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Contents

(Continued overleaf)

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Notifications Concerning Treaties

Budapest Treaty

Change of Name and Change in Fees

NATIONAL COLLECTIONS OF INDUSTRIAL AND MARINE BACTERIA LTD. (NCIMB)

(formerly known as National Collection of Industrial Bacteria (NCIB))

The Director General of WIPO was informed by a notification received on January 25, 1988, from the Government of the United Kingdom that, as concerns the National Collection of Industrial Bacteria (NCIB), an international depositary authority under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, which was the subject of Budapest Notifications Nos. 24, 29, 41, 53 and 60, the full and correct name and address of the said international depositary authority is:

National Collections of Industrial and Marine Bacteria Ltd. (NCIMB)
PO Box 31
135 Abbey Road
Aberdeen AB9 8DG
United Kingdom.

Further, as stated in the said notifications of the Government of the United Kingdom, the fees charged by the said international depositary authority pursuant to Rule 12.2*(a)* of the Regulations under the Budapest Treaty, as published in the October 1986 issue of *Industrial Property*, are changed as follows:

Storage of the microorganism	£ 300
Issuance of a viability statement in those cases in which, in accordance with Rule 10.2, a fee may be charged	50
Furnishing of a sample in accordance with Rule 11.2 or 11.3	25 plus actual cost of carrriage

The fees are subject to Value Added Tax where applicable.

[End of text of the notification of the Government of the United Kingdom]

The fees set forth in the said notification of the Government of the United Kingdom will apply as from the thirtieth day following the date (February 29, 1988) of publication of the said fees in the present issue of *Industrial Property*, that is, as from March 30, 1988 (see Rule 12.2*(c)* of the Regulations of the Budapest Treaty), and will replace the fees published in the October 1986 of *Industrial Property*.

Budapest Communication No. 41 (this Communication is the subject of Budapest Notification No. 67, of February 8, 1988).

Studies

The Interpretation of Patent Claims Revisited: Lessons from the Experience in the United States of America for the New Harmonization Debate

D.S. CHISUM*

I. Introduction

The patent laws of most countries require the inventor to define his or her invention in concise language in the form of one or more "claims."[1] The purpose of claims is to guide the two most important decisions in a patent system: (1) does the invention comply with the standards of patentability and (2) is the patent infringed?

Claim interpretation is a critical and recurring problem for every participant in a patent system: the inventor and his or her attorney or agent in composing claim language that both adequately distinguishes the invention from the prior art and provides meaningful protection against future misappropriation, the Patent Office official (and any reviewing authority) in determining whether the claimed invention is patentable, potential and actual licensees or competitors of the patent owner in assessing the scope and validity of the patent; a court or agency deciding whether the patent on an invention should be invalidated or revoked; and a court or agency in deciding whether the patent is infringed by a person or company accused of exploiting the patented invention without the permission of the patent owner.

The topic of claim interpretation is hardly a new one. It has been much discussed by judges and scholars in the United States of America, Japan, and elsewhere. Claim interpretation was a major point of compromise in the negotiations that led to the harmonization of European patent law.[2] However, two recent developments justify revisiting the topic. First, the application of patent law in the United States has been significantly revitalized by political and legal developments, especially those directed to trade policy, and by the creation of a single court (the Court of Appeals for the Federal Circuit) with virtually exclusive jurisdiction over appeals concerning patent validity and infringement issues.[3]

Second, the prospect of the harmonization of patent laws on a wider basis—including the United States of America, Japan and other countries, as well as the European States—brings the fundamental problem of claim interpretation to the forefront of discussion once again. The potential advantages of international patent law harmonization are manifest. Such harmonization will lower the costs of obtaining worldwide patent protection on important inventions by eliminating duplication of efforts in preparing and examining patent applications in individual countries. If the countries with the major markets for the commercial exploitation

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[1] This is certainly true of full patents on utilitarian inventions. In the United States, patents may be obtained on designs and plants. With such patents, the claim is merely a formal one—to the disclosed design or plant.

[2] Article 69 of the European Patent Convention provides that the "extent of the protection conferred by a European patent ... shall be determined by the terms of the claims" and that "nevertheless the description and drawings shall be used to interpret the claims." The meaning of Article 69 was discussed in a protocol adopted by the parties to the Convention:

> "Article 69 should not be interpreted in the sense that the extent of the protection conferred by a European patent is to be understood as that defined by the strict literal meaning of the wording used in the claim, the description and drawings being employed only for the purpose of resolving an ambiguity found in the claims. Neither should it be interpreted in the sense that the claims serve only as a guideline and that the actual protection conferred may extend to what from a consideration of the description and drawings by a person skilled in the art, the patentee contemplated. On the contrary, it is to be interpreted as defining a position between these extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties."

[3] The Federal Circuit came into being on October 1, 1982. It superceded the Court of Customs and Patent Appeals (CCPA) and the Court of Claims. The Federal Circuit has jurisdiction over both appeals from the Patent and Trademark Office concerning rejection of patent applications and appeals from district court proceedings concerning the validity and infringement of issued patents. The Federal Circuit adopted as binding precedent the decisions of its two predecessor courts. As a result, the numerous patent law decisions by the CCPA (and the lesser number of such decisions by the Court of Claims) rendered prior to October 1, 1982, have become of greater importance since they directly guide patent infringement suits in district courts. As of September 18, 1987, the Federal Circuit has issued approximately 400 published opinions in appeals concerning questions of patent law.

of inventions all offer strong patent protection on uniform terms, no country will take a "free ride" on the investment in research and development induced by the patent systems of other countries. But if these advantages are to be fully achieved, inventors obtaining patents in different countries with the same or similar claim language must have a reasonable degree of confidence that those claims will be given a similar interpretation and hence confer a similar scope of protection. Therefore, a model for the international harmonization of patent laws must include sound basic principles for the interpretation of patent claims.

The experience with claim interpretation in the United States provides valuable insights as to what these basic principles should be and how the principles are applied in specific situations. The sheer volume of case law that has accumulated during the 200-year history of the United States patent system provides a rich source of case examples and commentary thereon. With the advent of the Court of Appeals for the Federal Circuit, the principles of claim interpretation previously developed have been unified into a coherent structure.

In this article, I will review some of the basic principles of patent claim interpretation that can be derived from case law in the United States and illustrate those principles with actual case examples.

II. The Necessity of Interpretation — "Unambiguous" Claim Language

Ideally, patent claim language would be so immediately clear and unambiguous that there could be no question or dispute as to its meaning. However, experience has shown that this ideal is not and cannot be achieved in practice. Claims are written by human beings who have neither perfect skill of expression nor perfect understanding of the invention, knowledge of the prior art which determines its patentability, or precognition of the various forms into which the invention may be cast in the future. A patent system cannot operate fairly to achieve its purpose of encouraging innovation and the encouragement of the disclosure of inventions if it demands an unreasonably high standard of particularity in claim draftsmanship.

Human imperfection is not the only reason why claim language is not consistently absolutely clear. The nature of language and the task assigned by the patent system to written claims make such clarity an impossible dream. The point is stated eloquently in a leading judicial opinion on claim interpretation:

> "Claims cannot be clear and unambiguous on their face. A comparison must exist. The lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much shadow encumbers the reality. The very nature of words would make a clear and unambiguous claim a rare occurrence.... 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. This conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled. Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot. Things are not made for the sake of words, but words for things."[4]

For these reasons, proper claim interpretation is not and cannot be a simple matter of determining the dictionary or technically-accepted meaning of the words in the claim. Rather, the proper meaning of claim language can only be derived from a careful consideration of the context in which the patent claim language was used. The context includes the specification, the other claims (if any) in the patent, and the record of the examination proceedings that led to the issuance of the patent ("prosecution history").

A good example of the fallacy of the "plain meaning" approach to claim language is provided in a recent decision involving a patented invention on a soft contact lens with a laser-etched positioning mark.[5] The claim specified that the surface surrounding the laser-etched marking be "smooth." "Smooth" is a word with an apparently clear meaning. The accused infringer attempted to circumvent the scope of the claim by showing that the edges of its markings were not absolutely ridge-free (i.e., not "smooth") when scrutinized by a scanning electron microscope (SEM). The court stressed that "smooth" should be construed by resort to extrinsic evidence such as the specification, other claims, and the prosecution history. Such evidence indicated that "smooth" should not be taken as meaning absolutely ridge-free under the scrutiny of an SEM. Testimony indicated that a person of ordinary skill in the art would use an optical microscope, not an SEM, to gauge smoothness. "Smooth" in the context of the claim means smooth enough to serve the inventor's purpose, which was to avoid both irritation of the wearer's eyelid and a partial blurring of vision.

III. Consistency of Interpretation: Interpretation During Examination, Infringement and Validity Proceedings

A patent claim must be interpreted in a consistent fashion in determining both its validity and its infringement.[6] If the inventor secures a narrow interpretation in order to sustain the validity of a patent, it would be manifestly inappropriate for the inventor to show infringement by giving a broader interpretation.[7]

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[4] *Autogiro Co. v. America v. United States*, 384 F.2d 391, 155 USPQ 697 (Ct. Cl. 1967).

[5] *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986).

[6] E.g., *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437, 1449, 223 USPQ 603, 610 (Fed. Cir. 1984)(claims "must be construed in the identical way for both infringement and validity").

[7] E.g., *Devex Corp. v. General Motors Corp.*, 494 F. Supp. 1369, 1375, 210 USPQ 902 (D. Del. 1980) *aff'd* 667 F.2d 347, 212 USPQ 643 (3d Cir. 1981)("Neither precedent nor logic dictates that a claim which has been narrowly construed in order to survive a validity determination should be interpreted more broadly when it comes to determining what practices violate its coverage.").

