore found insurmountable.

Factors to be considered in determining the level of ordinary skill in an art include:

- (1) Educational level of the inventor;
- (2) Type of problems encountered in the art;
- (3) Prior solutions to the problems;

- (4) Rapidity with which innovations were made;
- (5) Sophistication of the technology; and
- (6) Educational level of active workers in the field.

Not all such factors may be present in every case, and one or more of these or other factors may predominate in a particular case. _ It has been recognized that formal education and practical experience are at least to a degree interchangeable.

The statutory "person having ordinary skill in the art," created by Congress to provide a standard of patentability, is a hypothetical person presumably possessing knowledge in the field to which the claimed "subject matter pertains," wherein the level of said knowledge resides somewhere between that possessed by the layman and that possessed by the expert. _ While the skill level is a component of the inquiry for a suggestion to combine separate prior art disclosures, a lofty level of skill alone does not suffice to supply a motivation to combine disclosures.

Where evidence of level of skill of ordinary persons working in the art is not presented, a grant of summary judgment is only appropriate if the patented invention is so understandable that a factual determination as to the level of skill in

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the art is unnecessary. _ A failure to demonstrate the level of ordinary skill in the art may not necessarily preclude summary judgment of invalidity.

Apparently a challenge to patent validity predicated on obviousness requires *testimonial evidence* to such effect by a person skilled in the art. _ Failure to proffer such evidence by one challenging patent validity on the ground of obviousness, where a finding regarding the level of skill in the art is deemed necessary, has obviated the defense. _ There is no need to determine the level of ordinary skill in the art where there are in fact no differences between the prior art and the claims at issue. _ A district court apparently agreed with the Commissioner of Patents & Trademarks that a finding regarding the level of ordinary skill in the art is also not required in cases in which the subject matter of the invention is easily understandable.

Obviousness is measured by what would have been obvious to one reasonably skilled in the applicable art rather than what would be obvious to the layman. _ Nor is the inventor to be equated with the hypothetical person whose level of skill in the art is to be the measuring gauge of obviousness. The actual inventor's skill is irrelevant to the inquiry. Inventors, as a class, possess something which sets them apart from workers of ordinary skill.

The usual way of determining the level of ordinary skill in the art is by referring to the subjective reaction of a person thoroughly familiar with the particular art and, if possible, one who practiced the art at the crucial time in question.

Only technological incompatibility is relevant to the issue of obviousness. Accordingly, the fact that a given combination would not be made by businessmen for economic reasons does not mean that persons skilled in the art would not make the combination because of some technological incompatibility.

While the person of ordinary skill is necessarily a hypothetical person, the difficulties to be encountered in ascertaining his capabilities should be comparable to those encountered in ascertaining the mental state of the man of ordinary care, known to the law of negligence.

A hypothetical person having ordinary skill in the art to which the subject matter pertains is a problem solver and not a user of the solution. _ He is charged with knowledge of all prior art disclosed at the time of the alleged invention, irrespective of whether persons of ordinary skill in the field, or anyone else, actually possessed such all-encompassing familiarity with prior developments.

An inventor is pictured as working in his shop with prior art references, which he is presumed to know, hanging on the walls around him. _ This, of course, is a classic example of a legal fiction. The more remote in time the prior art is, the less likely it is that an invention to which it is relevant would be obvious in view of it. _ Thus, the test for unobviousness

concerns itself not with the actual mental processes whereby an invention was developed but with the degree of difficulty in developing the invention in light of all the prior art. _ It must be determined whether the hypothetical person having ordinary skill in the art would readily have found the same solution when addressing himself to the same problem. _ Generally contemporaneous and independent completion of the invention by another is taken, by some courts, as evidence of obviousness. Such, however, does not in itself preclude the patentability of that invention. _ That which is within the capabilities of one skilled in the art is not synonymous with obviousness.

While under [35 U.S.C.A. § 103](#), the test of invention or unobviousness (as the third requisite of patentability is now called) _ is ultimately subjective, the measurements comprising this test are to be made by those familiar with the pertinent art and not by a judiciary untutored in science and technology. _ The test is

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whether the subject matter of the claimed invention would have been obvious to one skilled in the art at the time the invention was made, not what would have been obvious to a judge after reading the patent in suit and hearing the testimony.

[Section 103](#) makes it incumbent upon the judiciary to seek out and consider, in all but the simplest cases, _ evidence in support of unobviousness. The outcome of the inquiry is not to be based wholly upon a judge's a priori and subjective

notions, as it so often was under the law prior to the enactment of [35 U.S.C.A. § 103](#). To this end, at least one court has said that obviousness does not turn on subjective considerations. _ Indeed, obviousness under [35 U.S.C.A. § 103](#) has been characterized as an "objective test." _ The judiciary, nevertheless, is still free to interpret the test data and to decide what score passes muster under [35 U.S.C.A. § 103](#).

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The perspective from which to draw a legal conclusion under 35 U.S.C.A. § 103

The ultimate question of obviousness is one of law.

In judging whether difference(s) between claimed subject matter and the prior art impart the quality of nonobviousness to the subject matter claimed, some cautions and caveats are in order.

The question of obviousness is simple to ask but difficult to answer.

Just how much difference the difference must make to be unobvious is incapable of mechanical or general formulation. Each case must ultimately turn on its own peculiar facts. Whether obvious claims have been allowed to other applicants is immaterial. _ Where the claimed structure is simple and/or differs only slightly from the prior art, the inquiry may focus upon the utility or result effected.

Results which are truly unexpected, unusual, or surprising may render the invention as a whole unobvious, regardless of how little its structure differs from the prior art, so long as there is some actual physical difference. _ The standard is the same whether the area of technology involved is complex or easily understood.

Congress did not contemplate various degrees of obviousness in [35 U.S.C.A. § 103](#).

When one is drawing a *legal* conclusion as to whether the "invention" would have been obvious or nonobvious, the language of [35 U.S.C.A. § 103](#) and the requirements articulated by this language must not only be borne in mind, but must carefully and faithfully be applied to the particular *facts* of the case. Prominent among the requirements of [35 U.S.C.A. § 103](#) are that: [i] "the subject matter as a whole" must be considered [ii] "at the time the invention was made."

The subject matter as a whole"

As noted at the outset of § 9:8, *supra*, [35 U.S.C.A. § 103](#) requires that obviousness is to be determined by considering "the subject matter as a whole." The novelty of an invention turns solely upon whether there is any *physical* difference between what is claimed and the prior art, i.e., whether there exists any structural difference. By contrast, the obviousness or nonobviousness of a novel structure requires consideration not only of physical or structural difference but also consideration of any difference(s) in effect or function. Stated in homelier terms, a novelty determination involves merely consideration of the difference between the prior art and what is claimed, whereas a nonobvious determination involves consideration not only of any difference between the prior art and what is claimed but also consideration of the difference that any difference makes.

The concept of *the subject matter as a whole* comprises the total inventive act, which includes not only the remedy claimed, but also the discovery of the source of trouble, despite teachings of the prior art. _ When considering what constitutes the subject matter as a whole, within the context of [35 U.S.C.A. § 103](#), the court must consider first that which the applicant discovered as the cause of the trouble, which persisted despite the prior art, and then consider the applicant's remedy.

Whether the "subject matter as a whole" has been duly considered most often surfaces in two very diverse technological contexts. One of these contexts involves mechanical-type inventions, wherein the constituent elements or components claimed are all per se old. Consideration of the subject matter *as a whole* in a mechanical context must include consideration of the nonobviousness of the claimed combination and its physical effect or result. _ Consideration of the subject matter *as a whole* in a chemical context must include consideration of the nonobviousness of the structure and properties of the claimed composition. _ The obviousness/nonobviousness of chemical processes has generated both case law and specific legislation (albeit confined to biotechnological processes), _ which in effect require that obviousness determinations be based upon the subject matter as a whole.

It will be noted that consideration of *the subject matter as a whole*, as opposed to merely its "gist" or "essence," is an issue not only in connection

with nonobviousness determinations, but also in both a priority of invention context and a novelty context wherein "gist" or "essence" is used, in contrast to consideration of each and every physical or structural element.

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At the time the invention was made" (hindsight, afterthoughts)

The obviousness standard, while easy to expound, is sometimes difficult to apply, as it requires the decisionmaker to return to the time the invention was made. _ The difficulty in answering a question of obviousness is due in no small part to the strong temptation to resort to and rely on hindsight in formulating the answer. Hindsight, however, is quite improper when resolving the question of obviousness.

The obviousness standard articulated in [35 U.S.C.A. § 103](#) requires the decisionmaker to return to the time the invention was made, as the invention must be viewed not with the "blueprint" drawn by the inventor, but in the state of the art that existed at that time. _ That which may be made clear and thus "obvious" to a court with the invention fully diagrammed and aided by

experts in the field may have been a breakthrough of substantial dimension when first unveiled. _ To use the patent-in-suit as a guide through the prior art references, combining the right references in the right way to arrive at the result of the claims-in-suit, is, therefore, quite improper. Combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination, cannot establish obviousness.

Just as it is improper for the *obviousness/nonobviousness decisionmaker* to rely on information not publicly available at the time the invention was made, it is improper for the *inventor* to argue or otherwise rely on information neither disclosed in the patent application nor proffered during the patent application process in order to establish the nonobviousness of the invention, such subsequently employed information being characterized as "afterthoughts" by the Supreme Court. _ With respect to afterthoughts, sight should not be lost of the following observation by the former Court of Claims:

An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law.

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Comparison of the application of 35 U.S.C.A. § 103 in patent application prosecution and in patent enforcement proceedings

Procedures for considering and determining issues of obviousness/nonobviousness differ in the process of (1) ex parte prosecution of a patent application before the Patent & Trademark Office to obtain a patent; and (2) inter partes litigation to enforce an issued patent in court. These differences concern (i) allocation of the burden of producing evidence, and (ii) the manner of adducing and evaluating such evidence.

