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The Doctrine of Equivalents after Hilton Davis and Markman, and a Proposal for Further Clarification

Werner Stemer*

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Abstract

In March 1997, the United States Supreme Court issued its decision in Warner-Jenkinson Co. v. Hilton Davis Chemical Co. ("Hilton Davis I/," which had been eagerly anticipated in the intellectual property community.

KEYWORDS: disclosure, issues, contract

The Doctrine of Equivalents after *Hilton Davis* and *Markman*, and a Proposal for Further Clarification

TABLE OF CONTENTS

I. INTRODUCTION.....	784
II. PRELIMINARIES	784
A. <i>The Patent Contract</i>	785
B. <i>The Patent Claim</i>	788
C. <i>The Enabling Disclosure</i>	791
D. <i>After the Grant-Reissue</i>	792
E. <i>Infringement</i>	793
III. THE DOCTRINE OF EQUIVALENTS.....	794
A. <i>Two Competing Policy Issues</i>	794
B. <i>Graver Tank</i>	795
IV. LIMITS ON THE DOCTRINE OF EQUIVALENTS.....	798
A. <i>Prosecution History Estoppel</i>	798
B. <i>The Range of Equivalence Dictated by the Prior Art</i>	800
C. <i>Hilton Davis I and the Insubstantial Changes Test</i>	802
V. <i>HILTON DAVIS II</i>	804
A. <i>The Supreme Court Decision in Detail</i>	805
1. The Doctrine of Equivalents and the 1952 Patent Act.....	805
2. Element by Element Analysis	806
3. Prosecution History Estoppel.....	807
4. No Equitable Threshold to Trigger Doctrine of Equivalents	810
5. Not Limited to Equivalents Disclosed in Specification	811
B. <i>No Ruling in the Judge-Jury Question</i>	811
C. <i>Markman v. Westview</i>	812
1. The <i>Markman</i> Hearing.....	813
2. Reconciling <i>Hilton Davis II</i> with <i>Markman</i>	813
D. <i>The Remand</i>	815
E. <i>The Argument Warner-Jenkinson Failed to Make</i>	815
VI. A PROPOSAL	817
VII. CONCLUSION.....	819

I. INTRODUCTION

In March 1997, the United States Supreme Court issued its decision in *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.* ("*Hilton Davis II*")¹ which had been eagerly anticipated in the intellectual property community. The expectations were high. It was hoped that the doctrine of equivalents would either be abolished or clarified. A degree of consistency would return to patent law which had been lacking with the ever expanding application of the doctrine. Patent practitioners would once more be able to prepare and present to their clients unambiguous and dependable infringement opinions. Some had even argued that the Court would abolish the doctrine altogether. Neither expectation came true. Instead, the case at bar was Solomonically decided on the facts, and the Court offered little else beyond a detailed analysis of earlier Supreme Court cases. The doctrine of equivalents is here to stay, and the patent bar will now have to return to the deeply divided Federal Circuit in the hope that the rift in the patent appeals court can be bridged and that the Court will exhibit a higher degree of consistency in future decisions on the doctrine of equivalents.

Part II of this article presents several concepts of patent law which are indispensable for a proper understanding of the issues presented in this article. Part III provides an overview of the doctrine of equivalents from a policy perspective and from an historical perspective. Part IV discusses various limitations on the doctrine of equivalents and several related developments in the Federal Circuit. Part V discusses the specific Supreme Court holdings in *Hilton Davis II* and attempts to reconcile this latest decision with the earlier decision in *Markman v. Westview*.² Finally, Part VI presents a proposal for a further clarification of the application of the doctrine of equivalents.

II. PRELIMINARIES

Patent law, like any area of law, can be understood only if the underlying concepts are properly understood. This part provides a brief overview of several concepts of patent law and statutory definitions pertinent to this article. Furthermore, patent prosecution and claim interpretation are

1. 117 S. Ct. 1040 (1997), *rev'g* 62 F.3d 1512 (Fed. Cir. 1995) [hereinafter *Hilton Davis II*]. This case at the appeals court level is *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995) [hereinafter *Hilton Davis I*].

2. *Markman v. Westview Instruments, Inc.*, 116 S. Ct. 1384 (1996), *aff'g* 52 F.3d 967 (Fed. Cir. 1995) (en banc).

briefly described so as to introduce the reader to those concepts from a practitioner's viewpoint.

A. *The Patent Contract*

The primary model of domestic patent theory is the so-called contract model, which essentially states that a letters patent is a contract between the United States and the patentee.³ The government, under constitutional authority,⁴ promises the inventor to grant and enforce a monopoly in the invention⁵ for a limited time. The inventor, in turn, promises to describe the invention so that it may be made and used by those skilled in the art after the monopoly is terminated.⁶ The government's side of the bargain is enforced in accordance with 35 U.S.C. § 281, which allows the patentee to bring a civil action against a suspected infringer after the patent issues.⁷ The patentee's side of the bargain comes due prior to the issuance of the patent. The patentee is required to provide a proper and enabling description of the invention and to disclose to the Patent Office all pertinent information of which the patentee is aware that could influence the granting of a

3. See PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS § 1.02, at 1–4 (2d ed. 1997) (citing *In re Tenney*, 254 F.2d 619, 624 (C.C.P.A. 1958)); see also *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 159 (1989) (“[T]he bargain held out by the federal patent system of disclosure in exchange for exclusive use.”).

4. U.S. CONST. art. I, § 8, cl. 8. “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” *Id.*

5. 35 U.S.C. § 271 (1994 & Supp. I 1995). The monopoly is infringed by anyone who “without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor[e],” 35 U.S.C. § 271(a) (Supp. I 1995), by anyone who induces infringement, 35 U.S.C. § 271(b) (1994), and by anyone who imports into the United States a product made abroad by a process which is patented in the United States. 35 U.S.C. § 271(g) (Supp. I 1995).

6. The term of a United States utility patent is 20 years from the date of a first application for the patent. 35 U.S.C. § 154(a)(2) (1994). The patent may lapse, however, if maintenance fees are not paid every four years. *Id.* § 151. Design patents are valid for 14 years from the issue date, *Id.* § 41(b), and are not subject to maintenance fees. It is also possible, under very restricted circumstances, to extend a utility patent term such as in the case of drug patents, wherein the invention is subject to a lengthy review process at the Food and Drug Administration and the patent owner may not be able to market the product at the time the patent issues. *Id.* § 155. A patent owner may, however, dedicate the patented invention to the public at any time during the life of the patent. *Id.* § 253 (second paragraph).