Conversely, if the inventor secures a broad interpretation in order to show infringement, it is appropriate to invalidate the claim if, as interpreted, it covers ("reads on") the disclosures in the prior art.[8]

The maintenance of a consistent interpretation for purposes of validity and infringement is a serious problem for those patent systems in which cancellation or invalidation proceedings are separate from infringement proceedings. For the most part, this problem is avoided in the United States where the validity of a patent may be and often is raised by an accused infringer as a defense. Problems do arise when, in a given case, the issue of validity or infringement must be re-tried because of a legal error. In one case, the error directly affected only the determination of infringement. Yet, because the infringement trial under United States practice would be tried to a different jury panel, the court felt that it was necessary to re-try the validity question as well.[9]

The principle of consistency in claim interpretation is subject to a major caveat relating to the interpretation of claims to determine patentability. After issuance of a patent, when the validity of a patent claim is challenged, the claim will be construed, if reasonably possible, so as to sustain the validity of the claim.[10] While the patent application is undergoing examination by the Patent and Trademark Office, a claim is given the "broadest reasonable construction."[11] The reason for such broad interpretation was recently reiterated by the Federal Circuit as follows:

> "Patent application claims are given their broadest reasonable interpretation during examination proceeding, for the simple reason that before a patent is granted the claims are readily amended as part of the examination process.... Claims may be amended for the purpose of distinguishing cited references, or in response to objections [as to definiteness or the adequacy of disclosure support] raised under section 112. Issues of judicial claim interpretation such as arise after patent issuance, for example, during infringement litigation, have no place in prosecution of pending claims before the P.T.O., when any ambiguity or excessive breadth may be corrected by merely changing the claim."[12]

The "broadest reasonable interpretation" principle has been extended to reissue and reexamination proceedings involving patents.[13] This extension can cause substantial hardship to a patent owner if the claim would have been held valid over the prior art under the normal interpretation standard but is considered unpatentable under the broad interpretation standard. Any substantive amendment to a patent claim made during reissue or reexamination will extinguish any right to recover damages for infringement of that claim as to activity occurring prior to the reissuance or reexamination confirmation.[14] While amendments made to cure formal defects or for the purpose of clarity do not extinguish such a right,[15] an amendment required in order to distinguish prior art is not likely to be viewed as nonsubstantive.[16]

When infringement rather than patentability is being determined, claim interpretation is the first but not the final step.[17] After a claim is properly construed, the language of the claim is then compared with the device or method accused of infringement. If every element or limitation of the claim is found in the device or method, then "literal" infringement is established. If literal infringement exists, then a conclusion of infringement in law normally follows. In rare and isolated cases, a device or method falling literally within the language of a claim will be nevertheless found not to infringe in law if that device or method functions in a substantially

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[8] *Smith v. Hall*, 301 U.S. 216, 81 L.Ed. 1049, 57 S. Ct. 711 (1937).

A related problem is whether a narrow construction of a claim entered against a patent owner is binding in subsequent suits brought by the patent owner against other accused infringers. See *Jackson Jordan, Inc. v. Plaser American Corp.*, 747 F.2d 1567, 224 USPQ 1, 10 (Fed. Cir. 1984); *A.B. Dick Co. v. Burroughs Corp.*, 713 F.2d 700, 218 USPQ 965 (Fed. Cir. 1983)(judicial statements on the scope of a claim have a collateral estoppel effect in a later suit only to the extent that the determination of scope was essential to a final judgment on validity or infringement).

[9] *Witco Chemical Corp. v. Peachtree Doors, Inc.*, 787 F.2d 1545, 229 USPQ 188 (Fed. Cir. 1986)("In order to determine infringement, the scope of disputed claims must be construed in light of the patent's specification and prosecution history. Here the arguments against infringement are indistinguishably woven with the factual underpinnings of the validity and enforceability determinations.... Consequently, the entire judgment is vacated and the case remanded for a new trial."). Compare *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 221 USPQ 669 (Fed. Cir. 1984)(no retrial of the validity issue is required after an appellate reversal of the noninfringement finding absent evidence that the appellate court in finding infringement interpreted the claims differently from the jury that found the patent valid).

[10] E.g., *ACS Hospital Sys., Inc. v. Montefiore Hospital*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984).

[11] E.g., *In re Heck*, 699 F.2d 1331, 216 USPQ 1038 (Fed. Cir. 1983); *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541 (CCPA 1969).

[12] *Burlington Industries, Inc. v. Quigg*, 822 F.2d 1581, 3 USPQ2d 1436 (Fed. Cir. 1987).

[13] *In re Yamamoto*, 740 F.2d 1569, 222 USPQ 934 (Fed. Cir. 1984). See also *In re Queener*, 796 F.2d 461, 230 USPQ 438 (Fed. Cir. 1986).

[14] See, e.g., *Fortel Corp. v. Phone-Mate, Inc.*, 3 USPQ2d 1771 (Fed. Cir. 1987). The reissue and reexamination statutes provide, in effect, that a right to recover damages for infringement of a claim survives reissue or reexamination only if a claim in the reissued or reexamined patent is "identical" to a claim in the original patent.

[15] *Slimfold Manufacturing Co., Inc. v. Kinkead Industries, Inc.*, 810 F.2d 1113, 1 USPQ2d 1563 (Fed. Cir. 1987); *Kaufman Company, Inc. v. Lantech, Inc.*, 807 F.2d 970, 1 USPQ2d 1202 (Fed. Cir. 1986).

[16] For this reason, the PTO recently ruled that the broad construction rule should not apply to the reexamination of patents that have expired. See *Ex parte Papst-Motoren*, 1 USPQ2d 1655 (PTO Bd. Pat. App. & Int'f 1986). The owner of an expired patent can potentially recover damages for infringing acts occurring prior to expiration. Amendments to the claims of an expired patent would serve no purpose other than to deprive the patent owner of such a remedy for damages.

[17] As to the *time* framework for construing and applying the language of patent claims to determine infringement, the district court in *E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co.*, 2 USPQ2d 1545, 1575-76 (D. Del. 1987) noted that "[i]nfringement is determined based on the claims of the patent as construed by the methods generally used by those skilled in the art at the time the patent application was filed, not by other methods not then generally used or which were developed later in order to obtain lower results."

different way.[18] If literal infringement does not exist, then a further inquiry is made into whether there is infringement under the doctrine of equivalents.

Under the doctrine of equivalents, a process or apparatus may be the basis of an infringement finding even though it falls outside of the scope of the claim. Recent developments in the United States concerning the doctrine of equivalents is an important topic.[19] However, since the application of the doctrine of equivalents is not, strictly speaking, a problem of claim *interpretation*, it will not be dealt with in this article.

IV. The Role of "Rules" and "Canon" of Interpretation

Court decisions recite various special rules and canons on the interpretation of patent claims. Examples include: (1) "Words will be given their ordinary and accustomed meaning unless it appears that the inventor used them differently"[20] and (2) "claims should be construed as they would be by those skilled in the art."[21]

The limited utility of specific rules or canons developed in prior cases in deciding specific problems of claim interpretation was noted by an appeals court over 40 years ago:

> "[I]n addition to the general rules of construction applicable to all written instruments, the courts over the years have formulated a great number of minor rules or canons of construction applicable to patents only.... Possibly the courts, as non-expert tribunals, felt inadequate to definitely and finally decide the question of the meaning of such a highly technical document as a patent ... and hoped by formulating these minor rules to provide definite guides to meaning for themselves and others to follow in the future. If this was the hope it seems to us that it has not been realized but that on the contrary these numerous overlapping and sometimes conflicting canons of construction and the exceptions thereto shed only an illusion of light upon, and so only add confusion to the exceedingly difficult question of the meaning of a patent.
>
> ....
>
> "... [W]e prefer to decide the question of the meaning of a patent, not by heavy reliance upon subsidiary canons of construction, but rather by resorting to broad general principles applicable to the construction of all similar written instruments.
>
> "The courts have said ... that letters patent are contracts. This seems to us too broad a statement. If patents are contracts at all, surely they are contracts of a peculiar sort. But the fact remains that patents, like contracts, are bilateral instruments, and this common feature makes the rules of the construction of contracts applicable to them. Thus as we see it our problem is to determine first what a patentee intended to claim as his invention or discovery and second upon what invention or discovery the patent office intended to grant a temporary monopoly. To make this determination we turn to the words of the patent, viewing them as objectively as we would view the words of any ordinary contract.
>
> "The rule that the claim or claims of a patent measure the scope of the invention is ... well established ... and equally well established is the rule that claims are to be construed with reference to the specification and in the light of the drawings and the prior state of the same and analogous arts. That is, a claim in a patent, like a clause in a contract, is to be construed in connection with the other terms of the instrument of which it forms a part and the whole instrument is to be interpreted with reference to the circumstances surrounding its inception."[22]

V. Extrinsic Material Pertaining to Claim Interpretation

From the theoretical insights that patent claims do not have an unambiguous "plain meaning," and that special "rules" on the construction of patent claims are of limited utility in solving specific claim interpretation problems, it follows that material other than the bare language of the claim must be considered in determining the proper interpretation of that claim. The Federal Circuit has referred to this additional material as "extrinsic evidence."[23] Extrinsic evidence includes the specification, other claims in the same patent, the prosecution history, and expert testimony.