Underlying the differences in procedure between the examination process and enforcement proceedings is the economical and expeditious nature of patent application prosecution relative to enforcement proceedings, as the Patent & Trademark Office is not equipped to consider information other than in the form of prior art references and an occasional affidavit.

Prima facie obviousness and its rebuttal

That an applicant is prima facie entitled to a patent is established by the prefatory language of [35 U.S.C.A. § 102](#). The Federal Circuit, and its predecessor court, the Court of Customs & Patent Appeals, have reconciled the prefatory language of [35 U.S.C.A. § 102](#), "A person shall be entitled to a patent unless-- ..." with the requirement of nonobviousness expressed in [35 U.S.C.A. § 103](#) by holding that an applicant for a patent has no obligation to submit evidence of nonobviousness unless and until the Patent & Trademark Office establishes a prima facie case of obviousness.

Evaluation of obviousness/nonobviousness in the examination process may be viewed as a two-step process:

Step One--Whether a prima facie case of obviousness has been established; and, if so,

Step Two--Whether affidavits or declarations presented are sufficient to overcome the prima facie case of obviousness.

Thus, the principal significance of the prima facie case with respect to obviousness is that, unless the examiner establishes a prima facie case, the applicant is not obliged to proffer any evidence of nonobviousness.

The examiner bears the initial burden of presenting a prima facie case of unpatentability, based on review of the prior art or any other ground. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant. _ After evidence or argument is submitted by the applicant in response, patentability is determined on the totality of the record, by a preponderance of the evidence, with due consideration to the persuasiveness of the argument.

When is a prima facie case of obviousness established? According to [37 C.F.R. § 1.56\(b\)\(2\)\(ii\)](#):

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

According to the Manual of Patent Examining Procedure, to establish a prima facie case of obviousness, three basic criteria must be met:

First, there must be some suggestion or motivation, either in the prior art references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. _ When more than one reference is used to establish a prima facie case under [35 U.S.C. § 103](#), the motivation or reason for combining the references must be suggested by the references themselves or by the prior art known to one of ordinary skill in the art.

Second, there must be a reasonable expectation of success.

Third, the prior art reference (or references when combined) must teach or suggest all the claimed limitations.

A prima facie case of obviousness requires supporting objective evidence to be sustained. _ An examiner must substantiate his or her "suspicions" or "hunches" on

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the basis of facts drawn from paper prior art. _ A prima facie case of unpatentability is not established merely by speculation that claim limitations are "probably satisfied" by the prior art.

If the prima facie case is based on the combination of one or more references, rebuttal evidence may include facts based on the prior art cited to the effect that these pieces of prior art are not combinable and that there is no

motivation in the references themselves or other prior art to combine the references. [..1] The Federal Circuit has held that Patent & Trademark Office may not substitute "common knowledge" of one skilled in the art for specific evidence that the prior art suggests an invalidating combination of references. The Circuit Court added that conclusory statements about an invention and prior art teachings do not adequately address the factual issue of the required motivation to combine

references. [..2] The Federal Circuit has also held that the Patent & Trademark Office may not base an obviousness rejection on a patent examiner's conclusions about what is old and well known in the art. The Circuit Court determined that the examiner's conclusion that the use of grammar is old and well known in the art of speech recognition as a means of optimization did not properly address the grammar creation capability features of the claim for interacting with hypermedia sources. [..3]

Evidence in rebuttal of prima facie obviousness. Once a prima facie case of obviousness is established, it is incumbent upon the applicant to go forward with objective evidence of nonobviousness. _ If the prima facie case is based on the combination of one or more references, rebuttal evidence may include facts based on the prior art cited to the effect that these pieces of prior art are not combinable and that there is no motivation in the references themselves (or other prior art) to combine the references. _ Rebuttal

evidence may include evidence that the claimed invention yields unexpectedly improved properties, _ properties not present in the prior art, _ or evidence of secondary considerations.

A showing of unexpected results must be based on evidence, not merely argument or speculation. _ Such evidence may be present in the specification, _ or be presented by way of affidavit or declaration. _ To overcome a prima facie case of obviousness on the basis of unexpected results, the applicant must establish not only that the differences in results achieved in fact are unexpected, but also that the differences are of practical significance. _ The claimed invention must be compared with the closest prior art.

Rebuttal is merely "a showing of facts supporting the opposite conclusion."

Evaluation of rebuttal evidence. The evidence of obviousness upon which a prima facie conclusion of obviousness is based must be weighed against the rebuttal evidence of nonobviousness. _ After a prima facie case of obviousness has been made and rebuttal evidence submitted, all the evidence must be considered anew. Facts established by rebuttal evidence must be evaluated with the facts on which the conclusion of prima facie obviousness was reached, and not against that earlier conclusion itself.

Patentability is determined on the totality of the record by a preponderance of the evidence, _ without regard to the so-called "rule of doubt," which is defunct.

Whether obvious claims have been allowed to other applicants is immaterial.

Specific situations. While prima facie obviousness as a legal precept applies broadly to all arts, _ it will be noted that much of the case law in which it has been articulated relates to the chemical arts, particularly to chemical compounds structurally similar to prior art compounds.

Prima facie obviousness has also been held established in instances in which the only physical difference between what was claimed and the prior art was numerical. Examples include: (1) a case involving an alloy composition, wherein the only

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difference between the prior art and what was being claimed was the numerical proportions of the constituent metallic elements; _ (2) cases where an overlap existed between the claimed range of numerical values and prior art numerical values; _ (3) a patent application scaling up a prior art process, i.e., mere use of commercial quantities; _ and (4) a patent application with a change in the relative size of the co-acting members of a prior art combination of members. _ Where the only difference between the prior art and the claims is a recitation of relative dimensions, which claimed dimensions do not perform differently from the prior art, there is no patentable difference over the prior art.

When the only difference between the claimed invention and the prior art is the range or value of a particular variable, then a prima facie rejection is properly established when the difference in range or value is minor. _ Such a prima facie case of obviousness can be rebutted if the applicant: _ (1) can establish the existence of unexpected properties in the range claimed, or (2) can show that the art in any material respect *taught away from* _ the claimed invention.

Making an old device portable or movable has been held not to constitute a patentable distinction, in and of itself, over the prior art.

Another category of cases in which prima facie obviousness has been held to have been established involves combinations of components or elements wherein, compared to the prior art, the number of components or elements has been increased or decreased with a corresponding increase or decrease in function, omission of an element with its corresponding loss of function being regarded as an obvious expedient. _ Mere duplication of parts has no patentable significance unless a new and unexpected result is produced. _ Use of material in combination, each of which is known to function for the intended purpose, is prima facie obvious. _ Making out of one piece, i.e., making integral, what the prior art made out of two pieces, has been held to be prima facie obvious.

A fourth category of cases in which prima facie obviousness has been held to have been established involves the mere change in the order in which the steps of a process or method are carried out, _ or in the arrangement of the components or parts of a device.

Manner of adducing evidence in ex parte prosecution

Evidence adduced in the ex parte prosecution of a patent application is entirely in written form.

Examiner's search; applicant's information disclosure statement. As part of the examination process, the examiner assigned to an application personally performs a search of prior art patents and literature in categories deemed relevant to the subject matter of the application. Additionally, the applicant may submit prior art pursuant to an applicant's duty of disclosure.

An applicant's admissions. An important distinction, which sometimes is subtle, exists between a specification's "teachings" and an applicant's admission that something is prior art in the specification or elsewhere in the record of a case. While a specification's "teachings" may not be used in formulating a decision on the obviousness of what is claimed, _ when an

applicant states that something is prior art, it is taken as being available as prior art against the claims.

Official notice. While precedent exists for an examiner taking "official notice" of facts outside of the record which are capable of instant and unquestionable demonstration as being "well-known," _ the examiner must supply a documentary basis for such facts if challenged by the applicant.

Affidavits or declarations. Evidence may also be proffered in the form of an affidavit or declaration pursuant to [37 C.F.R. § 1.132](#). _ This most often occurs in an effort to obviate the basis for an examiner's rejection.

The Patent & Trademark Office must accept an expert's conclusion that falls within that expert's area of expertise, even where the expert's conclusions relate to the determination of something as subjective as the perception of color, absent a challenge to the affiant's qualifications as an expert and to the test procedures employed. _ In ex parte prosecution, affidavit evidence prevails over an examiner's surmise and unsupported contentions.

Level of skill determinations. Inasmuch as the Federal Circuit has indicated that a factual determination of the level of skill in the art is unnecessary where the subject matter of the patent and the prior art are easily understandable, _ the Manual of Patent Examining Procedure states that

if the only facts of record pertaining to the level of skill in the art are found within the prior art of record, the invention may be held to have been obvious without a specific finding of a particular level of skill, where the prior art itself reflects an appropriate level of skill.

Weight given on appeal to Patent & Trademark Office findings of fact. The Federal Circuit applies the "clearly erroneous" standard in reviewing findings of fact made by the Patent & Trademark Office.

Presumption of patent validity

The invalidity of one or more of the claims of an issued patent--a ground for which includes noncompliance with 35 U.S.C.A. § 103--can be (1) interposed as an affirmative defense _ to a charge of patent infringement, or (2) the basis of a declaratory judgment action, assuming a right to bring such an action otherwise exists. _ A patent involved in either of such proceedings enjoys a statutory presumption of validity.

While an analogy can be drawn between, on one hand, the initial burden on the Patent & Trademark Office to make a prima facie case in patent application prosecution proceedings, and, on the other hand, the presumption of patent validity in patent enforcement proceedings, significant differences do exist between the two. While both a prima facie case of unpatentability _ and the presumption of patent validity _ are procedural devices, unlike the making of a prima facie case by the Patent & Trademark Office, the presumption of patent validity never shifts, but rather remains on the challenger to disprove throughout the litigation proceedings. Moreover, whereas a prima facie case of obviousness is overcome by a mere preponderance of the evidence, the Federal Circuit maintains that clear and convincing evidence is necessary to overcome the presumption of patent validity.