7. 35 U.S.C. § 281 (1994).

patent.⁸ The examination in the Patent Office is central to the determination of patentability. The purpose of the in-depth examination is to ascertain that the patentee is indeed entitled to each claim of the patent, that each claim is patentable in light of the prior art, and that the public can determine from the claims whether or not the patented invention is infringed.⁹

The typical application process is as follows: the inventor discloses his invention to a patent attorney.¹⁰ The latter prepares an application by describing the invention in general terms, by describing at least one preferred embodiment of the invention in detail, and by defining the invention with one or more claims.¹¹ The application is then filed in the Patent Office together with an oath or declaration by the inventor stating that he is indeed the first inventor of the subject matter for which the patent is sought.¹² The application is then subjected to an examination before a patent examiner who is an expert in the technical field to which the invention pertains.

The examiner thereby reviews the application in light of the formal requirements under 35 U.S.C. § 112, which calls for an “enabling” disclosure of the invention¹³ and for definite and distinct claims.¹⁴ The

8. 37 C.F.R. § 1.56 (1997).

9. *Hilton Davis I*, 62 F.3d at 1539 (Plager, J., dissenting) (citing Giles Rich, *The Extent of the Protection and Interpretation of Claims-American Perspectives*, 21 INT’L REV. INDUS. PROP. & COPYRIGHT L. 497, 499, 501 (1990)).

10. The United States Patent Office strongly recommends that inventors employ the services of registered patent attorneys or patent agents. See generally U.S. DEP’T OF COMMERCE, PATENT AND TRADEMARK OFFICE, GENERAL INFORMATION CONCERNING PATENTS (1990). When it is apparent that an application was filed by a pro se applicant, the patent examiners are instructed to advise the applicant as follows:

While an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skillful preparation and prosecution.

MANUAL OF PATENT EXAMINING PROCEDURE, CH. 401, ¶ 17.01 (6th ed., rev. 2, July 1996).

11. 35 U.S.C. § 112 (1994).

12. 37 C.F.R. § 1.63(b)(2) (1997).

13. The first paragraph of section 112 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

examiner also compares the claimed invention with the prior art, i.e., prior patents and other technical literature, and determines whether or not, in her opinion, the claims in the application attempt to monopolize something which is old.¹⁵ Anything which belongs to the prior art and has entered the public domain cannot be taken from the public and made the subject of a patent monopoly.¹⁶

Upon completing the review, the patent examiner issues an Office action,¹⁷ which is usually a rejection of the application. The most common rejections in the first Office action are based on the examiner's allegations that the claims, as presented in the application, fail to particularly point out and distinctly claim the invention,¹⁸ that the invention defined in the claims of the application is anticipated by the prior art,¹⁹ and that the claimed invention is obvious over the prior art.²⁰ The applicant then answers the Office action by responding to each of the examiner's objections. This may be done by either argumentatively traversing or satisfying the examiner's requirements and, if necessary, by suitably amending the application.²¹

Amendments often consist of a narrowing of the claims by adding limiting language. Prior art rejections under 35 U.S.C. §§ 102 and 103 are typically answered with a narrowing amendment to overcome the rejection and to remove the prior art. It is thereby paramount that any amendments

35 U.S.C. § 112.

14. The second paragraph of section 112 provides: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." *Id.*

15. Prior art is codified in 35 U.S.C. § 102 (the claimed subject matter is anticipated by the prior art, or there exists a judicial bar against the patentability of the claimed subject matter), and § 103 (the claimed subject matter is an obvious modification of prior art). 35 U.S.C. § 102 (1994); 35 U.S.C. § 103(a) (1994 & Supp. I 1995).

16. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 280–82 (1976). In *Sakraida*, the Court discussed the labors of Hercules in the Greek fables as the prior art. *Id.* at 275 n.1. *Sakraida* dealt with a patent claim on a water flush system for dairy farms in which dammed-up water was quickly released and conducted through the soiled areas of the stables to wash the manure away. *Id.* at 277. The claims were held to be obvious over the labors of Hercules, which included his ingenious diversion of a nearby river through the stables and the resulting removal of all impurities from the stables. *Id.* at 275 n.1.

17. 35 U.S.C. § 132 (1994).

18. *Id.* § 112.

19. *Id.* § 102.

20. 35 U.S.C. § 103(a) (Supp. I 1995).

21. 35 U.S.C. § 132 (1994). "[I]f after receiving [an Office action with a rejection], the applicant persists in his claim for a patent, with or without amendment, the application shall be reexamined." *Id.*

thus made be supported in the original application.²² If such support cannot be found, then the amendment is rejected as being directed to new matter and the applicant is required, in a further Office action, to cancel the new matter.²³ When the patent examiner is satisfied that all of the statutory and regulatory requirements have been met, the application is allowed and, subject to the payment of an issue fee by the applicant, the Patent Office issues a patent.²⁴

B. *The Patent Claim*

The invention is defined in the claims of the patent.²⁵ In terms of the above-noted contract model, the claims define the boundaries of the government's side of the bargain, and the monopoly granted to the patentee covers everything which falls squarely within the boundaries of the claims. A patent claim, which may be in independent or dependent form,²⁶ consists of an introductory phrase (the preamble), a transitional phrase, and a claim body. Generally, the preamble introduces the reader to the field to which the invention belongs, and the body defines the combination of elements or process steps which make up the invention. Alternatively, the preamble may recite the elements of a prior art product or process, and the body of the claim may recite an improvement over that prior art.²⁷ The transition between the preamble and the body of the claim may be open-ended or closed. An open-ended term such as "comprising" or "the

22. *Id.* "No amendment shall introduce new matter into the disclosure of the invention." *Id.* It is possible, however, to *force the entry* of such new matter by filing a continuing application. 37 C.F.R. §§ 1.53, -.60, -.62(a) (1997). A continuing application which adds subject matter relative to the first application, the parent application, is referred to as a continuation-in-part ("CIP"). 37 C.F.R. § 1.53. The applicant is thereby afforded the date of the parent application for any disclosure contained therein, and the date of the CIP for the subject matter added in the continuing application. 35 U.S.C. § 120 (1994).

23. *Id.* § 132.

24. *Id.* § 151. When an applicant appears to be entitled to a patent under law, the Patent Office will issue a notice of allowance and upon the payment of an issue fee within three months of the notice of allowance, a letters patent is issued to the applicant in the name of the United States. *Id.* §§ 151, 153.

25. *Id.* § 112 (second paragraph).

26. 35 U.S.C. § 112 (third paragraph). An independent claim defines a complete invention by itself. A dependent claim refers back to an independent claim (directly or indirectly) and incorporates any and all of the subject matter of that independent claim. *Id.* (fourth paragraph).