A. Specification—The Patentee as "Lexicographer"

The primary purpose of the "specification" of a patent is to provide a full description of the invention and sufficient information so as to enable a person of ordinary skill in the art to make and use the invention. In the United States, the inventor must also set forth the "best mode" contemplated for carrying out the invention as of the date the patent application is filed.[24] However, both patentability and infringement are determined by the language of the claims, properly interpreted. The scope of the patent is not limited to the best mode, preferred embodiment, specific objects, or illustrative examples in the specification.[25]

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[18] This possibility is sometimes referred to as the doctrine of "reverse equivalents." The doctrine was recognized in an early Supreme Court decision. See *Westinghouse v. Boyden Power Brake Co.*, 170 U.S. 537, 569, 42 L.Ed. 1136, 18 S.Ct. 707 (1898)("The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent."). The doctrine was applied in *Leesona Corp. v. United States*, 530 F.2d 896, 192 USPQ 672 (Ct. Cl. 1976). See also *SRI International v. Matsushita Electric Corporation of America*, 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985)(*in banc*)(reversing a summary judgment of noninfringement based on the doctrine and indicating that application of the doctrine is a question of fact).

[19] The most significant recent decision by the Federal Circuit on the doctrine of equivalents are *Perkin-Elmer Corp. v. Westinghouse Electric Corp.*, 822 F.2d 1528, 3 USPQ2d 1321 (Fed. Cir. 1987) and *Pennwalt Corp. v. Durand-Wayland, Inc.* (Fed. Cir. Nov. 6, 1987) *(in banc)*.

[20] *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 221 USPQ 473, 477 (Fed. Cir. 1984).

[21] *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 228 USPQ 90 (Fed. Cir. 1985).

[22] *Doble Engineering Co. v. Leeds & Northrup Co.*, 134 F.2d 78, 56 USPQ 426 (1st Cir. 1943).

[23] E.g., *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 229 USPQ 992 (Fed. Cir. 1986).

[24] See *Spectra-Physics Inc. v. Coherent Inc.*, 827 F.2d 1524, 3 USPQ2d 1737 (Fed. Cir. 1987)(patent on laser structure is invalid because the inventor failed to provide sufficient details on its preferred construction method).

[25] *Rolls-Royce Ltd. v. GTE Valeron Corp.*, 800 F.2d 1101, 1108, 231 USPQ 185, 190 (Fed. Cir. 1987)("Reference to an object does not constitute in itself a limitation in the claims"); *Seaman Corp. v. Reeves Brothers, Inc.*, 776 F.2d 584, 589, 227 USPQ 855, 859 (6th Cir. 1985)("a patent is not normally limited to the 'preferred embodiment' or the embodiment that produces the 'best results' or the 'most efficient balance'").

While the claims rather than the specification define the invention, the specification is an important tool for interpreting the language in the claims. It has been stated that the specification is the primary basis for construing the claims.[26] The specification functions as a dictionary, defining the terms used in the claims. Claim language may be, on its face, so ambiguous as to raise questions of invalidity for indefiniteness, and yet, after consideration of the specification, be quite clear in meaning.[27] The converse is also possible: an apparently clear phrase may be rendered fatally indefinite when considered in light of the specification.[28]

The inventor need not use conventional terminology in his claim. A venerable principle of patent claim interpretation is that the inventor may be "his own lexicographer," i.e., define his terms as he chooses, provided that he makes his meaning clear.[29]

The privilege of definition has limits. First, the inventor must use words in the same way in the claims and the specification.[30] Second, the inventor's usage of terminology may be so confusing, inconsistent or incorrect as to render the claim language invalid for indefiniteness.[31]

B. Other Claims—Claim Differentiation

An inventor may include more than one claim in a patent application or patent. The drafter of patent claims operates with incomplete knowledge of the prior art and of the possible ways in which the invention can be exploited. If an inventor were required to state a single claim to the invention, the claim might be too broad because it reads on the prior art or too narrow because it fails to cover embodiments of the invention or even both too broad as to certain elements and too narrow as to other elements. Also, the invention may be the type that can be stated alternatively as a method and as a structure. For these reasons, the law gives inventors reasonable latitude in varying the scope and terminology with which they define their invention.

If there are multiple claims in the patent, the additional claims may be in either independent or dependent form. An independent claim is one containing a complete definition of the claimed subject matter. A dependent claim is one containing a reference to a claim previously set forth and specifying a further limitation of the subject matter.[32]

In construing the language in one claim of a patent, due consideration must be given to the language in other claims in the patent. A specific application of this principle is the doctrine of "claim differentiation." The doctrine embodies the common sense notion that ordinarily language of one claim should not be so interpreted as to make another claim, such as a claim dependent on the first claim, identical in scope. An example is a case involving a patent on a process for removing sulphur from a gas stream.[33] One step of the process covered by claim 1 of the patent required "separating condensed water from the hydrogenated gas stream." The accused infringer argued that the step should be interpreted as meaning separation "prior to contact with an aqueous absorption solution." This argument was based in part on the inventor's argument during the prosecution of the patent that there was a "significant utility ... in removing water ... prior to contact with an aqueous absorption solution." The court refused to read such a "prior to ..." limitation into the claim, noting that another claim, claim 11, explicitly set forth that limitation and that it would be "improper for courts to read into an independent claim a limitation explicitly set forth in another claim."

The doctrine of claim differentiation is sometimes stated as though it were an absolute, immutable rule.[34]

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[26] *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 227 USPQ 293 (Fed. Cir. 1985).

[27] E.g., *In re Moore*, 439 F.2d 1232, 1235-36, 169 USPQ 236 (CCPA 1971).

[28] *In re Cohn*, 438 F.2d 989, 169 USPQ 95 (CCPA 1971)(phrase "opaque finish" used in inherently inconsistent ways in the specification). See also *In re Merat*, 519 F.2d 1390, 186 USPQ 471 (CCPA 1975)(claim phrase "normal chickens" rendered indefinite by specification).

[29] E.g., *In re Castaing*, 429 F.2d 461, 463, 166 USPQ 550 (CCPA 1970)("Whether the terms are conventional is not necessarily controlling. An applicant is ordinarily entitled to be his own lexicographer, so long as his meaning is clear....").

[30] *Fonar Corp. v. Johnson & Johnson*, 821 F.2d 627, 3 USPQ2d 1109 (Fed. Cir. 1987).

Fonar is an instructive case on the importance of both the specification and the other claims of a patent to proper claim interpretation. The patent claim in suit was to a method for detecting cancer using nuclear magnetic resonance (NMR), including the limitations (a) that certain standard relaxation times for normal and cancerous tissue be measured and established, (b) that those times for suspected tissue in a patient be measured, and (c) that the two sets of values be compared. The court held that those limitations do not encompass a comparison involving the "experience and images carried in the minds of doctors" who use the accused machines, which display an image on a screen but do not require numerical computation of times. The word "standard" in claim 1 of the patent does not encompass images stored in a doctor's memory since the specification of the patent does not use "standard" in that sense. Other, nonasserted claims used "standard" in a manner consistent with the specification, referring to "reference tables" as comprising the standards.

[31] E.g., *Ex parte Wolk*, 225 USPQ 225, 227 (PTO Bd. App. 1984)("Appellant's specification contains inconsistent and confusing teachings. Thus the principle that a patent applicant may be his own lexicographer can not apply here. The definition of ash as 'noncatalytic' is wrong. Therefore the statement in the claims that reaction is 'in the absence of a catalyst' is inaccurate and indefinite."). Cf. *Codex Corp. v. Milgo Electronics Corp.*, 717 F.2d 622, 219 USPQ 499 (1st Cir. 1983).

[32] 35 U.S.C. §112. The statute provides that "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers."

[33] *Environmental Designs Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 218 USPQ 865, 871 (Fed. Cir. 1985).

[34] *D.M.I. v. Deere & Co.*, 755 F.2d 1570, 225 USPQ 236 (Fed. Cir. 1985)("Where, as here, the limitation sought to be 'read into' a claim already appears in another claim, the rule is far more than 'general.' It is fixed. It is long and well established. It enjoys an immutable and universally applicable status comparatively rare among rules of law. Without it, the entire statutory and regulatory structure governing the drafting, submission, examination, allowance, and enforceability of claims would crumble."). The Federal Circuit's language is hyperbolic and in a sense dictum since the appeals court was commenting on the trial court's concession that "as a general rule a limitation cannot be read into a claim to avoid infringement."

In fact, however, experience has shown that it actually serves as a guide to construction and may not be determinative in a particular case. In one decision, the court noted that "[c]laim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, similarity will have to be tolerated."[35] A more recent case decided by the Federal Circuit is instructive.[36] The patent in question related to the ubiquitous "cube puzzle." The trial court read a claim of the patent (claim 3) that expressly recited only rotation of a puzzle around a first axis and a second axis as implicitly limited to structures that can also rotate around a third axis. The court did so even though it recognized that such an interpretation rendered dependent claim 4 (specifying rotation around a third axis) completely redundant. The court felt that its interpretation was "a reasonable interpretation of the words of the claim, and is clearly consonant with the implications of the rest of the patent and the intent of the patentee." The accused infringer (who was seeking to invalidate the patent based on a broad construction of the claim) argued on appeal that this was error. The Federal Circuit confirmed the district court's construction.[37]

C. *Prosecution History*

During the course of the prosecution of a patent application (i.e., the process of examination), the inventor, through his patent attorney or agent, may, in response to actions by the examiner, make arguments supporting the patentability of the claimed invention or amend the claims.

Arguments and amendments made during prosecution may have an impact on the scope of the patent after its issuance in two separate ways. First, the arguments and amendments may provide the basis for prosecution history estoppel. The doctrine of prosecution history estoppel provides that a patentee may not recapture through the doctrine of equivalents claim coverage given up during prosecution.[38] Such an estoppel only operates to limit a patentee's attempt to show infringement through the doctrine of equivalents when there is no literal infringement.[39] Thus, prosecution history estoppel is not itself a rule governing claim interpretation.