Manner of adducing evidence in inter partes enforcement proceedings

The patent's prosecution history. The entire written record made before the Patent & Trademark Office during the prosecution of the patent application--sometimes referred to as the "prosecution history" of the patent--is subject to review and scrutiny in patent enforcement proceedings, including all prior art references of record. However, it has been said that the presumption of patent validity is "most formidable" _ in regard to prior art that was previously considered by the Patent & Trademark Office.

"Newly" introduced prior art. Prior art not considered during ex parte prosecution can be introduced in proceedings to enforce a patent, but even where such prior art is more pertinent than that considered during ex parte prosecution, the presumption of patent validity is not destroyed or even weakened.

Discovery. A very significant difference between the prosecution of a patent application and enforcement proceedings is the availability of extensive discovery in enforcement proceedings.

Trial. Evidence of the invalidity of the patent or any claim in suit on the ground of obviousness _ may be proffered as part of the accused infringer's case, provided that the issue of obviousness was raised as a defense in the accused infringer's answer.

The trial is conducted in accordance with the Federal Rules of Civil Procedure, which provide for *viva voce* testimony of witnesses and their cross-examination, as well as documentary evidence.

The trier of fact may be a judge or a jury.

Weight given on appeal to a district court's findings of fact. The Federal Circuit applies the "clearly erroneous" standard in reviewing findings of fact made by a U.S. district court.

Appellate review of determinations under 35 U.S.C.A. § 103

According to the Supreme Court, "[t]he ultimate test of patent validity is one of law ... , but resolution of the obviousness issue necessarily entails several factual inquiries." _ These factual inquiries include: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims in issue; and (3) the level of skill in the pertinent art.

Appellate review by the Federal Circuit of district decisions on the issue of patentability focuses upon whether evidence relating to each of the three foregoing three factual inquiries and any objective evidence (i.e., evidence of the "secondary considerations") was introduced and whether the district court made sufficient findings of fact based thereon.

The Federal Circuit takes the position that while the ultimate question of obviousness is one of law, _ antecedent determinations, including (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the prior art and the claims at issue; and (4) any other objective evidence, are questions of fact. _ Consequently, the Federal Circuit reviews the ultimate question of obviousness de novo _ and antecedent factual findings under a clearly erroneous standard if made by a district court, _ or by the Board of Patent Appeals & Interferences, _ and under a substantial evidence standard if made by the International Trade Commission.

Since the ultimate question of obviousness is a matter of law, _ the "clearly erroneous" standard of review of Fed. R. Civ. P. § 52(a) does not apply. _ In other words, the Federal Circuit reviews obviousness determinations made by the Board of Patent Appeals & Interferences de novo, but its antecedent factual findings under the clearly erroneous standard.

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Case law prior to 35 U.S.C § 103 as viable precedent

The Supreme Court regards [35 U.S.C.A. § 103](#) "merely as a codification of earlier precedents with congressional directions that inquiries into the obviousness of the subject matter sought to be patented are a prerequisite of patentability."

"Innovation" and "invention" are, at least since the 1952 Patent Act, legally synonymous. Innovation is *always* invention, although it may not be *patentable* invention. "Invention," since the advent of [35 U.S.C.A. § 103](#), is no longer the prerequisite to patentability which it was prior to 1952. _ Nevertheless, the Federal Circuit has characterized as harmless error mere reference by a district court to "the invention standard."

In fact, the unobviousness test is so broad as to encompass most of the other negative rules of invention. The doctrine of small structural change has been subsumed under unobviousness. _ Thus, to change arbitrarily merely the size or dimensions of a known machine or article of manufacture, or the amount or relative proportions of the constituents of a composition of matter, or the values of the operative parameters of a process can fairly said to be obvious. A numerical limitation in a claim cannot be availed of as a distinction over prior art unless the recited boundary corresponds with physical phenomena and

the inventor has discovered the point at which such physical phenomena occur. The mere redimensioning of an element found in the prior art to perform a different function ordinarily will not create a new element. _ The omission of a component of a machine, or an ingredient of a composition of matter, or a step of a process, with only the corresponding loss of the omitted component's, ingredient's, or step's function can fairly said to be obvious. Similarly, the mere substitution of one material, albeit superior, for another is ordinarily deemed to be obvious. _ That which is merely an alternative to the prior art structure is deemed an obvious matter of design choice.

Congress in enacting [35 U.S.C.A. § 103](#) is said to have intended to replace the mosaic of "negative rules," many of which could be applied to only a limited range of patents, with a single standard of nonobviousness.

It will be observed that the test set out in the first sentence of [35 U.S.C.A. § 103](#) is couched as a negative rule _ which focuses upon the obviousness or nonobviousness of the subject matter sought to be patented. While the word nonobvious is somewhat more descriptive and definitive than the word "invention," it is still quite general and, as was noted by Judge Learned Hand:

The test laid down is indeed misty enough. It directs us to surmise what was the range of ingenuity of a person "having ordinary skill" in an "art" with which we are totally unfamiliar; and we do not see how such a standard can be applied at all except by recourse to the earlier work in the art, and to the general history of the means available at the time. To judge on our own that this or that new assemblage of old factors was or was not "obvious" is to substitute our ignorance for the acquaintance with the subject of those who were familiar with it.

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Based upon the evidence, courts must still make judgments, such as whether the use of a concavity for the creation of a partial vacuum would have been obvious to one skilled in medicine and in administering a barium enema.

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Is there a constitutional standard of invention?

From time to time courts, including the Supreme Court, allude to a "constitutional standard of invention." This supposed standard is deduced from the phrase in Article I, Section 8, Clause 8, "To promote the Process of Science and useful Arts" Thus, an eighteenth century rhetorical embellishment, intended merely to articulate a conviction of the framers, has been transformed into a condition of patentability, which has also been couched as a requirement that the invention "further human knowledge," or demonstrate "technical achievement." The applicability of any "constitutional standard" to the patentability of designs has been questioned. With respect to copyright, it has been recognized that the introductory phrase "To promote the progress of Science and the useful Arts" does not constitute a limitation on congressional power, so that Congress need not require that each copyrighted work be shown to promote the progress of science.

It is submitted that there is no "constitutional standard" of invention beyond what would constitute an invention within the meaning of the English Statute of Monopolies, which included subject matter not previously known within the country. Any further requirement is that which Congress--and not the Constitution--may choose to impose.

Analogous and nonanalogous art

The scope of prior art relevant in determining obviousness is that art which is reasonably pertinent to the particular problem with which the inventor was involved. The "scope" of the prior art determines what references fall within the relevant prior art that can be applied to reject a claim, while the "content" of the prior art is what those references teach a person of ordinary skill in the art. _ When the references are all in the same or analogous fields, knowledge thereof by the hypothetical person of ordinary skill is presumed.

The applicability of a reference as prior art is determined in accordance with whether the teachings of the reference place it within the field of the inventors' endeavor or, alternatively, within a field reasonably pertinent to the particular problem with which the invention addresses. _ In other words, in order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of the

applicant's endeavor, or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned.

In determining the scope of the prior art, a question often arises as to what are the proper bounds of the relevant technology.

Long ago the Supreme Court observed:

Indeed, it often requires as acute a perception of the relationship between cause and effect, and as much of the peculiar intuitive genius which is a characteristic of great inventors, to grasp the idea that a device used in one art may be made available in another, as would be necessary to create the device *de novo*.

Bringing together knowledge held in widely diverse fields may itself be invention. It is established law that adaptation of a device to a different field may amount to invention. _ However, such does not necessarily render invention nonobvious. It should be noted that the question of whether prior art is analogous, while relevant to the issue of nonobviousness, is irrelevant to the issue of anticipation. _ If a claim can literally be "read on" a piece of prior art, the fact that it is drawn from a "different" art is immaterial. Relevant prior art includes all prior art in analogous fields.

Analogous prior art is that art to which one seeking a

solution to a particular problem, or attempting to achieve a particular result, would look for the purpose of finding the answer to that problem, or suggestions as to the attainment of that result. _ The test for analogous art has been said to be "similarity of elements, problems and purposes." _ References drawn from analogous arts may be combined. _ Invention can be obvious when fields utilize such similar, parallel, or analogous principles of design or function that a would-be inventor could reasonably be expected to look to that field or art for solution of the problem that the alleged invention attempted to solve.

While full knowledge by an inventor of all prior art in the field of his endeavor is presumed, only knowledge from those arts reasonably analogous or pertinent to the particular problem with which the inventor was involved outside of his field of endeavor will be presumed. _ The hypothetical person of ordinary skill in the pertinent art is presumed to have the ability to select and utilize knowledge from other arts *reasonably* pertinent to the particular problem.

Recognizing that in today's world technological breakthroughs that result from the cross-fertilization of minds trained in different disciplines are common, _ courts

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generally tend to take an expansive view of what constitutes relevant or analogous art, particularly where the invention is mechanical in nature. The concept of the scope of the art must be afforded a wide latitude.

_ Thus it has been said that with respect to a simple mechanical invention which utilizes "universally" known principles, the entire field of mechanics is pertinent art.

When defining the relevant prior art, it is not the differences between various arts that are important. Rather, the relevant inquiry relates to the relationship between the problem which the invention of the patent-in-suit was attempting to solve and the problem to which any prior art reference is directed. _ Accordingly, the focus of inquiry is on the problem solver and not on the user of the solution.

In order to assist the public and patent practitioners in determining the relevant prior art, the Patent Act provides that the Director of the Patent & Trademark Office may maintain the classification by subject matter of domestic patents, foreign patents, and other publications "for determining with readiness and accuracy the novelty of prospective inventions." _ For over one hundred years, the Patent & Trademark Office has implemented a classification system that divides the entire body of prior art into approximately 400 separate technical areas called "classes" that are further subdivided into subclasses for the purpose of patent searching and examination. _ Like inventors, patent examiners and patent practitioners develop specialized skill in the art of specific classes and subclasses. The Federal Circuit has upheld the opinions of a lower court on the scope of relevant prior

art based on the domestic patent classification system and the *Manual of Classification*.