27. Improvement-type claims are also referred to as "Jepson claims." See ROBERT C. FABER, *LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING* § 57 (4th ed. 1996) (citing *In re Jepson*, 1917 C.D. 62, 243 O.G. 525 (Ass't Comm'r Patents 1917)).

invention comprises” means that the invention requires at least all of the elements recited in the body, and maybe more.²⁸ For infringement purposes, if the accused product or process has all of the elements of such an open-ended claim, and several additional elements, the claim is still infringed.²⁹ It is only necessary for the patentee to show that the accused product or process incorporates all of the claimed elements.³⁰ If, on the other hand, the claim is written with a closed transition, such as “consisting of” or “the invention consists of,” then only exact accord between the accused product or process and the claim body, will support a holding of patent infringement.³¹

It is difficult to overstate the importance of a patent claim in modern United States patent practice. The scope of the claims alone answers the question whether or not a product or process infringes a patent.³² To be sure, during the early stages of United States patent law, the patent claim was relatively unimportant and it generally consisted of a catchall phrase which covered “the invention as described.”³³ The central claiming system for utility patents was replaced in 1836 with the peripheral claiming system, where the statute required that a patentee “particularly specify and point out the part, improvement, or combination which he claims as his own invention.”³⁴ A peripheral claim thus stakes out the boundaries within which the patentee holds his monopoly. The general description of the invention which makes up the bulk of the patent is thus considerably less important in the context of patent infringement. In the peripheral claiming system it is therefore possible for a product to be virtually identical to an invention *described* in a patent, yet the *claimed* invention is not infringed.

This proposition is best explained by way of a simple example. Assume the invention is a four-legged stool with an upholstered seat and it is defined in the following claim: “A stool, comprising: a plate having a seating surface, upholstery covering said seating surface, and four legs each screwed to said plate opposite said upholstery and supporting said seating surface in a

28. *Id.* §§ 7, 8.

29. *Id.*

30. *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985) (holding that “each element of a claim is material and essential,” and the burden is on the plaintiff to show that every element of the claim or a substantial equivalent is present in the accused product or process).

31. *FABER*, *supra* note 27 at §§ 7, 8.

32. *See Lemelson*, 752 F.2d at 1538.

33. *Hilton Davis I*, 62 F.3d at 1565 (Nies, J., dissenting). *See generally* 3 DONALD CHISUM, CHISUM ON PATENTS, § 8 (Supp.) to § 8.02 (1997).

34. *Hilton Davis I*, 62 F.3d at 1539 (Plager, J., dissenting) (citing *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 278 (1877)).

substantially horizontal position.” The claim thus defines the invention as a combination of three elements, the plate, the upholstery, and the legs. In order to show infringement, the patentee must show that the accused device has all three elements in the same combination.³⁵ Any stool or chair with an upholstered seating surface and with four legs screwed to the seating plate could be shown to infringe the claim. Also, a stool with an upholstered seating surface, five or six legs, a backrest, and two arm rests would still literally infringe the claim because each of the three elements of the claim is found in the accused product.³⁶ However, a stool with an upholstered seating surface and only three legs would not literally infringe the claim. It could also be argued that, because of the use of the term, “screwed,” the claim inferentially included a fourth element, namely screws or bolts with which the legs are attached to the seating plate. Accordingly, a stool with four legs “glued” or “stapled” to the seating surface plate would not literally infringe the claim. The fact that the stool described in the patent specification (even with an express teaching that any number of legs over three would be acceptable or a statement that the legs may be glued or stapled to the seating surface plate) and the accused stool may be virtually identical is of little importance. Only the claim defines the invention.

Whether or not infringement could possibly be shown in the foregoing example under the doctrine of equivalents will be discussed later in this article. An essential point to remember in this context, however, is that if a claim is literally infringed, the doctrine of equivalents and the doctrine of prosecution history estoppel play no role in the infringement analysis.³⁷

An element in a claim may also be expressed as a means for performing a certain function.³⁸ Such *means-plus-function* recitations cover everything expressly described in the specification and their equivalents.³⁹ By way of example, the stool legs in the above claim could be recited as “means for supporting said seating surface in a substantially horizontal position,” or the like. The claim could thus be read on a swing, on a cherry picker seat, or on a camera boom support. Proper claim construction would now turn on the questions of whether or not these alternative embodiments were described in the specification and whether or not they are equivalents of the described

35. *Id.*

36. If, on the other hand, the claim were in the closed format and the term “*comprising*” were replaced with “*consisting of*,” then a stool with a fourth element such as the backrest would not read on the claim and the patented invention would not be infringed.

37. *See, e.g.,* *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1558–59 (Fed. Cir. 1985).

38. 35 U.S.C. § 112 (1994) (sixth paragraph).

39. *Id.*

stool legs.⁴⁰ The Patent Office during the patent prosecution phase and the courts in an infringement action, determine the scope of a *means-plus-function* limitation from the specific structure described in the specification and equivalents thereof.⁴¹

C. *The Enabling Disclosure*

The inventor's side of the bargain requires that he contribute to the arts a disclosure which, when read by a person of skill in the pertinent art, enables the skilled artisan to make and use the invention.⁴² The invention must be described in "full, clear, concise, and exact terms."⁴³ Finally, the inventor must present a best mode example, i.e., an exemplary embodiment of the invention which the inventor, at the time the application is first filed at the Patent Office, deems to be the best mode of the invention.⁴⁴ No proof is necessary as to how the invention was conceived.⁴⁵

It is important to note that the description of the invention must fully support and enable the claimed invention. If a patent specification fails to properly teach and enable the invention, then the contract between the patentee and the government is void for lack of consideration.⁴⁶ Similarly, if the description does not support the entire scope of the claimed invention—the claim is too broad in view of the disclosure—then the contract may be void for insufficiency of consideration.⁴⁷

Once more, this proposition may be best underscored with a simple, yet timely example: Assume the invention is for a disinfectant composition with two main components, namely a benzalkonium and a phospholipid. The specification describes and provides examples of various mixtures of 1) a benzalkonium halide in a range from 3% to 5% by weight; and 2) a synthetic phospholipid in a range from 1% to 10% by weight. The broadest claim, on the other hand, defines the benzalkonium component in a range of *up to a*

40. See, e.g., *In re Donaldson Co.*, 16 F.3d 1189, 1193 (Fed. Cir. 1994) (en banc) (holding that, similar to the courts in infringement actions, the Patent Office must consider limitations on *means-plus-function* elements as dictated by the specification, and not import into the element the broadest possible meaning which reads on anything under the sun).

41. *Id.* at 1195.

42. 35 U.S.C. § 112 (1994) (first paragraph).

43. *Id.*

44. *Id.*

45. 35 U.S.C. § 103 (Supp. I 1995). "Patentability shall not be negated by the manner in which the invention was made." *Id.* § 103(a).

46. *In re Tenney*, 254 F.2d 619, 624 (C.C.P.A. 1958); see ROSENBERG, *supra* note 3, at § 1.02.