Second, the arguments and amendments made during prosecution are pertinent to proper interpretation of a claim.[40] The relevance of the prosecution history to claim interpretation is illustrated in a number of cases. In one case,[41] the patent in question related to a catalytic process used to make acrylamide. The claim recited the use of certain "copper ions in solution." During a reissue proceeding, the patentee, in response to an examiner rejection based on a certain reference showing a certain "Urushibara copper" catalyst, argued that the reference disclosed use of a "metallic copper" and that such a metallic copper catalyst was outside the scope of the claim in question. The court held that the patentee's argument to the examiner precluded the patentee from interpreting the claim so as to include metallic copper catalysts.[42] Another case dramatically illustrates the effect the course of prosecution can have on interpretation of a claim.[43] The claims of two related

[35] *Autogiro Co. of America v. United States*, 384 F.2d 391, 404, 155 USPQ 697 (Ct. Cl. 1967).

[36] *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986).

[37] "[The accused infringer] argues that because claim 1 ... expressly claims rotation about three axes, claim 3 must therefore be more 'broadly' claiming rotation about two axes only. The language of dependent claims 4 and 5 are said to support this argument. The district court reviewed the entire patent and concluded otherwise. In our view, the district court's interpretation of the claims is the more reasonable one." 793 F.2d at 1269 n4.

[38] The leading Supreme Court decision is *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 52 USPQ 275 (1942). A good illustration of prosecution history estoppel is *Mannesmann Demag Corp. v. Engineered Metal Products Co., Inc.*, 793 F.2d 1279, 230 USPQ 45 (Fed. Cir. 1986). In *Mannesmann Demag*, the patent related to a vessel for a metal smelting furnace. The original patent application claim provided that certain sections of a coil be arranged "closely adjacent." After a rejection by the examiner, the inventor amended the claim to require that the sections be "in contacting relation." The court held that this created an estoppel that precluded the application of the doctrine of equivalents to find infringement when the accused device separated the sections by a certain "slag-stopping bar." The court noted that "Determination of the scope of an estoppel deriving from actions taken before the Patent and Trademark Office requires review of not only the nature of such actions, but the reasons therefor; the prior art thereby distinguished, and the examiner's objections thereby overcome."

[39] The amendment of claims during prosecution does not automatically preclude all reliance on the doctrine of equivalents. In a much quoted decision, *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 219 USPQ 473 (Fed. Cir. 1983), the court noted:

> "Amendment of claims is a common practice in prosecution of patent applications. No reason or warrant exists for limiting application of the doctrine of equivalents to those comparatively few claims allowed exactly as originally filed and never amended. Amendments may be of different types and may serve different functions. Depending on the nature and purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero. The effect may or may not be fatal to application of a range of equivalents broad enough to encompass a particular accused product."

[40] *Graham v. John Deere Co.*, 383 U.S. 1, 33, 148 USPQ 459 (1966)("an invention is construed not only in the light of the claims, but also with reference to the file wrapper or prosecution history in the Patent Office.... Claims as allowed must be read and interpreted with reference to rejected ones and to the state of the prior art; and claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent"); *Howes v. Medical Components, Inc.*, 814 F.2d 638, 2 USPQ2d 1271, 1273, 1274-75 (Fed. Cir. 1987)("during the prosecution of a patent, claim language may take on new meanings, possibly different from that which was originally intended").

[41] *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 227 USPQ 293 (Fed. Cir. 1985).

[42] After finding noninfringement based on this claim construction, the Federal Circuit went on to find the patent claim invalid for indefiniteness and obviousness. In a later case involving a patent on a closely-related process, the Federal Circuit confirmed a finding of validity, noting that "although the *Standard Oil* case and this one involve generally similar conversion processes ... the claims, patents, and records in these cases are dissimilar and thus we are in no way bound by that prior decision." *Dow Chemical Co. v. American Cyanamid Co.*, 816 F.2d 617, 2 USPQ2d 1350 (Fed. Cir. 1987).

[43] *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 228 USPQ 90 (Fed. Cir. 1985).

patents each contained the word "anaerobic." The court held that the same word had a different meaning in the two patents because certain arguments were made in the prosecution of one of the patents but not in the other.

One consequence of giving a role to the prosecution history in the interpretation of patent claim language is that a person, such as a competitor of the patentee, must obtain and study the prosecution history before reaching a final opinion as to the scope or validity of the patent. In cases dealing with requests for multiple damages because of willful infringement, the Federal Circuit has stressed that a person who has actual notice of another's patent rights is obligated to exercise due care to determine whether or not he is infringing and that this obligation includes the duty to obtain competent legal advice (normally a written opinion) before initiating possibly infringing activity.[44] The court has also stressed that studying the prosecution history of the patent is a step "normally considered to be necessary and proper in preparing an opinion."[45]

The impact of statements or actions during the prosecution on the proper interpretation of a patent claim will not always be evident and may be the source of differences of opinion. This is illustrated by the internal divisions among the judges in *SRI International v. Matsushita Electric Corporation of America.*[46] *Matsushita* involved a patent claiming the use of color subtractive striped grids to record color information in television cameras in which a scanning beam makes successive horizontal sweeps to pick up light intensity. The primary prior art reference (Kell) used two grids of respectively unequal densities to generate different frequencies in a signal corresponding to the intensity of the primary colors blue and red. The patent in suit by SRI used two grids that were, in the language of claim 1, of the "*same line density*" but "*angularly superimposed.*" In the specific example in the specification of the SRI patent, the stripes of one grid were vertical while the stripes of the other grid were at 45 degrees. This meant that the effective horizontal distances of the stripes of the grids were unequal, resulting in two frequencies. The accused device by Matsushita used two grids with stripes of equal width that were angularly super-imposed. However, because the grids were imposed at equal opposite angles from the vertical, the stripes continued to be of equal horizontal width, unlike the specific embodiment illustrated in the SRI patent. The Matsushita device generated color information in a signal by a certain offset phase differentiation system, not by generating different frequencies.

The district court granted a summary judgment of non-infringement. First, it found no infringement when the claims were properly interpreted in the light of the specification. The specification predicated that the differently-angled striped filters would generate frequency variations for the two primary color signals. This interpretation was confirmed by the prosecution history. In arguing that the claims were patentable over the prior art, in particular Kell, the attorney for SRI explained to the examiner during the prosecution that "*this applicant assures two different modulating frequencies by virtue of placing one grid at an angle to another grid.*" Second, and alternatively, the district court found an absence of infringement under the doctrine of "reverse equivalents" since the "MEI filter cannot be found to do the same work in the same way with the same result as the SRI filter."

The Federal Circuit heard the case "in banc," that is with all 11 active judges rather than with three or five judges who usually hear appeals.[47] A bare majority of six held that the case should be remanded for a full trial rather than being resolved on a summary judgment motion. A lead opinion representing the views of five judges stated that (1) there was a literal infringement and that the prosecution history provided no basis for estopping the patentee from literally reading the claims on the accused MEI device, and (2) summary judgment was erroneous because there were disputed material issues of fact whether there was an absence of infringement under the reverse doctrine of equivalents. A concurring opinion by Judge Davis stated that (1) there was a disputed factual issue regarding reverse equivalents, and (2) there remained issues regarding literal infringement and possible prosecution history estoppel as a defense to literal infringement. A dissenting opinion representing the views of five judges stated that (1) there was no literal infringement when the claims were construed in the light of the specification and the arguments made during the prosecution history, and (2) the undisputed fact record indicates that the MEI device operates in a fundamentally different way from the patented device and cannot infringe under the reverse doctrine of equivalents.

For purposes of this article, the discussions in *Matsushita* of claim interpretation and literal infringement are of primary interest. Chief Judge Markey in the lead opinion agreed that claim interpretation is "a legal matter subject to review free of the clearly erroneous standard applicable to fact findings."

[44] E.g., *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986).

The Federal Circuit has indicated that whether infringement is willful is a question of fact dependent upon the totality of the circumstances. The presence or absence of an opinion by a competent patent attorney is a factor but is not conclusive. E.g., *Rolls-Royce Ltd. v. GTE Valeron Corp.*, 800 F.2d 1101, 1109-1110, 231 USPQ 185 (Fed. Cir. 1986). In several cases, advice to a foreign company by its in-house patent counsel (i.e., a person other than a United States patent attorney) has been held not sufficient to preclude a finding of willful infringement. E.g., *Spindelfabrik Suessen-Schurr v. Schubert & Salzer Maschinenfabrik AG*, 4 USPQ2d 1044 (Fed. Cir. 1987); *Kloster-Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

[45] *Underwater Devices Inc. v. Morrison-Knudsen Co.*, 717 F.2d 1380, 219 USPQ 569 (Fed. Cir. 1983).

[46] 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985)(*in banc*).

[47] There are 12 judgeships on the Federal Circuit, but at any one point in time there may be one or more vacancies.

The district court erred in relying on a single sentence in remarks SRI made to the examiner concerning the assurance of the generation of "two different modulating frequencies." SRI did not amend the claims in such a way as to limit the "information" recited in the claim to that consisting of two rather than one frequency. Nor did it insert any claim language relating to the manner of operation of the claimed structure. The district court also erred by limiting the claims to the preferred embodiment described in the specification and by failing to consider the effect of other claims that were specific about the angles: "[it] is settled law that when a patent claim does not contain a certain limitation and another claim does, that limitation cannot be read into the former claim in determining either validity or infringement."

The concurring opinion by Judge Davis stated that there were disputed fact issues not only concerning application of the reverse doctrine of equivalents but also over the meaning and impact of the prosecution history.