Whether arts are analogous is said to be a question of fact based on the content of the prior art that requires inquiry into: (1) the remoteness of the relationship between the arts; (2) the degree of alteration necessary to adapt a technique; and (3) the value of the adaptation to the new art. _ It has been said that the test for analogous arts is similarity of elements, problems, and purposes. _ Two criteria are relevant in determining whether prior art is analogous: _ (1) whether the art is from the same field of endeavor, *regardless of the problem addressed*, and (2) if the art is not within the same field of endeavor, whether it is still reasonably pertinent to the particular problem to be solved.

Analogous art includes not only knowledge accumulated with respect to a problem in a particular industry but also encompasses that accumulated in those scientific fields the techniques of which have been commonly employed to solve problems of a similar kind in the particular and similar and closely related fields. The trend clearly is to widen the scope of prior art that can be considered pertinent. The days when inventions relating to locks are only made by locksmiths are past us. However, in the final analysis, exactly what constitutes analogous or nonanalogous arts will depend upon facts and circumstances peculiar to the case. For example, it was held that the

"brake art" for railway vehicles was not analogous to the brake art for automobile vehicles. _ In another finding of nonanalogous art, the Federal Circuit held that a prior art patent to splicing photographic textual film in the printing industry was not within field of an inventor seeking a patent for loading magnetic tape into closed cassettes.

The Federal Circuit held that the fields of read only memories (ROMs) and static random access memories (SRAMs) are not analogous prior art for a patent claiming single inline memory modules (SIMMs) for use in personal computers. _ However, the Federal Circuit also held the field of mechanical housings, hinges, latches, and springs is analogous prior art for a patent claiming the hinge on a portable computer because hinge problems are not unique to computers. _ The Federal Circuit has upheld a Patent & Trademark Office rejection of patent claim for a "hair brush" by

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construing "hair brush" to include both scalp hair brushes and facial hair brushes as well as the analogous art of toothbrushes which were from the same field of endeavor and reasonable pertinent to the particular problem.[\[..1\]](#)

The opinion of a person skilled in one art as to whether a person of ordinary skill in such art would look to another art to solve a problem is entitled to fair evidentiary weight even though the person giving the opinion is not established as an expert in the other art.

A design, from the standpoint of patentability, has no utility other than its ornamental appearance, and the problem of combining references is therefore one of combining appearances rather than uses. The principle of nonanalogous arts, therefore, cannot be applied to design cases in exactly the same manner as to mechanical cases. The question in design cases is not whether the references sought to be combined are in analogous arts in the mechanical sense, but whether they are so related that the appearance of certain ornamental features in one would suggest the application of those features to the other.

Relevant art is that which addresses the actual *problem to be solved* by the inventor rather than the field of endeavor for which the invention is to be used.

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Impact of certain factors on the application of 35 U.S.C.A. § 103

While the number of possible useful inventions is infinite, the manner in which novel subject matter can differ from the prior art can be subsumed into a limited number of categories, structurally and functionally. Structurally, most inventions can be characterized as new combinations of old elements. Some functional aspects, such as criticality and unpredictability, are regarded as indicia of nonobviousness. Moreover, as [35 U.S.C.A. § 103](#) mandates that "the subject matter as a whole" be considered, such factors as whether the prior art teaches away from what is claimed, and the nature of the problem solved by the claimed subject matter, are also germane to obviousness determinations. These factors or parameters and their bearing on patentability have been considered

by courts a plethora of times, generating a body of judicial precedent helpful in assessing patentability.

Obviousness and equivalence

"Equivalence" in patent law has been used in reference both to the results that are produced and to the elements and factors by which those results are produced.

In the sense that equivalence signifies the interchangeability of agencies which are known in the art to be capable of serving the same purpose as integral parts of some particular invention, equivalents have been characterized as "obvious and customary" interchanges. _ It will be recalled that the seminal Supreme Court case holding that, to be patentable, the contribution must involve more than the ingenuity or skill possessed by an ordinary mechanic acquainted with the business, concerned the substitution of clay or porcelain in fabricating knobs for doors, locks, and furniture in the same manner as which knobs of iron, brass, wood, or glass had been previously made. _ Nearly a century later, the Supreme Court stated that it is not "invention" to bring into a known combination of elements the functional

equivalent of one such element. _ Substitution of a slot/detent for a hook/detent locking mechanism was deemed a mere design change substituting obvious equivalents that drew from mere mechanical skills.

The Federal Circuit has noted that obviousness is somewhat akin to the doctrine of equivalents. _ It should be borne in mind that equivalency under the doctrine of equivalents is assessed at the time of infringement, _ whereas obviousness is assessed at the time the invention was made. _ According to the Manual of Patent Examining Procedure, _ in order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on the applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents.

In the sense that "equivalence" signifies the result produced by an invention, the mere production of the same end result is not determinative of the obviousness of the structure achieving such result. _ Expedients which are functionally equivalent to each other are not necessarily obvious in view of one another. _ It is not the object of the policy behind the patent system to encourage satisfaction with, or commercialization of, only the first device for performing a given function that happens to come along. The Court of Customs and Patent Appeals stated:

For those who may be interested in promoting competition in the interest of the consuming public, the greater the number of functionally equivalent devices which are encouraged onto the market by patent protection, the better off the consumer will be.

Combinations of old elements

The Federal Circuit takes the position that [35 U.S.C.A. § 103](#) does not impose a standard of patentability for an invention that can be characterized as a combination of old elements different from that imposed by [35 U.S.C.A. § 103](#) for other types of invention. _ The court has noted that most inventions are in fact combinations of old elements. _ Since nearly all inventions amount to combinations of old elements, that an invention is a combination of old elements is irrelevant to patentability. However, it should be noted that the Federal Circuit has declined to treat as reversible error determinations of invalidity which alluded to "a combination which only unites old elements with no change in their function" _ and the "natural evolution of the prior art."

Moreover, the Supreme Court in addressing the issue of "invention" or nonobviousness has frequently alluded to inventions that are merely combinations of old elements and has at least suggested that the patentability of such type of invention is governed by a more severe test than is the patentability of other types of inventions.

A Supreme Court decision involving [35 U.S.C.A. § 103](#) concerned a patent directed to a combination of old elements on a water flush system for removing cow manure from a sloped floor of a dairy barn. Apparently, the closest applicable prior art involved spot delivery of water from tanks or pools to a sloped barn floor by means of high pressure hoses or pipes.

The novelty of the claimed system resided in the *abrupt* release of a cascade or surge of water from tanks or pools *directly* onto the barn floor, without first passing through pipes or hoses. The result achieved by the patentees was unlike anything previously attained in that supplemental hand labor was not required. The Court in its opinion alluded to the tale of how Hercules cleaned the Augean stables by diverting a river from its normal course. However, this bit of "prior art" of which the Court took judicial notice is not fact but fiction from the pages of mythology. The Supreme Court, nevertheless, held the patent invalid as failing to satisfy the unobviousness standard of [35 U.S.C.A. § 103](#). The rationale for the Court's holding was that all the claimed elements were old and that it is not unobvious simply to rearrange old elements so that each performs the same function it had been known to perform in the prior art, even though the rearrangement produces a more dramatic or striking result than previous combinations.

Slight reflection, however, should make it apparent that there has not been an invention yet made that does not amount to a combination of old elements. _ All machines are made up of the same elements (rods, pawls, journals, toggles, gears, cams, and the like), all acting their parts as they always do and must. All compositions are made of the same substances, retaining their fixed chemical properties. But the elements are capable of an infinity of permutations. Invention resides in selecting that combination which proves serviceable to a given need. _ This is as true of the chemical arts as of the mechanical arts, although perhaps in inventions involving the latter, that fact is less apparent or patent or patent (and thus, perhaps, more likely patentable) in the Court's mind. Chemical inventions are literally combinations of the chemical elements. The Patent Act makes no distinction between mechanical inventions and chemical or electrical inventions. Even a new chemical element is but a combination of old electrons, protons and neutrons. In its opinion, the Court suggests that whatever it characterizes as a combination of old

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elements can meet the unobviousness standard of [35 U.S.C.A. § 103](#) where the combination produces a new or different function. No clue, however, is given as to what type of change might in the Court's opinion constitute a new or different function. The Supreme Court, in the dairy barn case, moreover, disagreed with the court of appeals' finding that the results attained could be characterized as synergistic. Perhaps of significance is the

fact that after the court of appeals held the patent valid (reversing the district court) the alleged infringer petitioned for a new trial on the ground of newly discovered evidence, but this the court of appeals refused to allow as not having been timely presented. It should also be noted that the novelty appears to have resided in a method rather than in a system (i.e., apparatus) as it was claimed.

The occasional allusions by the Supreme Court to *combinations of old elements* and suggestions thereby that the patentability of such is governed by a more severe test than other types of inventions, has engendered much confusion, uncertainty, and mischief. Investment in innovation (because of the attendant risk of invalidity) has been discouraged, while competitors have been encouraged to imitate rather than improve or design around.

The Federal Circuit apparently takes the position that identification of and focus on an essence or "gist" of an invention in determining obviousness is contrary to the dictate of [35 U.S.C.A. § 103](#) that the subject matter *as a whole* be considered. Focus upon what was thought to be the invention's "most critical feature" and dismissing differences between the claims and the prior art as "distinctions without a difference" is improper. _ It is error to equate an invention only with its most critical feature. _ However, the Federal Circuit has affirmed a decision wherein the district court perceived the invention as having an essence or "heart,"

which the district court apparently equated with "the step forward the invention offers." _ It is submitted that there is indeed a gist to a combination patent, namely, the *combination itself*, i.e., the manner in which the elements are brought into concert and the result that the combination is capable of achieving.