47. See *Tenney*, 254 F.2d at 624.

maximum of 5% without providing a lower limit. Such a claim may be argued to be too broad in light of the disclosure and a patent examiner would typically require that the applicant provide a lower limit. Bound by the prohibition against the addition of new matter,⁴⁸ the applicant could only amend the claim to recite a maximum range from 3% to 5%. If such a narrow range is not acceptable, then the inventor must choose between the two alternatives of accepting the severely limited claim, or of filing a continuation-in-part application "CIP."⁴⁹ The latter alternative, however, is often avoided because of the added cost⁵⁰ and considerable delay in prosecution.⁵¹

D. *After the Grant-Reissue*

Once a patent has been issued by the Patent Office, it becomes a public document which defines the patentee's rights within the boundaries of the claims. The patentee has a right to exclude anyone from making, using, selling, or importing the claimed invention.⁵² If the patent is found to be defective, it may be surrendered and the Patent Office may reissue a corrected version of the patent.⁵³ The patent is defective if it contains mistakes in the description, in the drawing, or in the claims.⁵⁴ The claims are considered defective when they are too broad, i.e., the patentee claimed more than he had a right to claim.⁵⁵ They are also considered defective when they are too narrow, i.e., the patentee claimed less than he had a right to claim.⁵⁶ Returning briefly to the above disinfectant example, assume the original disclosure described a functional example in which the benzalkonium halide was present at 1% by weight, yet the example was overlooked by the applicant, who agreed to the limited claims reciting the range of 3% to 5%. The patentee clearly had a right to claim the broader range of 1% to 5% and, according to the reissue statute, the Patent Office

48. 35 U.S.C. § 132 (1994).

49. 37 C.F.R. §§ 1.53, -.60, -.62 (1997).

50. The Patent Office filing fee for new applications and continuing applications is currently \$790.00 (\$395.00 for independent inventors and small business concerns with fewer than 500 employees). 35 U.S.C. § 41(a), (b) (1994); *see also* 37 C.F.R. §§ 1.17-.21 (1997).

51. The filing of a continuing application typically delays the issuance of a patent by several months.

52. 35 U.S.C. § 271(a) (Supp. I 1995); *see also supra* text accompanying note 5.

53. 35 U.S.C. § 251 (1994) (first paragraph).

54. *Id.*

55. *Id.*

56. *Id.*

will reissue the patent upon the surrender of the original patent and a proper application for reissue.⁵⁷

While a reissue application to correct a defective patent in general may be filed at any time during the life of the patent,⁵⁸ it is possible to broaden the claims only if the reissue application is filed within two years of the original grant of the patent.⁵⁹ In addition, the broadened claims may be subject to the intervening rights of a person who practiced the invention prior to the reissue.⁶⁰ For instance, if someone had started to manufacture, prior to the grant of the reissue, the described disinfectant with a benzalkonium halide component of, say, 1.5%, then the patentee would have no apparent patent rights against that intervening party.⁶¹

E. *Infringement*

A patent is infringed by anyone who makes, uses, offers for sale, or sells the patented invention.⁶² The statute is simple enough. The patentee merely carries the burden of proving that the defendant's product or process is the same as the patented invention.⁶³ The patented invention, as outlined above, is defined in the claims of the patent and the metes and bounds of the monopoly granted by the patent are defined in the claims.⁶⁴ Accordingly, infringement is determined by comparing the accused product or process with the claims. Literal infringement is shown if the accused product or process incorporates each and every element of the claim.⁶⁵ However, only a slight modification in the product may move it outside of the literal scope of the patent claim,⁶⁶ while the heart of the invention is clearly copied. This is where the doctrine of equivalents comes into play: unscrupulous copycats who design around the letter of the patent claim, but otherwise copy the

57. *Id.*

58. 35 U.S.C. § 251.

59. *Id.* (fourth paragraph).

60. 35 U.S.C. § 252 (Supp. I 1995).

61. *Id.* "The court before which such matter is in question may provide for the continued manufacture . . . [if] substantial preparation was made before the grant of the reissue." *Id.* (second paragraph).

62. *Id.* § 271(a); *see also supra* text accompanying note 5.

63. *Wilson Sporting Goods Co. v. David Geoffrey & Assoc.*, 904 F.2d 677, 685 (Fed. Cir. 1990) ("The patent owner has always borne the burden of proving infringement . . .").

64. *See Zenith Lab., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418, 1424 (Fed. Cir. 1994).

65. *See Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985).

66. For example, an accused stool could have legs glued to the base, instead of screwed to the base as expressly required by the claim.

invention virtually identically may be stopped by this doctrine.⁶⁷ The doctrine affords the courts a vehicle with which to stave off fraud on the patent and to punish not only literal copying, but also copying by equivalent design.⁶⁸

III. THE DOCTRINE OF EQUIVALENTS

A. *Two Competing Policy Issues*

The patent statutes are founded on the constitutional dictate to promote the progress of science and the arts⁶⁹ and on the economically motivated effort to reward the diligent inventor for his contribution to the arts.⁷⁰ The primary policy argument adopted by the proponents of the doctrine of equivalents is that protection for the patentee must be the primary consideration in claim scope interpretation.⁷¹ The patentee is to be protected against copying of his invention where only minor elements of the product are changed so as to circumvent the letter of the patent claim. As stated more than 180 years ago by Judge Story: "Mere colorable differences, or slight improvements, cannot shake the right of the original inventor."⁷² The competing policy argument, adopted by the opponents of the doctrine of equivalents, is that patents fulfill an even more important function in the progress of the sciences, namely to provide notice to the public as to what is and what is not available for general use.⁷³ During the negotiation phase before the Patent Office, the applicant and the patent examiner agree on the metes and bounds of the claimed invention, and the printed patent must give fair notice as to what was contained in the agreement.⁷⁴ The law does not currently favor either proposition. Instead, the doctrine of equivalents strikes a careful balance between the two competing policies. Nevertheless, one must not overlook the clear prescription by the courts that the doctrine of equivalents must remain the exception rather than the rule.⁷⁵

67. See *Graver Tank & Mfg. Co. v. Linde Air Prods., Co.*, 339 U.S. 605, 607 (1950).

68. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (A patent owner "should not be deprived of the benefits of his patent by competitors who appropriate the essence of an invention while barely avoiding the literal language of the claims.").

69. U.S. CONST. art. I, § 8, cl. 8.

70. See *Hilton Davis I*, 62 F.3d at 1530 (Newman, J., concurring).

71. *Id.*

72. *Odiorne v. Winkley*, 18 F. Cas. 581, 582 (C.C.D. Mass. 1814) (No. 10,432).

73. See *Hilton Davis I*, 62 F.3d at 1541 (Plager, J., dissenting).

74. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991).