The dissenting opinion by Judge Kashiwa concluded that the prosecution clearly directed a narrow interpretation of the claim: "arguments made to the PTO to define and explain the claimed invention for the purpose of distinguishing it from the prior art limit the proper interpretation of the claim language, whether or not actual amendments to the claim language are made...."

D. Expert Testimony

In order to establish infringement, a patent owner is not required in every case to offer testimony by an expert on claim interpretation or on the application of claim language to accused devices or methods.[48] However, it is common practice for the parties to infringement suits to offer testimony by experts in the technology to which the patent relates and, in certain circumstances, by experts in patent law and procedures in the Patent and Trademark Office. The Federal Circuit has indicated that in some cases it is error for a trial court not to admit expert testimony on issues such as what a term in the claim means to a person of ordinary skill in the art.[49]

[48] *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986).

[49] *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 657, 229 USPQ 992, 995 (Fed. Cir. 1986)(summary judgment was not appropriate since there existed a dispute as to the meaning of a term ("electrode") in the claim of the patent, and expert testimony by persons skilled in the art would be helpful extrinsic evidence in interpreting the claim; although use of expert testimony is generally a matter of discretion with the trial judge, it was, under the circumstances of the case, an abuse of discretion not to allow such testimony; "In a patent case involving complex scientific principles, it is particularly helpful to see how those skilled in the art would interpret the claim."). Compare *Howes v. Medical Components, Inc.*, 814 F.2d 638, 2 USPQ2d 1271 (Fed. Cir. 1987)(expert testimony on the meaning of terms was not required since the terms were "not technical terms or terms of art").

VI. Claim Interpretation as a Question of "Law" or "Fact"

Whether claim interpretation is a question of "law" or "fact" has significant implications for the method of resolution of disputes as to such interpretation. Under United States judicial procedure, questions of *fact* are resolved by trial courts (such as district courts in infringement suits) and by agencies (such as the Patent and Trademark Office and the U.S. International Trade Commission). An appeals court, such as the Federal Circuit, in reviewing a decision by a trial court or an agency, has only limited power to overturn findings of fact. Further, in an infringement suit, either party may request trial by a jury of citizens. Questions of fact are resolved by the jury, and the trial judge and the appeals court have only limited powers to overturn the jury's verdict.[50] Finally, when a dispute between the parties to a suit is a question of *fact*, that dispute can usually be resolved only after a full trial.

In contrast, an appeals court may freely review the determination of a question of *law* by a trial court or agency. In a jury trial, the trial judge instructs the jury about questions of law. Any dispute over a question of law may be resolved prior to trial through a motion procedure ("summary judgment").

Early Supreme Court decisions treated the interpretation of a patent claim as a question of law.[51] This position was most likely based on the notion that a patent was an integrated document, like a contract, which could be simply read and interpreted without reference to extrinsic circumstances.[52] That notion of claim interpretation has long since been abandoned, and, as has been noted above, it is now viewed as necessary to consider extrinsic evidence, such as the prosecution history. These extrinsic circumstances may depend upon factual matters or upon expert testimony. Nevertheless, the Federal Circuit has followed the old position, repeatedly stating in its opinions that claim interpretation is a question of law.[53]

Despite the Federal Circuit's stated position that claim interpretation is a question of law, a number of its decisions indicate that claim interpretation may neces-

[50] See, e.g., *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986).

The right to trial by jury does not apply to certain "equitable" issues, such as the unenforceability of the patent because of breach of the duty of candor owed to the Patent and Trademark Office. *Gardco Manufacturing, Inc. v. Herst Lighting Co.*, 820 F.2d 1209, 2 USPQ2d 2015 (Fed. Cir. 1987).

[51] E.g., *Bates v. Coe*, 98 U.S. 31, 38-39 (1878)("In construing patents, it is the province of the court to determine what the subject-matter is upon the whole face of the specification and the accompanying drawings.").

[52] See 4 D.S. Chisum, *Patents* §18.06[2] (New York, Matthew Bender 1978, rev. 1987).

[53] E.g., *George v. Honda Motor Co., Ltd.*, 802 F.2d 421, 231 USPQ 382 (Fed. Cir. 1986)("The determination of scope of the claims is a question of law, and dispute respecting that legal issue does not preclude summary judgment."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985).

sitate the resolution of factual matters.[54] In one case, for example, it reversed a trial court's grant of summary judgment of noninfringement based on a certain interpretation of the claim in question. There existed a dispute as to the meaning of the term "electrode" in the claim, and expert testimony as to how persons of ordinary skill in the art would interpret the term would have been helpful.[55] In another case, it similarly reversed a summary judgment on the ground that there were complexities and ambiguities concerning the nature and significance of what occurred during the prosecution of the reissue patent.[56]

In a very recent decision, the Federal Circuit attempted to clarify the confusion over claim interpretation as a question of law or fact.[57]

> "That a claim must be interpreted in a certain way is a conclusion of law.... Like all legal conclusions, that conclusion rises out of and rests on a foundation built of established (undisputed or correctly found) facts. Interpretation of a claim, or of its scope, should not be assayed until that foundation is in place. If the meaning of terms in the claim, the specification, other claims, or prosecution history is disputed, that dispute must be resolved as a question of fact before interpretation can begin. Confusion may be caused by the circumstance in which resolution of the question on the meaning of a term or terms dictates the interpretation of the claim, but that is not unusual, legal conclusions being dictated by established facts and not the other way around, and does not change the nature of the meaning-of-terms inquiry from one of fact to one of law. With the meaning of terms in the claims, specification, etc. established, it may still be necessary to interpret the claim, with its now-defined terms, in light of the specification and prosecution history, with their now-defined terms. It is that interpretation based on established facts that constitutes a legal conclusion reviewable as a matter of law."

VII. "Means-Plus-Function" Claims

In one instance, the patent statutes actually prescribe a rule of claim interpretation. This prescription relates to the "means-plus-function" elements in claims.

Prior to 1946, patent claims, especially those relating to mechanical and electric devices and processes, commonly were expressed in a means-plus-function format to describe a particular element or step. For example, with an invention in which two parts are joined together, the claim might use the phrase "means for fastening said parts." The purpose of such language is to give the claim an appropriately generic scope since it may be unimportant to the nature of the invention whether the exact form of fastening means described by the inventor (e.g., a nail) is used. Thus, cases held that such a claim could be infringed even if the infringer used a subsequently developed alternative structure for achieving the same function.[58]

The Supreme Court's 1946 *Halliburton* decision contained strong suggestions that such "means-plus functions" were invalid *per se* because of "broadness" and "ambiguity."[59] In response to the *Halliburton* decision, a paragraph was included in Section 112 of the Patent Act of 1952 specifically authorizing means-plus-function elements in claims. It provides that "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof." As to the interpretation of claims with such elements, the paragraph provides that "such claim shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof." The purpose of these provisions is to restore the law on the use of these elements to what it was prior to *Halliburton*.[60]

In a number of decisions, the Federal Circuit has confronted the question of how claims with means-plus-function elements should be interpreted. A few decisions deal with claim interpretation to determine patentability or validity, that is, whether the claim as interpreted reads directly on a prior art reference or covers subject matter that is obvious in the light of all of the prior art references.[61] Most decisions, however, deal with claim interpretation to determine infringement.[62]

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[54] E.g., *McGill, Inc. v. John Zink Co.*, 736 F.2d 666, 221 USPQ 944 (Fed. Cir. 1984)(if the meaning of a term of art in a claim is disputed in a trial to a jury and extrinsic evidence is needed to explain the meaning, the construction of the claims should be left to the jury; the jury cannot be directed as to the disputed meaning of the term of art).

[55] *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 229 USPQ 992 (Fed. Cir. 1986).

[56] *Howes v. Medical Components, Inc.*, 814 F.2d 638, 2 USPQ2d 1271 (Fed. Cir. 1987).

[57] *Perini America, Inc. v. Paper Converting Machine Co.*, slip opinion, (Fed. Cir. Oct. 22, 1987).

[58] *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405 (1908).

[59] *Halliburton Oil Well Cementing v. Walker*, 329 U.S. 1, 71 USPQ 1 (1946).

[60] *In re Fuetterer*, 319 F.2d 259, 138 USPQ 217 (CCPA 1963).

[61] *Polaroid Corp. v. Eastman Kodak Co.*, 789 F.2d 1556, 1570, 229 USPQ 561, 572 (Fed. Cir. 1986)(prior art structures performing the recited function did not render the claimed subject matter obvious since the specification and statements in the prosecution history justified giving the means-plus-function element a narrow scope of equivalence); *RCA Corp. v. Applied Digital Data Sys.*, 730 F.2d 1440, 221 USPQ 385 (Fed. Cir. 1984)(a claim element stated in a means-plus-function format cannot be met by an element in a prior art reference that performs a different function). Cf. *In re Queener*, 796 F.2d 461, 230 USPQ 438 (Fed. Cir. 1986). *Queener* involved reexamination of a claim containing a means-plus-function element. As noted above, claims under examination or reexamination are given the "broadest reasonable construction." The question posed but not resolved in *Queener* was whether the inventor could evoke the rule of construction stated in Section 112 to distinguish prior art references that disclosed the same function but, arguably, achieved that function by means that were not equivalent to those disclosed in the inventor's specification.