It should be noted that in other contexts, namely, priority of invention _ and infringement under the doctrine of equivalents, _ the Federal Circuit has deemed it appropriate to consider the "gist" or "essence" of an invention.

The Supreme Court has said that there is "no legally recognizable or protected 'essential' element, 'gist,' or 'heart' of the invention in a combination patent."

Simplicity and sophistication

The simplicity of an invention must not be confused with its obviousness. The simplicity of the invention, or its ready understandability by a judge, does not constitute evidence of obviousness. A patent will not be invalidated simply because it embodies a solution that seems simple and obvious with the benefit of hindsight. Simplicity of itself does not negate invention. Simplicity--particularly in an old and crowded art or when the prior art teaches complexity--may be taken as evidence of nonobviousness.

On the one hand, simplicity in and of itself is not necessarily determinative of nonobviousness. On the other hand, it has been said that sophistication, particularly in a crowded, technically advanced art where the level of ordinary skill is high, is not synonymous with nonobviousness. An invention may be nonobvious even though the results are not superior to that achieved by the prior art. Nothing in the patent

statute requires that an invention be superior to the prior art in order to be patentable. That an invention may be simpler or less perfect than the prior art, and that it does not constitute an advancement in the art, does not necessarily make it obvious. The Court of Customs & Patent Appeals once noted:

The fact that the invention seems simple after it is made is not determinative of the question of obviousness. If it were the rule, many of the most beneficial patents would be stricken down.

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Predictability ("obvious to try")

While predictability has relevance to determination of obviousness, obviousness does not require absolute predictability. Only a reasonable expectation of success, not absolute predictability, is necessary for a conclusion of obviousness. Simply because a drug gives positive results *in vitro* it does not necessarily follow that there is a reasonable probability of success for therapeutic use of that drug *in vivo*. The act of selection should be beyond the capacity of commonplace imagination. The argument is untenable that since one slavishly following the prior art, albeit with a little educated imagination, will sometimes succeed and sometimes fail, then he should always be entitled to a patent when he succeeds. In other words, an invention can be said to be obvious if one ordinarily skilled in the art would consider that it was logical to anticipate with a high degree of probability that a trial would be successful.

Obviousness is not established by prior art which merely suggests the exploration of a new technology or general approach which gives only general guidance as to the particular form of the claimed invention or how to achieve it. Obviousness is also not established by prior art which requires varying all parameters or trial of each of numerous possible choices until one possibly arrives at a successful result, because such prior art gives no indication of which parameters are critical or no direction as to which of many possible choices is likely to be successful. "Obvious to try" is not the same as obviousness. Merely because a certain approach might be "obvious to try" does not render it unpatentable, if upon trial it is found that the approach yields a truly unexpected result. As the court noted:

[T]here is usually an element of "obviousness to try" in any research endeavor, that it is not undertaken with complete blindness but rather with some semblance of a chance of success, and that patentability determinations based on that as a test would not only be contrary to the statute but result in a marked deterioration of the entire patent system as an incentive to invest in those efforts and attempts which go by the name of "research."

An invention is merely "obvious to try" where the prior art gives no indication of which parameters are critical or no direction as to which of many possible choices is likely to be successful. It appears to be unsettled whether to constitute obviousness the prior art must merely suggest which parameters are critical or in addition must indicate an expectation of success.

The mere fact that a prior art structure *might possibly* function as claimed or be modified in a way that would render the claims obvious does not render such claims obvious within the meaning of [35 U.S.C.A. § 103](#). "Ought to be tried" is not the standard by which obviousness is determined. The governing standard is not whether a particular approach leading to an invention would be "obvious to try," but whether such an experiment would have been expected to succeed.

Whether prior art renders an invention obvious depends upon the specificity of its teachings. Generally speaking, there is nothing unobvious in choosing "some" among "many" indiscriminately. This is particularly applicable where the class of possible alternatives is small.

Superiority, criticality, and optimization

Superiority and unobviousness are not synonymous. _ Superiority, however, can be evidence of unobviousness. _ The mere fact that results attained are unexpectedly good is not controlling. _ A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use. _ A refusal to consider superior results is no more warranted by [35 U.S.C.A. § 103](#) than a total preoccupation with them. _ Making something stronger than the prior art is not the type of innovation for which the patent monopoly is granted. _ Making a known product adjustable or merely adding a plurality of units to it is not patentable invention. _ Improvement resulting from changes in size, proportion, or degree of an element contained in the prior art, no matter how desirable or useful, does not constitute patentable invention. _ A mere change in material cannot give rise to a patentable invention if the properties of the materials are already known and

the result obtained was the one expected. _ More than a mere change of the form or rearrangement of parts is necessary for patentability. _ Even if better results are achieved, invention does not necessarily occur when the better results arise from that kind of inevitable evolution of an art involving only a change in form, proportion, or degree. _ Mere extended applications of known principles has been said to be obvious. _ "Invention" has been said to exclude adjustments, alterations, and improvements that could be expected to result from the exercise of skill and ingenuity of persons of ordinary skill in the relevant art. The gap between the prior art and what is being claimed must be sufficiently great as to render the latter nonobvious. _ One may not arbitrarily select a point in a progressive chain and maintain a patent monopoly for all operations in that progressive chain falling on one particular side of that arbitrarily selected point.

Some courts have indicated that increased efficiency of a new combination of elements sets such combination apart from its constituent elements. _ Where the prior art clearly indicates that a class of compounds will effect a certain general result, the fact that a specific member of that class is particularly efficacious does not render it or its application unobvious. _ Obviousness is not necessarily inconsistent with the presence of an unpredictable result.

The fact that the patented subject matter is *an improvement* over previously patented subject matter does not save it from invalidity. _ It matters not that the device works *better than* the prior art device if the improvement would have been obvious to those skilled in the art.

The nature of unexpected results which may render an apparently obvious structure patentable can be further characterized by the word "criticality." A demonstration, preferably quantitative, that the very means or steps claimed produce a result or exhibit a property not produced or exhibited by means or steps that differ only slightly from those claimed would tend to establish the criticality of the very means or steps claimed. To be critical, a limitation in a product claim must show an advance over prior products; the mere location of optimum conditions and characteristics, however useful, is not sufficient. _ Comparative results are thus helpful in evaluating criticality. The issue of criticality and obviousness are interrelated though analytically distinct. Criticality focuses upon purported special attributes claimed over that which has been previously broadly disclosed. Obviousness, on the other hand, entails a broader examination. _ Whether criticality amounts to unobviousness will also depend upon the nature of the result or property

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itself. As noted above, even if the precise structure being claimed is more efficacious than that known to the prior art, this may not suffice to establish unobviousness, if the prior art taught that the claimed structure or something

analogous thereto exhibits that property, though not to the extent or degree demonstrated.

Moreover, a claimed range within a range disclosed by the prior art may be patentable, if a substantial departure from the proportions claimed is accompanied by a result materially different from that being claimed. That is to say, where the prior art merely suggests a long list of possibly combining chemical elements, the combination of them in proportions not specifically taught may be patentable, provided that the very proportions being claimed produce a composition having properties that are significantly different from these elements when they are combined in other than the claimed proportions.

Not infrequently the prior art will teach that a certain general result can be attained by doing something in a certain general way. Someone then comes along asserting that by carrying out such prior art process employing the specific values of the operative parameters being claimed, results demonstrably superior to those indicated by the prior art will be attained. Such improved results standing alone are insufficient to establish unobviousness:

The prior art having taught generally the functional relationship described it does not rise to the dignity of invention to teach optimization of the function by making quantitative adjustments to achieve the most desirable or effective result, there being involved in such process no discovery but only the exercise of prudence and skill.

Thus, the discovery of the optimum dimensions in a method of separating cheese slices was deemed obvious.

The fact that the optimum conditions were arrived at by routine experimentation does not in and of itself negate unobviousness. _ An exception to the rule that the discovery of the optimum value of a variable in a known process is normally obvious occurs when the parameter optimized was not recognized to be a result-effective variable. _ Another exception occurs where the results were unexpectedly good.

Teaching away from"

That the prior art teaches away from what is claimed militates against a finding of obviousness. _ The Federal Circuit has indicated that one important indicium of nonobviousness is "teaching away from" the claimed invention by the prior art. Although prior art that teaches away is a significant factor to be considered in determining unobviousness, the nature of the teaching is highly relevant, and must be weighed in substance. _ Doing what the prior art references try to avoid is the very antithesis of obviousness. _ Prior art that suggests the method or means claimed would produce unacceptable results is the very antithesis of obviousness. Proceeding contrary to the accepted wisdom is strong evidence of unobviousness.

"Teaching away from" is not dispositive, however, particularly where there is no evidence that the inventor was aware of any of the purported obstacles standing in the way of his invention. _ Where the prior art taught the use of a base to effect the desired chemical reaction, the substitution of an acid therefor, was characterized as the epitome of unobviousness. _ However, a prior art warning to "be careful" was not deemed equivalent to uniform prior art teaching that any investigation would be purposeless.

The skepticism of an alleged infringer as to the success of a patented device, which proves to be successful, has been taken as an indication of nonobviousness. Closely related to--and even overlapping--"teaching away from" the claimed invention is the skepticism of experts. _ However, the Federal Circuit has also held that there is no obviousness if one reference teaches away from its being combined with another reference by suggesting that the product of such combination would be inoperative.

"Teaching away from" is also intertwined with predictability. If the prior art teaches away from what is being claimed, it follows logically that what is being claimed is, at least in a sense, unpredictable.

Identifying the source of a problem and its solution

Invention may reside in discovering the source of a problem as well as in "its solution." _ The nature of the problem solved by an invention affects all four of the factual inquiries underlying obviousness. A patentable invention may reside in the discovery of the source of a problem, even though the remedy may be obvious once the source of the problem is identified. This is *part* of the "subject matter as a whole" which should always be considered in determining the obviousness of an invention under [35 U.S.C.A. § 103](#). _ The determination of whether a novel structure is or is not "obvious" requires cognizance of the properties of that structure and the *problem which it solves*, viewed in light of the teachings of the prior art. _ To be patentable, however, such an invention must include a solution of a problem, as a patent is granted for solving a problem, not merely for stating one. _ Moreover, discovery and recitation of an additional advantage associated with doing what the prior art suggests does not lend patentability to an otherwise unpatentable invention.