75. *Id.*

Currently, a heated debate is brewing as to whether the doctrine of equivalents is an equitable doctrine that evolved out of the equity courts,⁷⁶ or a doctrine which is merely equitable in nature and which may be given to a jury in deciding infringement.⁷⁷ A detailed discussion of the issue is beyond this article and, in fact, the question may reach the Supreme Court before too long. It is even conceivable that *Hilton Davis II*,⁷⁸ the primary case in this article, could once more reach the Supreme Court with regard to this issue.⁷⁹

B. *Graver Tank*

Prior to the decision in *Hilton Davis II*, the courts applied the doctrine of equivalents and its rule of application as it was announced by the Supreme Court in *Graver Tank Manufacturing Co. v. Linde Air Products Co.*⁸⁰ There, the Court was concerned with protecting the patent holder against “the unscrupulous copyist” who would make “insubstantial changes” which add nothing to the art, yet take the product “outside the reach of law.”⁸¹ The Court further recognized that a copyist’s intent on pirating an invention should be expected to introduce a minor variation in an effort to conceal his piracy, and that direct and literal “duplication is a dull and very rare type of infringement.”⁸² *Graver Tank* established the so-called *function-way-result* test, which asked whether the accused product performed: 1) substantially the same function; 2) in substantially the same way; and 3) to lead to *substantially* the same result.⁸³ As explained in *Graver Tank*, when two devices do the same work in substantially the same way, and the result of

76. See, e.g., *Hilton Davis I*, 62 F.3d at 1543 (“The authority to exercise the unique remedy which is the doctrine of equivalents lies exclusively in courts of equity.”) (Plager, J., dissenting).

77. *Id.* at 1525–26 (pointing to the Supreme Court precedent suggesting that the doctrine of equivalents is properly handled by the jury).

78. *Hilton Davis II*, 117 S. Ct. at 1040.

79. *Id.* at 1053 (“Whether, if the issue were squarely presented to us, we would reach a different conclusion than did the Federal Circuit is not a question we need to decide today.”).

80. 339 U.S. 605 (1950).

81. *Id.* at 607.

82. *Id.*

83. *Id.* at 608. Emphasis is added to indicate that the test is sometimes stated to require not only *substantially the same result* but *the same result*. The arbitrary inclusion or omission of the additional qualifier, however, does not appear to trigger a different outcome and it may thus be considered a cosmetic difference. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1366 (Fed. Cir. 1983).

both is the same, then the two devices are the same, even though they may be different in appearance.⁸⁴

While the rule and its application appeared clear, the various circuits applied the rule in different ways and reached divergent results.⁸⁵ This lack of uniformity in the application of the doctrine of equivalents was one of the reasons why Congress, in the interest of promoting uniform patent laws, established the Court of Appeals for the Federal Circuit in 1982 as the only federal appeals court to hear patent appeals.⁸⁶ Dependable uniformity, however, eluded the Federal Circuit as well as did questions concerning the doctrine of equivalents. Nevertheless, two applicable standards soon crystallized in the newly created court, namely the *as-a-whole* approach and the *element-by-element* analysis.⁸⁷

The first test compares the accused product with the allegedly infringed claim as a whole.⁸⁸ The *Graver Tank* test is applied by asking whether the accused product performs substantially the same function as the patented invention, in substantially the same way, to yield substantially the same result.⁸⁹ The primary case representing the *as-a-whole* approach is *Hughes Aircraft Co. v. United States*.⁹⁰ In that case, Hughes held a patent covering satellite stabilization processes.⁹¹ The Hughes patent, among other claimed elements, required an interactive feedback system between the satellite and the ground control station so that satellite velocity and satellite orientation could be adjusted. The government satellite did not have a feedback system.⁹² Instead, the velocity and orientation control were processed internally in the satellite.⁹³ Recognizing that the *way* prong of the *function-way-result* test could not easily be satisfied, the *Hughes* court held that the

84. *Graver Tank*, 339 U.S. at 608 (citing *Machine Co. v. Murphy*, 97 U.S. 120, 125 (1877)).

85. Daniel W. McDonald et al., *Hilton Davis: The Doctrine of Equivalents Survives – Now What?*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 309, 311–12 (1997).

86. Federal Courts Improvement Act of 1982, § 127(a), Pub. L. No. 97-164 (codified as amended at 28 U.S.C. § 1295 (1988)). All appeals from final decisions of federal district courts in patent cases, and from final decisions in the Patent Office, are brought in the Court of Appeals for the Federal Circuit, located in Washington, D.C. See *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760 (Fed. Cir. 1983).

87. See Paul C. Craane, Comment, *At the Boundaries of Law and Equity: The Court of Appeals for the Federal Circuit and the Doctrine of Equivalents*, 13 N. ILL. U. L. REV. 105, 114–25 (1992).

88. *Hughes*, 717 F.2d at 1364–66.

89. *Id.* at 1363–64, 1366.

90. *Id.*

91. *Id.*

92. *Id.*

93. *Hughes*, 717 F.2d at 1366–64.

government system was so strikingly similar to the patented system as a whole that the government system was an equivalent of the patented invention.⁹⁴

That analysis, of course, would have failed in a stringent reading of the Hughes claim on the government satellite. In fact, the dissent in *Hughes* faulted the majority for paying relatively little attention to the specifics of the claims and for instead viewing the invention as a whole.⁹⁵ In a comparison between each element of the claim and the accused device, the court would have had to find that the Hughes claim was not infringed because it lacked the required element of satellite to ground control feedback. The *element-by-element* analysis, however, had its proponents in the Federal Circuit as well, and it soon emerged as the more prevalent standard.⁹⁶

The *element-by-element* analysis engendered such mutually exclusive statements as “when an element is entirely *missing* [and the accused product] does not contain either the exact element of the claim *or* its equivalent, there is no infringement,”⁹⁷ and “[t]o require a one-to-one correspondence creates a bright line rule easier to apply, but costly in terms of unfair results in exceptional cases.”⁹⁸ It should be noted that the *element-by-element* analysis is not only easier to apply than the *as-a-whole* approach, but it also leads to more predictable results. The *element-by-element* analysis can be handled quantitatively with near mathematical and logical precision, while the *as-a-whole* analysis necessarily requires qualitative and thus subjective analysis. Furthermore, under the *element-by-element* approach, the scope of equivalence can be more easily balanced against the limits of prosecution history, guided by the maxim that “the patent applicant includes elements at his peril, and that a court is powerless to relieve him of the mistake of reciting elements which are superfluous to patentability.”⁹⁹

94. *Id.* at 1366.

95. *Id.* at 1366–68 (Davis, J., concurring in part, dissenting in part).

96. *See, e.g.,* Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1259 (Fed. Cir. 1989) (“An equivalent must be found for every limitation of the claim somewhere in an accused device . . .”); *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987) (en banc); *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528 (Fed. Cir. 1987); *Lemelson v. United States*, 752 F.2d 1538 (Fed. Cir. 1985).

97. *Pennwalt*, 833 F.2d at 949 (Nies, J., additional views).

98. *Id.* at 946 (Bennet, J., dissenting in part).

99. *Berkey Photo, Inc. v. Klimsch-Repro, Inc.*, 388 F. Supp. 586, 594 (S.D.N.Y. 1975); *see also* *Fromson v. Advance Offset Plate, Inc.*, 219 U.S.P.Q. 83 (D. Mass. 1983), *rev'd in part, aff'd in part*, 720 F.2d 1565 (Fed. Cir. 1983), *vacated*, 755 F.2d 1549 (Fed. Cir. 1985).