[62] E.g., *Perini America, Inc. v. Paper Converting Machine Co.*, — F.2d —, — USPQ2d — (Fed. Cir. 1987); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987); *Texas Instruments, Inc. v. U.S. Int'l Trade Comm'n*, 805 F.3d 1558, 231 USPQ 833 (Fed. Cir. 1986); *Medtronic Inc. v. Intermedics, Inc.*, 799 F.2d 734, 230 USPQ 641 (Fed. Cir. 1986); *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 226 USPQ 402 (Fed Cir. 1985); *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 226 USPQ 5 (Fed. Cir. 1985); *D.M.I. Inc. v. Deere & Co.*, 755 F.2d 1570, 225 USPQ 236 (Fed. Cir. 1985); *Radio Steel & Mfg. Co. v. MTD Products, Inc.*, 731 F.2d 840, 221 USPQ 657 (Fed. Cir. 1984).

In a recent decision, the Federal Circuit stated a two-step approach to interpreting claims with means-plus-function elements:

> "A finding of literal infringement of a claim expressed in terms of a series of means for performing particular functions ... involves interpreting the claim to define the recited function. If, as a threshold matter, the recited functions are not performed by the accused device, there can be no literal infringement. On the other hand, if an accused device is found to perform the recited functions, one must determine under §112 para. 6 whether the means by which the accused device performs each function is the same as or equivalent to the means disclosed in the specification for performing each function."[63]

The first step presents no serious problem of interpretation. The claim should clearly recite the function. The second step does require a more complicated process of interpretation. One must first examine the specification of the patent to determine what structure, material or acts are described that correspond to the "means" recited in the claim. One then must compare the described structure, material or act with the structure, material, or act that performs the recited function in the device or method that is in the prior art (if the issue is patentability or validity of the claim) or in the device or method that is the subject of a charge of infringement. The claim will cover that device or method if, upon comparison, the structure, material or act is equivalent to that disclosed in the specification of the patent (and if the other elements of the claim are also found in that device or method).

The inquiry into equivalents mandated by the statute (Section 112, paragraph 6) is not the same as the application of the doctrine of equivalents. The Section 112 inquiry into equivalents is made for the purpose of determining the *literal* scope of the claim.[64] The inquiry is solely into whether the single means in the accused device or method that performs the stated function is the same as or an equivalent of the corresponding structure described in the specification as performing that function. By way of contrast, application of the doctrine of equivalents occurs only after it is determined that the claim, properly interpreted, does not cover an accused device or method. Application of the doctrine of equivalents is guided by a number of equitable considerations. For example, if the invention is a particularly important one—a "pioneer"—it will be given a wider scope of equivalence than if it is a narrow improvement. Equivalence is more likely to be found if the accused infringer deliberately copied the technology of the patent. None of these considerations apply directly to the focused inquiry into equivalents mandated by Section 112, paragraph 6, for the interpretation of means-plus-function elements.[65]

The proper interpretation of means-plus-function elements in claims is discussed in the recent major decision, *Texas Instruments, Inc. v. U.S. International Trade Commission.*[66] At the time this article was written, the decision was still under reconsideration by the Federal Circuit. Nevertheless, the interpretative problem posed in *Texas Instruments* is so instructive as to justify a detailed discussion of the facts of the case and the Federal Circuit's original published opinion.

The patent in suit in *Texas Instruments* disclosed the pioneering invention of the portable electronic calculator.[67] Claim 1 of the patent, which the court treated as representative of the other claims, contained three "means-plus-function" elements: (1) input means including a keyboard with a single set of number keys; (2) electronic memory, arithmetic and transfer means; and (3) display means.[68]

The patent owner petitioned the United States International Trade Commission to exclude certain pocket calculators made in other countries from importation into the United States on the ground that such calculators infringed the patent. The accused pocket calculators unquestionably contained means that perform each of the functions specified in the patent claim. However, as to each element, the accused devices performed the specified function by means that differed from the corresponding means in the patent specification and that embodied subsequently developed, improved technology. As to the input keyboard means, the accused devices used a scanning matrix encoder instead of the conductive strips disclosed in the specification. As to arithmetic, memory and transfer means,

[63] *Spindelfabrik Suessen-Schurr v. Schubert & Salzer Maschinenfabrik AG*, 829 F.2d 1075, 4 USPQ2d 1044 (Fed. Cir. 1987).

[64] *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 225 USPQ 236 (Fed. Cir. 1985).

[65] *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 226 USPQ 5 (Fed. Cir. 1985).

[66] 805 F.2d 1558, 231 USPQ 833 (Fed. Cir. 1986).

[67] The court noted that the inventors' prototype calculator "was accepted for the permanent collection of the Smithsonian's Museum of History and Technology."

[68] Claim 1 of the patent (No. 3,819,921) provides:

1. A miniature, portable, battery operated electronic calculator comprising:

a. input means including a keyboard for entering digits of numbers and arithmetic commands into said calculator and generating signals corresponding to said digits and said commands, the keyboard including only one set of decimal number keys for entering plural digits of decimal numbers in sequence and including a plurality of command keys;

b. electronic means responsive to said signals for performing arithmetic calculations on the numbers entered into the calculator and for generating control signals, said electronic means comprising an integrated semi-conductor circuit array located in substantially one plane, the area occupied by the integrated semiconductor array being no greater than that of the keyboard, said integrated semiconductor circuit array comprising:

i. memory means for storing digits of the numbers entered into the calculator,

ii. arithmetic means coupled to said memory means for adding, subtracting, multiplying and dividing said numbers and storing the resulting answers in the memory means, and

iii. means for selectively transferring numbers from the memory means through the arithmetic means and back to the memory means in a manner dependent upon the commands to effect the desired arithmetic operation;

c. means for providing a visual display coupled to said integrated semiconductor circuit array and responsive to said control signals for indicating said answer; and

d. the entire calculator including keyboard, electronic means, means for providing a visual display, and battery being contained within a 'pocket size' housing."

the accused devices used metal oxide semiconductors instead of the bipolar semiconductors disclosed in the specification. As to the display means, the accused devices used a liquid crystal display instead of the thermal printer disclosed in the specification.

The Administrative Law Judge ("ALJ"), in findings and conclusions adopted by the Commission, found that the claims as construed in light of the specification were not infringed literally or through the doctrine of equivalents. The ALJ reasoned that the functions of the three clauses of the claim were performed in the accused devices by means that were not described in the specification and that were not equivalent to the means so described.

The court affirmed. It did find that there was no substantial evidence to support the ALJ's "determination of non-equivalence as to each claim clause considered separately." Furthermore, it concluded that the ALJ had "interpreted the claims too narrowly when he, in effect, limited each means to the embodiment shown in the specification." Therefore the court agreed with the patent owner that "when each changed means is considered separately, as part of the overall device as described by the inventors, substantial evidence may not support the finding that the resultant device is not an infringement."

The court stressed that 35 U.S.C. Section 112, paragraph 6 "provides, and extensive judicial analysis has reinforced, that when the claimed invention is a novel combination of steps, all possible methods of carrying out each step of the combination are not required to be described in the specification":

> "The purpose is to grant the inventor of a combination invention a fair scope that is not dependent on a catalogue of alternative embodiments in the specification. This court has cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.... The details of performing each step need not be included in the claims unless required to distinguish the claimed invention from the prior art, or otherwise to specifically point out and distinctly claim the invention."

Despite these comments, the court found an absence of literal infringement when the claimed subject matter as a whole is compared with the accused devices as a whole: "where all of the claimed functions are performed in the accused devices by subsequently developed or improved means, [it is not appropriate] to view each such change as if it were the only change from the disclosed embodiments of the invention. It is the entirety of the technology embodied in the accused devices that must be compared with the patent disclosure."

The construction of claims drafted in the means-plus-function form permitted by Section 112 is to be guided by equitable considerations in a fashion similar to the application of the doctrine of equivalents.

> "While the scope of patent claims under section 112 paragraph 6, is a legal determination, it is not devoid of equitable considerations, particularly when determining the breadth of 'means' claims on complex and rapidly-evolving technologies.... However, this does not mean that there is no limit on changed means of performing a claimed function, such that literal infringement can never be avoided. There must be outer boundaries to the scope of these rules, as for most rules, when the factual situation strains their rote application and requires a fresh look at the rules in the new context in which they are presented. There is no abstract guide to determining when a modified device crosses the boundary with respect to the reasonable scope of patent claims. Indeed, the determination of infringement is not made in the abstract, but in the context of the claimed invention and the accused devices."

The court concluded that "[t]aken together, [the] accumulated differences distinguish the accused calculators from that contemplated in the ... patent and transcend a fair range of equivalents of the ... invention."

VIII. Conclusion

In the United States, the courts have developed a set of sound principles for the interpretation of patent claims. These principles seek to further the twin goals of providing a clear definition of the invention to guide the determinations of patentability and infringement and of assuring a fair scope of protection to the inventor. Recognizing that the words in patent claims cannot have an unambiguous "plain meaning," and that words derive meaning not from dictionaries but from how they are used and understood by humans, the courts have directed that an inquiry into the full context in which the words are used be made as a predicate to the interpretation of the meaning of those words. Consideration must be given not only to the words of the patent themselves but also to the specification, the other claims in the same patent, the prosecution history of the patent, and expert testimony as to how persons of ordinary skill in the art would interpret any technical terms in the claim.

The experience in the United States shows that the proper interpretation of specific patent claims is a matter upon which reasonable minds will often differ and that resort to the uncertain process of litigation in the courts will continue to be necessary in some circumstances. This does not mean that the principles of claim interpretation are deficient. Rather, it demonstrates the inherent difficulty of the task assigned to patent claims—to provide both a clear and fair scope of protection without imposing impossible demands on the human and financial resources devoted to the patent system.

Books and Articles

Book Reviews

The 30-Year History of the Japanese Group of AIPPI, Japanese Group of AIPPI, Tokyo, 1987. — 2 volumes, 694 pages.