Patentable ingenuity may, and often does, reside in the perception of a desirable goal which, once perceived, is achievable through the exercise of routine skill. _ The proposition that perceiving a solution does not

entail the recognition of a problem is unacceptable. The failure of others to discern the concept in the prior art is not preclusive evidence of nonobviousness. If it were, the distinction between novelty and nonobviousness would be blurred. _ The Federal Circuit has held that a reference may be said to "teach away" when a person of ordinary skill, upon reading the reference, would either be discouraged from following the path disparaged in the reference or be led in a direction divergent from the path that was taken by the patent applicant.

That the problem solved by an invention is not specifically pointed out by the prior art is not determinative of the nonobviousness of the invention, because the problem may not be a serious one, or a large number of satisfactory solutions may be readily apparent.

It should be noted that judicial comments about identifying the source of the problem have generally arisen in situations where the structural change over prior art made by the invention at issue could be characterized as small or simple. _ In holding a seemingly small or simple structural change nonobvious, courts have pointed out that [35 U.S.C.A. § 103](#) requires consideration of *the subject matter as a whole*, which necessarily requires consideration of the source of the problem, as well as its solution. Thus, issues of simplicity, the subject matter as a whole, and identifying the source of the problem are generally intertwined.

Identifying the problem solved by an invention also arises in connection with the determination of the proper scope of prior art relevant to the obviousness inquiry. In such an inquiry, particular care must be exercised to differentiate the problem from its solution by the invention, as looking at art that solves the problem may involve use of improper hindsight.

Infringer's promotion

Statements made by infringers in their promotions to the effect that the patented invention is unobvious _ or represents a great advance in the art have been accorded considerable evidentiary value in determining at least the contemporary thinking of those skilled in the art _ and may be deemed as admissions against interest or an estoppel against assertions of obviousness. _ Statements of praise made prior to the initiation of litigation by an accused infringer are a strong indication of the nonobviousness of the invention. _ One who appropriates the teachings of a patent may not deny the utility of the invention. _ Use of the patented device by an infringer has long been recognized as an admission of this fact and as creating an estoppel upon such infringer to deny utility. _ The Federal Circuit too has noted that by use, the infringer has paid tribute to the utility of the device infringed. _ Copying itself is sometimes taken as evidence of nonobviousness. _ The unsuccessful prosecution by the accused infringer of a patent application that covered an invention identical to that of the patent he is accused of infringing does not constitute an admission as to the nonobviousness of such invention.

Chemical inventions

In the early days of the patent system inventors were preoccupied with the mechanical arts. Consequently, much of the law was cast in mechanical terminology, as "the mechanic of ordinary skill." As the frontiers of science were pushed back, however, more and more attention became directed at the chemical and electronic arts. Many of the more recent cases, including some just discussed, relate specifically to chemistry. Because the precise consequences of chemical reactions are often not predictable from theoretical considerations, innovation in the chemical arts poses many interesting questions of unobviousness. Along these lines, the Supreme Court has noted: "Elements may, of course, especially in chemistry or electronics, take on some new quality or function from being brought into concert, but this is not a usual result of uniting elements old in mechanics."

Because the bringing together of old elements that take on some new quality or function is not the usual result of uniting elements old in mechanics,

mechanical patents that can be characterized as combinations of old elements are much more susceptible to attack on obvious grounds than are other types of patents. Courts in framing their opinions, couch the condition of patentability imposed by the first sentence of [35 U.S.C.A. § 103](#) in terms of "mechanical skill." A modification of the prior art that is purely *mechanical* in nature is deemed not to constitute a patentable improvement.

Nevertheless, [35 U.S.C.A. § 103](#) applies equally to all inventions, whether chemical, mechanical, or electrical. The statute makes no distinction between chemical, electrical, and mechanical inventions. Chemical inventions are normally combinations of chemical elements, electrical inventions are combinations of electrical circuit elements, and process inventions are combinations of steps. General precepts derived from consideration of chemical cases are applicable to analogous situations in the electrical and mechanical arts. However, the relatively unpredictable nature of chemistry presents more opportunities for unobvious subject matter. A consequence of the lack of correlation between chemical structure and properties is that objective evidence of unexpected properties must be commensurate with the scope of the claims. While a chemical compound is not obvious unless its structure is obvious, its patentability is not to be determined merely on the basis of structural obviousness or prima facie obviousness alone.

Unpredictability in chemistry has engendered a number of recurrent situations which raise particularly perplexing problems of obviousness. Prominent among these are: (1) structurally obvious compounds; (2) purity; and (3) synergism.

Structurally obvious compounds

Patents are granted on compounds that are structurally obvious variants of known compounds in chemical technology where reactions are unpredictable, particularly in the field of pharmaceuticals. Any evidence to the contrary must also be considered. _ When a new compound so closely related to a prior art compound as to be structurally obvious is sought to be patented based on alleged greater effectiveness, clear and convincing evidence of *substantially greater* effectiveness is needed. _ One who claims a compound that is structurally similar to a prior art compound must rebut the presumed expectation that structurally similar compounds have similar properties. In obviousness rejections based on close similarity in chemical structure, the prima facie case of obviousness rises from the expectation that compounds similar in structure will have similar properties. _ Structurally obvious compounds include homologs and isomers of known compounds. _ The term homolog is used by chemists at times in a broad sense and at other times

in a more narrow or strict sense. _ Whether unobviousness exists over prior art isomers and homologs is a question to be decided in each case.

An unexpected property possessed by the compound would be evidence of its unobviousness. _ On the other hand, a compound that is structurally similar to prior art compounds which possess properties similar to the claimed compound is deemed unpatentable as structurally obvious.

An unexpected increase in activity may suffice to render a structurally obvious compound nonobvious. _ Nonobviousness may reside in greater potency as well as in greater efficacy. _ Potency is efficacy per unit mass. Less of a more potent substance may be taken to achieve the same effect as more of a less potent substance. Enhanced potency permits the production of smaller pills with attendant patient convenience.

Unexpected properties must be balanced against those that would be expected.

The prima facie obviousness of a claim drawn to a chemical compound was deemed rebutted by evidence that it possessed significantly less toxicity than its known homologs and analogs even though the absence of such toxicity was not disclosed in the specification.

To rebut a case of prima facie obviousness involving structurally obvious compounds the applicant need not test every structurally obvious compound taught in every prior art reference. _ Where an applicant tests less than all cited compounds, however, the tests must be sufficient to permit a conclusion respecting the relative effectiveness of that applicant's claimed compound and the compounds of the closest prior art. _ Where two pieces of prior art are in fact equally close to the claimed compound there is no logical reason for requiring the applicant to make a comparison with one prior art compound instead of the other. _ An applicant relying on comparative tests to rebut a prima facie case of obviousness must compare his claimed invention with the closest prior art.

A cognate but nevertheless distinct question is whether a mere recitation in the prior art of the very structural formula of the compound being claimed constitutes an anticipation thereof.

While there are probably an infinitely large number of different chemical compounds, these fall into a relatively limited number of classes. Class distinctions are based on the nature and arrangement of constituent atoms, members of a class possessing analogous structures and generally similar, albeit not identical, properties. In organic chemistry there are classes of compounds, known as

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homologous series, the members of which differ structurally from one another only in the number of units of atoms, according to a fixed formula. For example, the empirical formula for the alkane series of hydrocarbons is C_nH_{2n+2} . All members of the alkane series possess generally

similar chemical and physical properties, and almost any two adjacent homologs possess nearly identical properties. It is thus often possible to extrapolate empirical observations, postulating the existence and predicting the properties of homologs not yet prepared.

Does the fact that the possible existence of a compound has been predicted by such extrapolation constitute an anticipation? Does the fact that the possible existence of a compound could be predicted by extrapolation render it obvious? The answer depends upon whether the compound in fact possesses properties significantly different from those that have been or which are predictable. As the Court of Customs & Patent Appeals has noted:

From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing. The graphic formulae, the chemical nomenclature, the systems of classification and study such as the concepts of homology, isomerism, etc., are mere symbols by which compounds can be identified, classified, and compared. But a formula is not a compound and while it may serve in a claim to identify what is being patented, as the metes and bounds of a deed identify a plot of land, the thing that is patented is not the formula but the compound identified by it. And the patentability of the thing does not depend on the similarity of its formula to that of another compound but of the similarity of the former compound to the latter. There is no basis in law for ignoring any property in making such a comparison. An assumed similarity based on a comparison of formula must give way to evidence that the assumption is erroneous.

The foregoing exposition of the law is but an application of the rule laid down by [35 U.S.C.A. § 103](#) that the subject matter as a whole must be considered. Close structural similarity between what is being claimed and the prior art raises a presumption of obviousness which may be rebutted by evidence of such an unexpected result as that the claimed compound possesses an unexpected or surprising property. Where the prior art discloses not only the structure of a class of compounds but also identifies a common property, the confirmation that a particular compound within the class does in fact possess such property does not render such compound patentable. _ Following a rehearing in banc, the Federal Circuit held that a prima facie case of obviousness was made against a new chemical compound when the prior art showed not only a structurally similar compound but also provided incentive or motivation to make the claimed compound. _ That the prior art neither discloses nor suggests the properties possessed by the claimed compound is immaterial. Such decision overrules the earlier decision of a three-judge panel of the Federal Circuit in the same case that a prima facie case of obviousness against a new chemical compound requires prior art that discloses not only a structurally similar compound but also recognition that such structurally similar compound possess the same or at least similar utility.