IV. LIMITS ON THE DOCTRINE OF EQUIVALENTS

A. *Prosecution History Estoppel*

The Supreme Court soon recognized during the earliest stages of the development of the doctrine of equivalents that the acts by the applicant for obtaining a patent during prosecution before the Patent Office¹⁰⁰ could serve as a reliable gauge for the scope with which the range of equivalence should be applied.¹⁰¹ The rule which soon emerged was that, where an applicant for patent limits his claims to avoid prior art, the applicant cannot later “argue for a second bite at the abandoned apple.”¹⁰² As a first threshold, the prosecution history¹⁰³ does not come into play if literal infringement is found.¹⁰⁴ Where it is available, the doctrine of prosecution history estoppel, also referred to as file wrapper estoppel, refers equally to amendments and to remarks made by the applicant for patent.¹⁰⁵ The threshold question often asked is whether the patent examiner would have allowed the claims and issued the patent had the amendment or the remarks not been made or, alternatively, did the patent examiner allow the application because of the amendments or the applicant’s remarks.¹⁰⁶

In *Lemelson v. General Mills*,¹⁰⁷ for instance, the patent examiner rejected a claim with five elements on prior art, and suggested a more limited claim with seven elements.¹⁰⁸ Lemelson accepted the seven element claim and was granted a patent on the claim.¹⁰⁹ During a later infringement action, Lemelson tried to argue that the examiner’s rejection of the five element claim was in error and that the two additional limitations did not help distinguish the claims over the prior art.¹¹⁰ That argument was summarily rejected and the applicant’s acquiescence in a more limited claim was

100. According to the contract model of patents, prosecution before the Patent Office is considered the contract negotiation phase. *See supra* Part II.A.

101. *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222, 227–28 (1880); *see also* *Smith v. Magic City Kennel Club*, 282 U.S. 784 (1931).

102. *Lemelson v. General Mills, Inc.*, 968 F.2d 1202, 1208 (Fed. Cir. 1992).

103. The official record of the *ex parte* proceeding between the applicant for patent and the Patent Office is referred to as the prosecution history, the file history, or the file wrapper. The prosecution history of any issued patent may be inspected by the public.

104. *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565 (Fed. Cir. 1983).

105. *Townsend Eng’g Co. v. Hitec Co.*, 829 F.2d 1086, 1089 (Fed. Cir. 1987).

106. *See Hogan AB v. Dresser Indus. Inc.*, 9 F.3d 948, 953 (Fed. Cir. 1993).

107. 968 F.2d at 1202.

108. *Id.* at 1203.

109. *Id.*

110. *Id.* at 1207.

equated to an amendment volunteered by him and a resultant surrender of claim scope.¹¹¹ The Federal Circuit thereby emphasized the notice function of the patent, namely that competitors in the pertinent art were entitled to a determination of the scope of the claims on the record before the Patent Office.¹¹²

Claim amendments made to persuade the patent examiner to allow the claims over the prior art generally create an irrebuttable estoppel against the later broadening of the claims through the doctrine of equivalents. Additionally, it has been held that statements made by the applicant even *after* the examiner had indicated that the claims were allowable, could be equally damaging when they were directed towards an interpretation of the claims at issue.¹¹³

On the other hand, not every claim amendment automatically enjoins the patentee from relying on the doctrine of equivalents.¹¹⁴ Where a claim was amended during prosecution, the court must determine the reason for the change.¹¹⁵ The scope of prosecution history estoppel is thus determined on the basis of various factors, including all of the applicant's acts during the application phase and the reasons for those acts, the prior art removed or not applied because of those acts, and the patent examiner's objections and rejections which are removed by those acts.¹¹⁶

The Federal Circuit in 1993 clarified much of the confusion surrounding the application of prosecution history estoppel with its decision in *Texas Instruments, Inc. v. United States International Trade Commission*.¹¹⁷ There, the court held that any unambiguous assertion of patentability with regard to an element in a claim may create an estoppel against reliance on the doctrine of equivalents.¹¹⁸ The applicant in that case had not amended the claims and added the feature to overcome prior art.¹¹⁹ Further, the feature was not even necessary to overcome any prior art

111. *Id.* at 1207–08.

112. *Lemelson*, 968 F.2d at 1202.

113. *See* *Hormone Research Found., Inc. v. Genentech, Inc.*, 904 F.2d 1558 (Fed. Cir. 1990).

114. *Durango Assoc. Inc. v. Reflange Inc.*, 843 F.2d 1349, 1358 (Fed. Cir. 1988).

115. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 72 F.3d 857, 864 (Fed. Cir. 1995), *vacated*, 117 S. Ct. 1240 (1997), *and on remand vacated*, 117 F.3d 1385 (Fed. Cir. 1997).

116. *Mannesmann Demag Corp. v. Engineered Metal Prod. Co.*, 793 F.2d 1279, 1284–85 (Fed. Cir. 1986).

117. 988 F.2d 1165 (Fed. Cir. 1993).

118. *Id.* at 1175.

119. *Id.* at 1173.

reference cited by the patent examiner.¹²⁰ Yet, the applicants asserted in general that the particular feature rendered the claims patentable, and they were thus held to that assertion.¹²¹

The doctrine of prosecution history estoppel is built on the premise that a patent is a public document which provides unambiguous notice as to what is and what is not protected by the claims.¹²² The fact that an applicant makes a more limiting amendment than is necessary in light of the prior art is of no import.¹²³ Prosecution history is useful in establishing “meaningful limitations” on which the public may rely to avoid infringement.¹²⁴

B. *The Range of Equivalence Dictated by the Prior Art*

In 1990, the Federal Circuit introduced a new test for the doctrine of equivalents with the construction of the so-called “hypothetical claim.”¹²⁵ Based on the understanding that the doctrine of equivalents is equivalent to a judicial broadening of the claims of a patent, the court in *Wilson Sporting Goods*¹²⁶ suggested that the proper scope of equivalence could be determined by expanding the claims of the patent in suit towards the prior art.¹²⁷ A hypothetical claim would be tested in light of the prior art and the deciding question would be whether or not the hypothetical claim would have and could have been allowed by the patent examiner.¹²⁸ Upon the hypothetical allowance of such a broadened claim, the patent owner would then have the burden of proving that the accused product or process literally infringes the hypothetical claim.¹²⁹

The hypothetical claim construction did not fare well in subsequent litigation. Three problems with the hypothetical claim become immediately evident upon a careful review. First, it undermines the function of the Patent Office as the competent government agency in charge of negotiating the

120. *Id.*

121. *Id.* at 1174.

122. *Texas Instruments*, 988 F.2d at 1175.

123. *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 868 (Fed. Cir. 1993); *see also* *Fromson v. Advance Offset Plate, Inc.*, 219 U.S.P.Q. 83 (D. Mass. 1983).

124. *Genentech, Inc. v. The Wellcome Found. Ltd.*, 29 F.3d 1555 (Fed. Cir. 1994) (citing *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528 (Fed. Cir. 1987)).