This book is a publication commemorating the 30th anniversary of the Japanese Group of AIPPI.

The first volume provides an excellent description of the history of the Group during the first 30 years of its existence. It contains illustrations showing major events in the history of AIPPI in which the Japanese Group played an important role, messages delivered by heads of various organizations on the occasion of the anniversary, essays written by those who contributed to the development of the Group, and detailed records of its activities highlighted by important events such as the foundation of the Japanese Group in 1957 and AIPPI's Tokyo Congress in 1966. Interesting details are communicated in an interview given by Mr. Inouye, the Director General of the Japanese Patent Office in 1957, who recalled the circumstances concerning the establishment of the Japanese Group. A comprehensive index in English covers all issues from 1976 to 1986 of the English version of the *Quarterly Journal of the Japanese Group of the International Association for the Protection of Industrial Property.*

The second volume contains an organizational chart of the Group and a complete list of its members with their photographs and addresses.

During the last 30 years, the Japanese Group has become the biggest national group of AIPPI. This period is also a significant era for Japanese industry which, through effective use of the industrial property system, has made remarkable progress in technology. Thus, the book contributes to an understanding of the important role played by the industrial property system in the technological and economic development of Japan.

YT

Patentgesetz — Kommentar auf der Grundlage der deutschen und europäischen Rechtsprechung, by R. Schulte, Carl Heymanns Verlag KG, Cologne, etc., 1987. — 987 pages.

Among the publications dealing with the patent law of the Federal Republic of Germany, the commentary by Dr. Schulte holds a special position because it gives comprehensive information, including references to provisions of the European Patent Convention, in a clear and concise presentation. The fourth edition, published in 1987, contains updated information on the interpretation of the law in the practice of the German Patent Office and in court decisions and thus makes this useful publication still more valuable.

LB

Les brevets d'invention — La Loi belge du 28 mars 1984, by B. Van Reepinghen and M. De Brabanter. F. Larcier S.A., Brussels, 1987. — 435 pages.

This publication comprises three parts:

Firstly, a clear, in-depth analysis of a series of questions relating to patents in Belgium as a result of the new Belgian Patent Law of March 28, 1984,[1] which takes its inspiration from the European and Community provisions on patents; secondly, an analysis of Regulation No. 2349/84 of July 29, 1984, of the Commission of the European Communities (CEC) concerning application of Article 85(3) EEC to categories of patent licensing agreements; thirdly, an analysis of the various international conventions.

This publication will surely be of great use to those dealing with the theory and the practice of industrial property law.

BI

[1] See *Industrial Property Laws and Treaties*, BELGIUM — Text 2-004.

Grundzüge und Entwicklung des Markenrechts in Argentinien, by U. Wittenzeller. Carl Heymanns Verlag KG, Cologne, etc., 1987. — 196 pages.

The study, as stated by the author herself, is intended to be a comparative law presentation of the basic features of the Argentinian trademark system, its historical development and its interrelationship with the systems of other Latin American countries. Its purpose is to acquaint European lawyers with the specific legal tradition and jurisprudence of Argentina and increase the understanding of the special problems facing the country.

The book starts with a summary of historical developments in Argentina and other Latin American countries stressing the fact that Argentina can reflect upon a particularly rich tradition in trademark law of more than a hundred years' standing. In short, but clear and precise outlines, the features of the modern trademark law, in particular the special notions of distinctiveness and similarities, the procedures for the registration of trademarks, oppositions and revocation, defensive marks and the removal of trademarks for non-use are given.

The author shows that the consumer protection aspect of modern trademark law has been a well-established element of the trademark law of Argentina for several years. She also describes modern trends to contain the influence of transnational corporations with instruments of trademark law policy. The study, which is not meant to serve as a reference book, is highly recommended for the reader who wants to get a clear view of the existing trademark system of Argentina and its historical and social implications.

AS

Selection of New Publications

AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION (AIPLA)—CHEMICAL PRACTICE COMMITTEE, *Claiming Biotechnological Inventions* (ed. by B.M. Eisen and J. Williams), AIPLA, Arlington, 1985. — multiple pagination.

ASIAN PATENT ATTORNEYS ASSOCIATION (APAA), *Laws and Practices on Anti-Counterfeiting in APAA Countries (1985)*, APAA, Tokyo, 1985.— 159 p.

BENT (S.A.), BIGGART (W.A.) and SCHWAAB (R.L.), *Biotechnology Patent Practice*, Patent Resources Institute, Inc., Washington, D.C., 1985. — multiple pagination.

BENTATA (V.), *Derecho marcario: fundamentos teóricos y prácticos*, Instituto Nacional de Propiedad Intelectual, Caracas, 1986. — 188 p.

BERNHARDT (W.) and KRASSER (R.), *Lehrbuch des Patentrechts—Recht der Bundesrepublik Deutschland, Europaïsches und Internationales Patentrecht* (4th revised ed.), C.H. Beck'sche Verlagsbuchhandlung, Munich, 1986. — 742 p.

BRAUN (A.), *Précis des marques de produits et de service: Loi uniforme Benelux, droit belge, droit international*, F. Larcier S.A., Brussels, 1987. — 918 p.

Brevets, marques et dessins industriels en Amérique centrale et du Sud, prepared by Obligado & Cia., Buenos Aires, 1986. — 188 p.

BURSTALL (M.L.), *The Community's Pharmaceutical Industry*, Office for Official Publications of the European Communities, Luxembourg, 1985. — 156 p.

Butterworths Competition Law Handbook (ed. by G. Lindrup), Butterworths, London, 1987. — 419 p.

CARR (H.), *Computer Software: Legal Protection in the United Kingdom*, ESC Publishing Ltd., Oxford, 1987. — 228 p.

CENTRE PAUL ROUBIER, *Les conflits de réglementations dans le droit français et le droit communautaire des pratiques restrictives de concurrence* (Journées d'étude de droit de la concurrence, Lyon, 24 et 25 mai 1984), Librairies techniques, Paris, 1985. — 222 p.

DIENER (M.), *Contrats internationaux de propriété industrielle*, Librairies techniques, Paris, 1986. — 347 p.

Direct Protection of Innovation (ed. by W. Kingston), Kluwer Academic Publishers, Dordrecht, Boston, Lancaster, 1987. — 346 p.

EISENREICH (K.), *Die neuere Entwicklung des Ausstattungsrechts unter besonderer Berücksichtigung der Dienstleistungsausstattung*, Carl Heymanns Verlag KG, Cologne, etc., 1987. — 184 p.

EUROPEAN ASSOCIATION FOR RESEARCH ON PLANT BREEDING (EUCARPIA), *Genetic Manipulation in Plant Breeding: Proceedings* (International Symposium organized by EUCARPIA, September 8-13, 1985, Berlin (West)) (ed. by W. Horn, C.J. Jensen, W. Odenbach and O. Schieder), W. de Gruyter, Berlin, New York, 1986. — 909 p.

GALLAFENT (R.J.), EASTAWAY (N.A.) and DAUPPE (V.A.F.), *Intellectual Property Law and Taxation* (2nd ed.), Oyez Longman, London, 1984. — 338 p.

GRUBB (P.W.), *Patents in Chemistry and Biotechnology*, Clarendon Press, Oxford, 1986. — 335 p.

GRÜTZMACHER (R.), SCHMIDT-COTTA (R.-R.) and LAIER (H.), *Der internationale Lizenzverkehr: Genehmigungsvorschriften, Steuern, Devisenbestimmungen und Hinweise zur internationalen Lizenzpraxis* (7th revised and corrected ed.), *Schriftenreihe Recht der Internationalen Wirtschaft (6)*, Verlagsgesellschaft Recht und Wirtschaft mbH, Heidelberg, 1985. — 280 p.

INSTITUTO PARA LA INTEGRACIÓN DE AMÉRICA LATINA (INTAL) (Banco Interamericano de Desarrollo), *Régimen jurídico de la transferencia de tecnología en los países de la ALADI* [Asociación Latinoamericana de Integración], INTAL, Buenos Aires, 1986. — 2 volumes *(I. Argentina-Brasil-México; II. Grupo Andino—Régimen en Común (Bolivia, Colombia, Ecuador, Perú, Venezuela))*.

JACOBACCI (G.) and SENA (G.), *Italian Patent Law*, Dott. A. Giuffrè Editore, Milan, 1985. — 156 p.

JOHNSTON (D.), *Design Protection: A Guide to the Law on Plagiarism for Manufacturers and Designers* (2nd ed.), Design Council, London, 1986. — 156 p.

KAZIS (D.A.) and PERRAKIS (C.I.), *Licensing and Industrial Development: The Case of Greece*, Centre of Planning and Economic Research, Athens, 1986. — 208 p.

MARTIN (J.N.), *Paterson's Licensing Acts 1987* (95th ed.), Butterworth and Co. (Publishers) Ltd./Shaw and Sons Ltd., London, 1987. — 1790 p.

MOUSSERON (J.-M.)

Loi de 1968-1978: Jurisprudence 1969-1986 (Dossiers brevets I), Centre du droit de l'entreprise, Montpellier, 1987. — 106 p.

Parasitisme et Recherche et développement (Dossiers brevets III), Centre du droit de l'entreprise, Montpellier, 1987. — 38 p.

MOUSSERON (J.-M.) and VIVANT (M.), *Logiciels et brevets (Dossiers brevets VI)*, Centre du droit de l'entreprise, Montpellier, 1986. — 55 p.

NIMMER (R.T.), *The Law of Computer Technology*, Warren, Gorham & Lamont, Boston, etc., 1985. — multiple pagination.

Patents, Trade Marks and Designs in Central and South America, prepared by Obligado & Cia., Buenos Aires, 1986. — 190 p.