A prior art compound that could be used to synthesize the claimed compound does not render the claimed compound obvious, even where the prior art compound could be used as an intermediate in the synthesis of the claimed compound. _ The mere ability of a compound to act as an intermediate in the production of other compounds does not alone constitute the sort of "property" that the cases on the

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obviousness of chemical compounds contemplated. _ The prior art must provide one of ordinary skill in the art with the motivation to make the proposed molecular modifications needed to arrive at the claimed compound.

Chemical inventions

Purity

The mere purity of a naturally occurring product does not impart patentability thereto. _ The increased purity of the product is only one of the factors to be considered in determining the issue of obviousness of a process.

A purer form of a known substance may be patentable where the purer form possesses properties significantly different from those exhibited by the impure form. Such difference in utility has been characterized as a "new" utility.

Some of the most dramatic and valuable inventions involved the identification and isolation (or synthesis) of the active ingredient in a naturally occurring product. Isolation of a naturally occurring substance from its natural environment, as a hormone from a mammalian endocrine organ (e.g., adrenalin, _ insulin _) or of a vitamin _ from foodstuffs, satisfies the novelty requisite of patentability. Purified and isolated DNA sequence encoding human hormone erythropoietin was found to be patentable in view of the unobvious probing and screening procedures employed to effect its purification and isolation. _ The synthetic (artificial) form of a naturally occurring substance may be deemed novel where the substance exists in nature only in impure form. _ For example, acetyl salicylic acid (aspirin) is the active ingredient in willow bark, a remedy known and used for centuries to reduce fever. To satisfy the nonobvious requisite, however, it must be demonstrated that such pure form possesses one or more beneficial unexpected properties, which may be an unexpected degree of activity.

Pure materials necessarily differ from less pure or impure materials and, if the latter are the only ones existing and available as a standard of reference, the "pure" materials are "new" with respect to them. The existence of a compound as an ingredient of another substance does not negate novelty in a claim to the pure compound, although it may, of course, render the claim unpatentable for obviousness. _ A mere difference in the degree of purity (i.e., a difference in purity unaccompanied by unusual or surprising properties attributable to such degree of purity) is insufficient to render the purer form patentable.

A racemic mixture does not constitute an anticipation of an individual optical isomer isolated therefrom. Whether a pure isomer would be deemed unobvious would depend upon the difference between its properties and those of the racemic mixture.

Chemical processes

With regard to a process or method, it is the functional interrelationship of materials used, the process conditions, and the sequence of steps which are relevant to the issue of obviousness. _ While an otherwise old process becomes a *new* process when a previously unknown starting material is used, the use of such previously unknown starting material does not necessarily mean that the whole process has become *unobvious* in the sense of [35 U.S.C.A. § 103](#). The Board of Patent Appeals & Interferences has said that use of an unobvious starting material, without more, does not render a known process unobvious. _ In short, a new process may still be obvious even when considered "as a whole," notwithstanding that the specific starting material or resulting product, or both, is not to be found in the prior art. That the only difference between what was being claimed and the prior art was the selection of a *slightly different* acylation agent to result in a *slightly different* product was deemed by the Federal Circuit as insufficient to establish a prima facie case of obviousness. The court emphasized the highly fact-specific nature of the inquiry under [35 U.S.C.A. § 103](#). _ Moreover, the Biotechnological Process Patents Act of 1995, _ amends [35 U.S.C.A. § 103](#) by declaring that claims to a biotechnological process using or resulting in a novel and nonobvious composition of matter recited in the same patent application or in a separate application having the same effective filing date, where the composition and the process were owned by the same person or were subject to an obligation of assignment to the same person at the time it was invented, *shall be considered nonobvious*.

Change in physical form and physical mixtures

A new physical form of a known chemical composition may be patentable, as the crystalline form of a substance that previously existed only in amorphous form. _ Any change in form from a previous condition may render the article new, but to render such article patentable the change must be unobvious. For example, a change that is the result of mere mechanical division is not patentable.

Secondary considerations

The Federal Circuit has indicated that the totality of evidence used to reach the ultimate conclusion of obviousness includes evidence of nonobviousness. _ The weight of secondary considerations may be insufficient to override a determination of obviousness based on primary considerations.

Secondary considerations--Unexpected results

The role of unexpected results in the scheme laid out by the Federal Circuit for raising and resolving the issue of obviousness is that an unexpected result is evidence *in rebuttal* of a prima facie case of obviousness. _ Under this scheme, an applicant or patent owner is under no obligation to proffer any evidence of an unexpected result unless and until (1) the examiner in proceedings before the Patent & Trademark Office or (2) an adversary challenging the validity of an issued patent in patent enforcement proceedings has made a prima facie case of obviousness.

A patent applicant, however, is well advised to lay at least a basis for demonstrating any unexpected result, preferably by mention thereof in the patent specification itself, lest, in subsequent litigation, the assertion of an unexpected result be dismissed by the court merely as the afterthought of an astute patent lawyer.

A need to demonstrate an unexpected result most often arises in cases characterized as a mechanical combination of old elements and in cases involving structurally obvious chemical compounds.

An examination for unexpected results is a factual, evidentiary inquiry, which is reviewed on appeal for clear error. _ The Federal Circuit has reversed a district court's summary judgment of noninfringement based on defendant's assertion that a patented pain treatment was obvious. The Federal Circuit held that the lower court did not properly consider evidence of unexpected results in making a determination of obviousness.

Secondary considerations--Synergism

The combined action of two or more agents that is greater than the sum of the action of each of the agents used alone is a phenomenon known as synergism. That two drugs react favorably together is insufficient to establish medical synergism. Although synergism may occur in other contexts, this phenomenon is particularly pertinent in, if not indigenous to, physiology and chemistry. While the presence of synergism would seem to satisfy the requirement that the whole in some way exceed the sum of its parts, the existence of synergism is not in all cases determinative of nonobviousness. The presence of a synergistic effect was held not to establish nonobviousness where the prior art reasonably taught or suggested the expediency of the results achieved, albeit it did not teach that the effect would amount to synergism. Where the compound claimed possessed a close structural relationship to one known to the prior art, and the two possessed a specific, significant property in common, it was held that the fact that the one being

claimed possessed an additional property efficacious for the use intended was not sufficient ground for a finding of nonobviousness.

In striking down the patent for a water flush system for removing cow manure from the sloped floor of a dairy barn, the Supreme Court observed that no synergistic result was present. As a result, many lower courts inferred that synergism or a new result always must be present when the claims are drawn to a combination of old elements. The Federal Circuit takes the position that the *presence* of synergism is not essential to a finding of nonobviousness. Synergism may point toward nonobviousness, but its *absence* has no place in evaluating obviousness evidence. In other words, there is no requirement that an invention demonstrate "synergism" to support patentability.

Synergism is probative only of nonobviousness; not of obviousness. Synergism and unexpected results are merely evidence of nonobviousness, rather than independent requirements. An inventor may try to distinguish his claims from the prior art by introducing evidence of unexpected "synergistic" properties. To be efficacious, as such, the evidence should at least demonstrate an effect greater than the sum of the several effects taken separately.

According to the Federal Circuit, there is no basis for treating combinations of old elements differently from other types of inventions in determining

patentability. Mere mention of "synergism," however, has been held by the Federal Circuit not to be a sufficient basis for reversal. The starting place for determining the issue of obviousness is with the inventor working in his shop with the prior art references--which he is presumed to know--hanging on the walls around him. Only after consideration of all evidence, including that with respect to "secondary considerations," can obviousness be judged. Thus, where instructions to a jury were to the effect that (1) the combination must produce a new and surprising result, and (2) secondary factors cannot support a finding of nonobvious subject matter if consideration of the state of the prior art, the differences between what is claimed and such prior art, and the level of ordinary skill in the art leads to the conclusion that the subject matter is obvious, those instructions were held to constitute reversible error.

Prior to the Federal Circuit analysis of this issue, in view of allusions by the Supreme Court to synergism in the context of nonobviousness, confusion reigned

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among the lower federal courts as to the proper role of synergism in evaluating nonobviousness.

The subtests of invention

Of assistance in evaluating unobviousness are the so-called subtests of invention. These include evidence of the skepticism of experts; or that the claimed innovation met with commercial success; or satisfied a long-felt demand; or met with commercial acquiescence. There often is an interrelationship between subtests, e.g., an invention enjoys commercial success because of a long-felt, but unsatisfied demand. What they amount to are circumstantial evidence of unobviousness. These subtests are sometimes referred to as secondary or subconsiderations. _ Where patentability turns upon an unexpected property, at least one court has taken as a useful indicator of

whether such property was unobvious the value placed thereon by manufacturers and consumers thereof.

As the word "subtest" suggests, these considerations may tip the scales in favor of unobviousness. _ They have been said to be factors that may guide a court to a finding of nonobviousness. _ Beyond this, courts have equivocated as to the amount of deference that is to be accorded to these secondary considerations. A secondary consideration will not alone satisfy the requirement of nonobviousness. _ Thus the Supreme Court has said:

Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy.

And:

They may also serve to "guard against slipping into hindsight" ... and to resist the temptation to read into the prior art teachings of the invention in issue.

The Supreme Court also noted:

It is, however, fervently argued that the combination filled a long felt want and enjoyed commercial success. But those matters "without invention will not make patentability."

It should be noted, however, that the subtests or secondary considerations of nonobviousness are material and are entitled to weight. Evidence of secondary considerations is to be considered independently of what any real person knows about the prior art. These considerations are objective criteria of obviousness that help illuminate the subjective determination involved in the hypothesis used to draw the legal conclusion of obviousness. _ Objective evidence (such as commercial success, failure of others, long-felt need, and unexpected results) must be considered *before* a conclusion on obviousness is reached and is not merely "icing on the cake." _ Apparently holding a patent invalid without consideration of evidence of secondary considerations constitutes reversible error.

Objective evidence ("secondary considerations"), such as commercial success due to the merits of the invention, must when present be considered as part of the obviousness equation, it having been held reversible error to reach a

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conclusion on obviousness before considering the evidence of secondary considerations and in then evaluating the latter solely on its "gap filling" capacity. They have tipped the scales in favor of validity and their ability to do so has been upheld by the Supreme Court.