125. *Wilson Sporting Goods Co. v. David Geoffrey & Assoc.*, 904 F.2d 677 (Fed. Cir. 1990).

126. *Id.* at 684.

127. *Id.*

128. *Id.* A hypothetical claim is in essence a claim that is broadened relative to the patent claim and which would literally read on the allegedly infringing product or process. *Id.*

129. *Wilson*, 904 F.2d at 685.

scope of patent claims.¹³⁰ Second, it violates the notice function.¹³¹ Third, it circumvents the statutory prohibition against the addition of new matter.¹³² These three factors, of course, go hand in hand. As repeatedly stressed by the Federal Circuit, competitors in the marketplace must be able to rely on the scope of the claims in an issued patent.¹³³ The very purpose of the stringent examination before the Patent Office is to determine the scope of the claims which are available to the applicant and to issue a patent with claims which are sufficiently delineated relative to the prior art. The dependence on the propriety and depth of the examination before the Patent Office is reflected in the statutory presumption that any issued patent is valid.¹³⁴ Finally, and maybe most importantly, applicants for patent are statutorily prohibited from adding anything to a claim during prosecution which was not originally contained in the application.¹³⁵ In the hypothetical claim construction, however, the patentee is in effect allowed to add limitations not found in the original specification.

For instance, the primary case at hand concerns a dispute involving a process for purifying red and yellow dyes used in the food and cosmetics industries.¹³⁶ An aqueous solution of the dye is subjected to ultrafiltration under defined process conditions. The patent claims in question define those process conditions at a hydrostatic pressure of 200 to 400 p.s.i.g. and at a pH of 6.0 to 9.0.¹³⁷ The claimed pH range was added into the independent claims during prosecution. As agreed by all parties, only the upper limit of 9.0 was necessary in light of the prior art. The lower limit of 6.0 was not required. However, simply omitting the lower limit would not be acceptable either because of the requirement that a claim of a patent must be fully enabled in the specification.¹³⁸ In other words, a lower limit of 4.0 or 3.0, or even 2.0, may work in the process described in the specification, but the process would fail at a pH below 2.0. The hypothetical claim construction in this case, therefore, would have to strike a balance between a maximum

130. *See supra* Part II.A.

131. 35 U.S.C. § 112 (1994).

132. *Id.* § 132.

133. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (If broadening of claims under the doctrine of equivalents is always available to the patentee, then competing market players “will never know whether their actions infringe a granted patent” and “the public comes to believe (or fear) that the language of patent claims can never be relied on.”).

134. 35 U.S.C. § 282 (Supp. I 1995). “A patent shall be presumed valid.” *Id.*

135. 35 U.S.C. § 132 (1994).

136. *Hilton Davis I*, 62 F.3d at 1515.

137. *Id.* at 1515.

138. 35 U.S.C. § 112 (1994).

allowed by the prior art and a minimum dictated by the scope of enablement in the specification. A hypothetical claim for Hilton Davis would recite a pH value ranging from 4.0 to 9.0. Hilton Davis, armed with such a claim would have had little difficulty in showing that Warner-Jenkinson's process, which operated at a pH of 5.0, infringed their claim.¹³⁹ However, Hilton Davis now would be awarded a claim which they could not have obtained from the Patent Office on the basis of their original application. Had they attempted, during prosecution, to amend their claims to recite a pH ranging from 4.0 to 9.0, the patent examiner would have required that the new matter entered with the amendment be canceled because it would have violated code section 132.¹⁴⁰ The hypothetical claim proposed in *Wilson Sporting Goods*, therefore, could potentially violate the statutory prohibition against the addition of new matter.

C. Hilton Davis I and the Insubstantial Changes Test

After having supported the *function-way-result* test of *Graver Tank* for years as the predominant test for the doctrine of equivalents, the en banc Federal Circuit held in *Hilton Davis I* that this test had caused as much confusion as it had cleared up.¹⁴¹ The court subsequently stated an apparently new rule which turned on the question of whether the changes made by the accused copier were *substantial* or *insubstantial*.¹⁴² The decision in *Hilton Davis I* was a narrow one.¹⁴³ The majority opinion in the Federal Circuit decision stressed that the new standard was not a revision of the test for infringement under the doctrine of equivalents, but a restatement.¹⁴⁴ Indeed, the *new* test had already been expressed in the

139. For clarity of the example, the author has disregarded the other questions concerning the possible differences between the Warner-Jenkinson process and the Hilton Davis claims. In her dissent, Judge Nies pointed out that at least one additional element of the claim, namely the recited hydrostatic pressure, was not infringed, *Hilton Davis I*, 62 F.3d at 1579 (Nies, J., dissenting), and that another element, namely the recited pore size of the membranes, had not been sufficiently proven to be infringed. *Id.* at n.34.

140. 35 U.S.C. § 132.

141. *Hilton Davis I*, 62 F.3d at 1518.

142. *Id.*

143. Seven of the twelve judges formed the majority and Judge Newman filed a concurring opinion. Five judges dissented, with Judges Plager, Lourie, and Nies each filing a dissenting opinion. While the majority opinion concentrated largely on Supreme Court precedent in formulating its opinion, Judge Newman concurred essentially only in the outcome, as her opinion was primarily based on an economic incentives analysis. *Id.* at 1512.

144. *Id.* at 1516.

seminal *Graver Tank* decision.¹⁴⁵ There, the Court warned against an overly narrow and literal reading of the patent claims which would allow an “unscrupulous copyist to make unimportant and insubstantial changes and substitutions in the patent” without being liable for infringement.¹⁴⁶ The majority in *Hilton Davis I* further held that infringement, under the doctrine of equivalents, was a question of fact and thus, a question for the jury.¹⁴⁷ In fact, much of the discussion in the various opinions, and particularly Judge Plager’s dissent, deals with the judge-jury question and it was widely expected that the Supreme Court would decide that issue on appeal.¹⁴⁸ That expectancy was heightened since the Court had during the previous term affirmed the Federal Circuit in *Markman v. Westview Instruments, Inc.*,¹⁴⁹ which held that claim construction in patent infringement was exclusively within the province of the court and should not be presented to the jury.¹⁵⁰ Finally, the Federal Circuit held that the question whether or not the doctrine of equivalents was to be applied is not at the discretion of the trial judge.¹⁵¹

The decision in *Hilton Davis I* turned on the question of whether or not a pH of 5.0, as practiced by Warner-Jenkinson, was equivalent to and included in the range of 6.0 to 9.0.¹⁵² Each element of the *Hilton Davis* claim was analyzed and compared with the Warner-Jenkinson process.¹⁵³ *Hilton Davis* was held to have carried its burden of showing the presence of each element in the accused process with all but one claim element finding literal support.¹⁵⁴ The element defining the pH¹⁵⁵ in the process was found to be present, albeit outside of the claimed

145. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607 (1950).

146. *Id.* at 607.