PETRY (M.), *Taxation of Intellectual Property: Tax Planning Guide*, M. Bender & Co., New York, etc., 1986. — multiple pagination.

PHILLIPS (J.), *Introduction to Intellectual Property Law*, Butterworths, London, 1986. — 310 p.

PRACTISING LAW INSTITUTE (PLI), *Patent Litigation 1986* (ed. by T. Arnold), PLI, New York, 1986. — 576 p.

PRACTISING LAW INSTITUTE, *Technology Licensing 1987* (ed. by G. Sobel), PLI, New York, 1987. — 431 p.

PRACTISING LAW INSTITUTE, *The Law of Gray and Counterfeit Goods* (ed. by D. Bender and D. Gerber), PLI, New York, 1987. — 656 p.

REID (B.C.), *A Practical Guide to Patent Law*, ESC Publishing Ltd., Oxford, 1984. — 438 p.

SINCLAIR (L.), *The Vienna Convention on the Law of Treaties* (2nd ed.), University Press, Manchester, 1984. — 270 p.

SINGER (R.), *Le droit allemand des brevets et des modèles d'utilité* (updated ed.), European Patent Office (EPO), Munich, 1987. — 110 p.

TEPLITZKY (O.), *Wettbewerbsrechtliche Ansprüche: Unterlassung—Beseitigung—Schadensersatz (Anspruchsdurchsetzung und Anspruchsabwehr)* (5th ed.), Carl Heymanns Verlag KG, Cologne, etc., 1986. — 524 p.

UNITED STATES TRADEMARK ASSOCIATION (USTA), *1985-86 Trademark Law Handbook: Annual Review of Developments in Trademark Law and Practice* (ed. by A.L. Fletcher and S. M. Weinberg), C. Boardman Company Ltd., New York, 1986. — 322 p.

VIDA (A.), *Die Warenzeichen in der Wirtschaft der sozialistischen Länder*, Carl Heymanns Verlag KG, Cologne, etc., 1987. — 190 p.

VIDALES (A.O.), *Régimen jurídico de la propiedad industrial en los países de la ALADI*, INTAL, Buenos Aires, 1987. — 254 p.

Selection of Recent Articles

COMTE (J.-L.), *"Revisionsbestrebungen im schweizerischen Immaterialgüterrecht,"* Gewerblicher Rechtsschutz und Urheberrecht (Internationaler Teil), 11/1986, pp. 675-681.

van INNIS (T.), *"Dix ans de loi uniforme Benelux de dessins ou modèles,"* Bulletin de l'Association Benelux des conseils en marques et modèles, No. 41, December 1985, pp. 18-26.

Selection of New WIPO Industrial Property Publications

International Classification of Goods and Services for the Purposes of the Registration of Marks under the Nice Agreement of June 15, 1957, as revised at Stockholm on July 14, 1967, and at Geneva on May 13, 1977 (5th ed.), No. 500 (EF), January 1987 (Sw.fr. 125.-).

The Situation of Industrial Property in the Countries of Africa: A Survey, No. 878 (E), September 1987 (Sw.fr. 35.-).

News Items

ALGERIA

Director General,
Algerian Institute for Standardization and Industrial Property

We have been informed that Mr. Dine Hadj Sadok has been appointed Director General of the Algerian Institute for Standardization and Industrial Property.

Calendar of Meetings

WIPO Meetings

(Not all WIPO meetings are listed. Dates are subject to possible change.)

1988

March 7 to 11 (Geneva) — Committee of Experts on the Establishment of an International Register of Andiovisual Works

March 14 to 18 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Working Gronp on General Information

March 21 to 28 (Geneva) — International Patent Classification (IPC) Union: Committee of Experts (Sixteenth Session)

April 18 to 22 (Paris) — Committee of Governmental Experts on Photographic Works (convened jointly with Unesco)

April 18 to 22 (Geneva) — Madrid Union: Assembly (Extraordinary Session)

April 25 to 28 (Geneva) — Committee of Experts on Measures Against Connterfeiting and Piracy (Third Session)

May 2 to 6 (?) — Permanent Committee on Industrial Property Information (PCIPI): Ad hoc Working Gronp on the Revision of the Guide to the IPC

May 16 to 20 (Geneva) — Permanent Committee for Development Cooperation Related to Industrial Property (Twelfth Session)

May 24 to 27 (Geneva) — Consultative Meeting of Experts from Developing Countries on Legal Matters Relating to Intellectual Property in Respect of Integrated Circnits

May 25 to Jnne 1 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Executive Coordination Committee (second session); Patent Cooperation Treaty (PCT) Committee for Technical Cooperation (PCT/CTC) (eleventh session); PCIPI Ad hoc Working Group on Management Information

May 30 to June 1 (Geneva) — Review Meeting on Intellectual Property in Respect of Integrated Circuits

June 2 and 3 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Ad hoc Working Group on IPC Revision Policy

June 6 to 17 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Working Gronp on Search Information

June 13 to 17 (Geneva) — Committee of Experts on the Harmonization of Certain Provisions in Laws for the Protection of Inventions (Fifth Session)

June 20 to 24 (Geneva) — Nice Union: Preparatory Working Gronp (Ninth Session)

June 27 to July 1 (Geneva) — Committee of Governmental Experts for the Synthesis of Principles Concerning the Copyright Protection of Various Categories of Works (convened jointly with Unesco)

September 12 to 16 (Geneva) — International Patent Classification (IPC) Union: Committee of Experts (Seventeenth Session)

September 14 to 16 (Geneva) — WIPO Worldwide Forum on the Impact of Emerging Technologies on the Law of Intellectual Property

September 22 and 23 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI) (Second Session)

September 26 to October 3 (Geneva) — Governing Bodies (WIPO Coordination Committee; Executive Committees of the Paris and Berne Unions) (Nineteenth Series of Meetings)

October 10 to 14 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Working Gronp on General Information (Second Session)

October 24 to 28 (Geneva) — Committee of Experts on Biotechnological Inventions and Indnstrial Property (Fourth Session)

November 21 to December 2 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Working Group on the Search Information (Second Session)

November 28 to December 2 (Geneva) — Committee of Experts on Model Provisions for Legislations in the Field of Copyright

December 5 to 9 (Geneva) — Madrid Union: Preparatory Committee for Diplomatic Conference for the Adoption of Protocols to the Madrid Agreement

December 12 to 16 (Geneva) — Permanent Committee on Industrial Property Information (PCIPI): Executive Coordination Committee (Third Session); Ad hoc Working Gronp on Management Information (Second Session)

December 19 (Geneva) — Information Meeting for Non-Governmental Organizations on Intellectual Property

UPOV Meetings

1988

April 18 to 21 (Geneva) — Administrative and Legal Committee

April 22 (Geneva) — Consultative Committee

June 7 to 9 (Edinburgh) — Technical Working Party on Automation and Computer Programs

June 13 to 15 (Wageningen) — Technical Working Party for Vegetables

June 16 and 17 (Wageningen) — Workshop on Variety Examination (for Lettuce)

June 20 to 24 (Melle) — Technical Working Party for Ornamental Plants and Forest Trees

June 28 to July 1 (Hanover) — Technical Working Party for Fruit Crops, and Subgroups

July 5 to 8 (Surgères) — Technical Working Party for Agricultural Crops

September 27 and 28 (Cambridge) — Workshop on Variety Examination (on Examination Techniques)

October 11 to 14 (Geneva) — Administrative and Legal Committee

October 17 (Geneva) — Consultative Committee

October 18 and 19 (Geneva) — Council

October 20 and 21 (Geneva) — Technical Committee

Other Meetings Concerned with Industrial Property

1988

March 3 and 4 (New York) — The United States Trademark Association (USTA): Forum on "Management of a Corporate Trademark Department"

March 24 (London) — Institute of Trade Mark Agents (ITMA): International Conference on "New Vistas in Trade Marks"

March 29 and 30 (Oxford) — Pharmaceutical Trade Marks Group (PTMG): Annual General Meeting and Conference on Education and Training

April 10 to 15 (Sydney) — International Association for the Protection of Industrial Property (AIPPI): Executive Committee

May 1 to 4 (Phoenix) — The United States Trademark Association (USTA): Annual Meeting

June 6 to 10 (Munich) — European Patent Organisation (EPO): Administrative Council

June 7 to 10 (Strasbourg) — Center for the International Study of Industrial Property (CEIPI): Licensing and Technology Transfer Course (first module)

June 27 to July 1 (Cannes) — International Federation of Industrial Property Attorneys (FICPI): World Congress

July 24 to 27 (Washington, D.C.) — International Association for the Advancement of Teaching and Research in Intellectual Property (ATRIP): Annual Meeting

September 15 to 18 (Angers) — International League for Competition Law (LIDC): Congress

September 28 to 30 (Stockholm) — Pharmaceutical Trade Marks Group (PTMG): Conference on "A Commission of Enquiry—In Search of a System"

October 4 to 7 (Strasbourg) — Center for the International Study of Industrial Property (CEIPI): Licensing and Technology Transfer Course (second module)

November 7 to 11 (Buenos Aires) — Inter-American Association of Industrial Property (ASIPI): Congress

December 5 and 6 (Ithaca, New York) — Cornell University, Department of Agricultural Economics: Animal Patent Conference (Consideration of Applicable United States and International Law, Technicalities of Deposit Requirements, Status of Animal Science Research into Potentially Patentable Animal Types, Anticipated Impact of Patents on Livestock Breeding Sector and Production Agriculture, and Perspectives of Farmers and Those Concerned About Ethical Issues Involved)

December 5 to 9 (Munich) — European Patent Organisation (EPO): Administrative Council