The Federal Circuit has said:

Objective evidence of nonobviousness ... may in a given case be entitled to more weight or less, depending on its nature and its relationship to the merits of the invention. It may be the most pertinent, probative, and revealing evidence available to and in reaching a conclusion on the obvious/non-obvious issue. It should when present always be considered as an integral part of the analysis.

The Federal Circuit has also observed in more than one case:

[E]vidence of secondary considerations may often be the most probative and cogent evidence of record. It may often establish that an invention appearing to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

The objective evidence of secondary considerations may in any given case be entitled to more or less weight depending upon its nature and its relationship to the merits of the invention.

The Federal Circuit has repeatedly emphasized the necessity of establishing a nexus between the merits of the claimed invention and evidence of secondary considerations.

Evidence of long-felt need and commercial success is of diminished value where relevant prior art whose teachings are incorporated in the claimed invention itself achieved commercial success and satisfied a long-felt need.

The Federal Circuit has reversed Patent & Trademark Office holdings of obviousness on the ground that its Board of Patent Appeals & Interferences did not give fair weight to objective evidence of nonobviousness.

Commercial success

Commercial success is perhaps the most frequently invoked of the subtests. The nexus between it and unobviousness is only indirect and inferential: (1) something of substantial commercial value, if obvious, would have appeared on the marketplace before; and (2) earlier attempts were made and failed.

It is important to bear in mind the distinctions among commercial success, potential commercial worth, and non-obviousness. Likelihood of commercial success is not a requisite of patentability and is not to be equated with unobviousness. An innovation may be truly unobvious and patentable and yet not be commercially feasible.

While courts have said that cost savings _ or economies of production _ alone do not establish unobviousness, it should be borne in mind that the dramatic effects of such inventions as the Bessemer process, Watt's steam engine, McCormick's reaper, and Eli Whitney's cotton gin resided in the fact that they accomplished what had been done before in a significantly cheaper and more efficient manner.

An invention may be responsible for effecting a profound change in an industry and still not be a commercial success in the sense of having generated profit for the inventor. Apparently such phenomenon itself, i.e., effecting a profound change in an industry, may be taken as evidence of unobviousness.

A nexus must be established between the merits of the claimed invention and evidence of commercial success before that evidence may become relevant to the issue of obviousness. _ When the thing that is commercially successful is not coextensive with the patented invention--for example, if the patented invention is only a component of a commercially successful machine or process--the patent owner must show prima facie a legally sufficient relationship between that which is patented and that which is sold. _ A

prima facie case of nexus is generally made out when the patent owner shows both that there is commercial success and that the thing (product or process) that is commercially successful is the invention disclosed and claimed in the patent. _ Once a prima facie case of nexus between the commercial success and the patented invention is made, the court must consider the evidence adduced on both sides, with such weight as is warranted. _ The burden of proof as to this connection or nexus resides with the patent owner. _ In meeting its burden of proof, the patent owner in the first instance bears the burden of coming forward with evidence sufficient to constitute a prima facie case of the requisite nexus. _ The Federal Circuit has held claims to be obvious in spite of a showing of commercial success when the patentee failed to show that "such commercial success as its marketed system enjoyed was due to anything disclosed in the patent in suit which was not readily available in the prior art." _ If the patentee makes the requisite showing of a nexus between commercial success and the patented invention, the burden shifts to the challenger to prove that the commercial success is due to other factors extraneous to the patented invention, such as advertising or superior workmanship.

A patent owner is not required to prove as part of its prima facie case that the commercial success of the patented invention is not due to factors other than the patented invention, it being sufficient to show that commercial success was of the patented invention itself. _ It has been said that the probative value of commercial success evidence depends in large part on whether, given the surrounding circumstances, it will support an inference that the market potential was sufficiently strong to motivate others who must have tried and failed to solve the

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problem. _ As noted by the Supreme Court even before the advent of electronic mass media:

The argument drawn from the commercial success of a patented article is not always to be relied on. Other causes, such as the enterprise of the vendors, and the resort to lavish expenditures, may cooperate to promote a large marketable demand. Yet as was well said long ago: "[W]hen the other factors in the case leave the question of invention in doubt, the fact that the device has gone into general use and has displaced other devices which had previously been employed for analogous uses, is sufficient to turn the scale in favor of the existence of invention."

Long-felt demand

The failure of others to provide a feasible solution to a long-standing problem is probative of nonobviousness.

Long-felt demand and commercial success are complementary tests. A showing of long-felt demand coupled with a showing of commercial success are indirect but cogent evidence of unobviousness. _ The nexus between long-felt but unsatisfied demand and unobviousness is the same as that for commercial success; namely, that if the innovation were obvious, it would have appeared on the marketplace before in response to existing demand.

Long-felt need has been discounted as evidence of nonobviousness where an intervening development supplies an element that is the key to the long unsolved problem.

Long-felt demand tends to establish unobviousness, while prompt invention once the need becomes apparent tends to establish obviousness. _ Similarly, generally contemporaneous and independent completion of the invention by another is taken, by some courts, as evidence that the invention was not beyond the reach of those of ordinary skill in the art.

Commercial acquiescence

Commercial acquiescence looks to the actions or inaction of competitors in regard to the patent in issue. The willingness of competitors to take a license or their efforts to design around or otherwise circumvent its claims may be a tacit recognition by them of the patent's validity and, hence, circumstantial evidence of the unobviousness of the innovation. _ The more widespread the licensing, the stronger is the inference of unobviousness. As a general matter, the public acquiescence needed to sustain validity must be long-standing. _ Where evidence of licenses taken by competitors tends to indicate nonobviousness, the weight to be accorded to such evidence of "secondary considerations" must be carefully appraised in relation to all the facts.

Skepticism of experts

The "skepticism of experts" is occasionally mentioned in court opinions, wherein it is apparently regarded as a separate and distinct subtest of invention. _ Apparently, the rationale is that evidence that experts in the art believe that the result achieved or the means or steps by which a result is achieved is not possible or feasible is taken as circumstantial evidence of the nonobviousness of what is achieved. Thus, the "skepticism of experts" is closely related to long-felt but unsatisfied need.

Praise for the invention

Praise for the invention, including awards accorded to the inventors for their invention, has been taken as evidence of the nonobviousness of the invention. _ The Federal Circuit has held that testimony of skilled scientists, who were developing the same technology and who characterized the patent as "pioneering," would support a finding of nonobviousness. _ Receipt of a prestigious award by an association whose membership is composed of the inventor's professional peers and which award symbolizes international recognition for outstanding technical innovation, has been taken as an objective indication of nonobviousness even where the award citation mentioned only a machine and the claims of the patent covered only a method.

Copying

Also sometimes said to constitute persuasive circumstantial evidence of nonobviousness is copying itself. _ Imitation bears on obviousness.

THE END

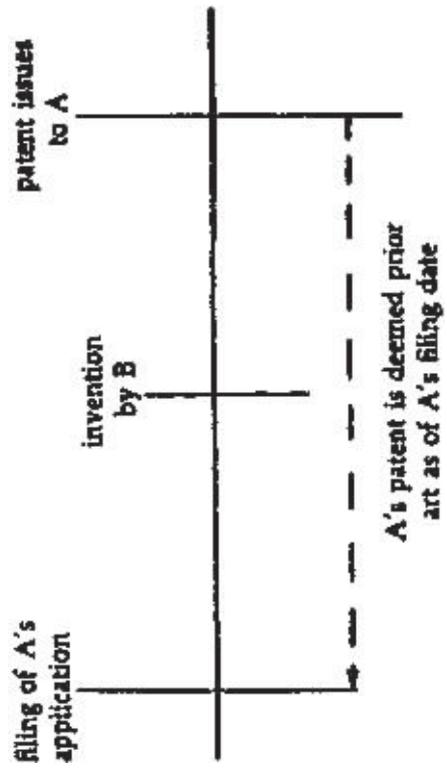
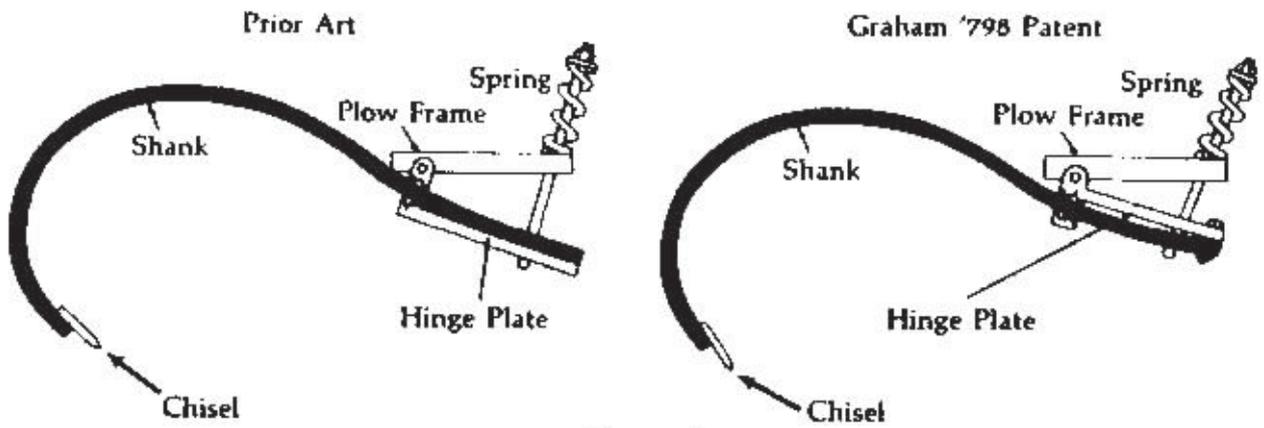


Figure 9-1

Graham v. John Deere Co.

Side-by-Side Comparison of Elements



- Components*
Hinge Plate
Plow Frame
Spring
Shank
Chisel