147. *Hilton Davis I*, 62 F.3d at 1520.

148. Both of the principal parties’ briefs and each of the 17 briefs for *amicus curiae* filed in the Supreme Court, discussed the judge-jury question at length and much of the oral hearing before the Court dealt with the question. *Hilton Davis II*, 117 S. Ct. at 1053.

149. 116 S. Ct. 1384 (1996).

150. *Id.* at 1396.

151. *Hilton Davis I*, 62 F.3d at 1521.

152. *Id.* at 1524.

153. *Id.* at 1524–25.

154. *Id.*

155. The pH scale expresses the acidity, neutrality, or basicity of dilute aqueous solutions. The scale varies within the numerical range of -1.0 to 15.0. A pH of 7.0 designates a neutral composition. The lower the number, the higher the acidity of the solution. The scale is a logarithmic scale with a base of 10. A numerical change in the pH by one designates a 10-fold increase or decrease of acidity and, similarly, a change by two designates a 100-fold increase or decrease. KENNETH W. WHITTEN ET AL., *GENERAL CHEMISTRY WITH QUALITATIVE ANALYSIS* 531–34 (1988).

range.¹⁵⁶ Hilton Davis had amended its claims during prosecution before the patent examiner by adding the numeric pH limits. The upper limit of 9.0 was necessary in delineating the claims against the prior art.¹⁵⁷ The lower limit of 6.0 was not necessary in light of the prior art. As noted above, it is questionable, however, whether the Patent Office would or could have allowed an open-ended limitation which recited only the upper limit of 9.0, but not a lower limit. Such a claim would run afoul of the distinct claiming requirement¹⁵⁸ and of the enablement requirement.¹⁵⁹ Adding an express limit other than 6.0, on the other hand, would run afoul of the prohibition against the addition of new matter.¹⁶⁰ Hilton Davis, therefore, in order to obtain a proper claim with an acceptable range of pH values, would have had to file a continuing application, with the attendant costs and the delay in the prosecution.¹⁶¹ Alternatively, Hilton Davis could have attempted to surrender their patent and obtain a broadened reissue claim within two years of the patent. Unfortunately for Hilton Davis, Warner-Jenkinson would then likely have been able to rely on intervening rights.¹⁶² But then again, none of this mattered to the en banc Federal Circuit, because a pH of 5.0 was equivalent to a pH of 6.0 and the doctrine of prosecution history estoppel did not apply where no compelling reason was evident to the court for Hilton Davis to enter the lower limit of 6.0.¹⁶³

V. HILTON DAVIS II

The Supreme Court disagreed with the Federal Circuit's majority opinion.¹⁶⁴ The Court held that prosecution history could indeed create an

156. *Hilton Davis I*, 62 F.3d at 1516.

157. *Id.* at 1515-16. The patent examiner had cited a prior art reference which disclosed a similar process operating at a pH between 11 and 13. *Id.*

158. 35 U.S.C. § 112 (1994) (second paragraph).

159. *Id.* (first paragraph).

160. *Id.* § 132. In her dissent in *Hilton Davis I*, the late Judge Nies argued that the notice function of the claims would be served yet the claims were not unduly enlarged if the courts carefully applied the doctrine of equivalents to individual elements of the claims and substituted only equivalent elements. *Hilton Davis I*, 62 F.3d at 1573-74 (Nies, J., dissenting).

161. *See supra* Part II.C.

162. The Hilton Davis patent, No. 4,560,746, issued in 1985. By the time Warner-Jenkinson learned of the existence of the '746 patent in October 1986, they had begun to commercially use the infringing process. *Hilton Davis I*, 62 F.3d at 1516. Hilton Davis learned of Warner-Jenkinson's infringement in 1989 when it was no longer possible to broaden the patent claims in a reissue. *Id.*

163. *Id.* at 1528.

164. *Hilton Davis II*, 117 S. Ct. at 1040.

estoppel and while affirming the majority of the Federal Circuit in virtually all other aspects, the Supreme Court remanded the case for further proceedings.¹⁶⁵ Specifically, the Court held that any claim amendment during prosecution, absent an explanation to the contrary on the public record, created a rebuttable presumption that the amendment was necessary for patentability.¹⁶⁶ This presumption, the Court argued, would strike a proper balance between the notice function of the claims and the primacy of the Patent Office in ensuring that patent claims do not cover more than the invention which is disclosed in the application.¹⁶⁷

A. *The Supreme Court Decision in Detail*

The question certified to the Supreme Court in *Hilton Davis II* was: “Whether patent infringement exists whenever the accused product or process is ‘equivalent’ to the invention claimed in the patent, in that the differences are not ‘substantial’ as determined by a jury, even though the accused product or process is outside the literal scope of the patent claim.”¹⁶⁸ Warner-Jenkinson’s main arguments were that the doctrine of equivalents, as defined in *Graver Tank* in 1950 cannot be reconciled with the 1952 Patent Act,¹⁶⁹ that equivalents should be limited to those explicitly mentioned in the patent,¹⁷⁰ and that Congress did not allow for infringement by equivalents in the 1952 Patent Act.¹⁷¹ *Hilton Davis*, of course, was quite satisfied with the majority opinion in the Federal Circuit and argued that the doctrine of equivalents had survived the 1952 Patent Act,¹⁷² the doctrine should be broadly applied and remain available in all infringement actions,¹⁷³ and that equivalents questions are properly presented to the jury in a jury trial.¹⁷⁴

1. The Doctrine of Equivalents and the 1952 Patent Act

Justice Thomas, writing for the unanimous Court, explained that the differences between the earlier patent statute and the 1952 Patent Act were

165. *Id.* at 1054.

166. *Id.* at 1051.

167. *Id.*

168. Brief for Petitioner at i, *Hilton Davis II* (No. 95-728).

169. *Id.* at 13.

170. *Id.* at 31.

171. *Id.* at 41.

172. Brief for Respondent at 11, *Hilton Davis II* (No. 95-728).

173. *Id.* at 23.

174. *Id.* at 36.

minimal with regard to the requirement for definite and distinct claiming.¹⁷⁵ The results reached in *Graver Tank*, Justice Thomas argued, would not have been different had the case been decided following the 1952 Patent Act.¹⁷⁶ In addition, the arguments upon which Warner-Jenkinson's contention was based had already been presented in *Graver Tank*, but had failed to garner a majority.¹⁷⁷ Accordingly, overruling *Graver Tank* on that basis was not warranted.¹⁷⁸

Next, the Court discussed Warner-Jenkinson's contention that no express mention of *Graver Tank* or its standard could be found in the legislative history of the 1952 Patent Act and that Congress had statutorily overruled *Graver Tank*.¹⁷⁹ Warner-Jenkinson had argued in their brief that it was improper to attribute a silent incorporation of the *Graver Tank* rule to Congress.¹⁸⁰ On questioning by the bench at oral argument, Warner-Jenkinson's counsel softened that argument and instead relied on his fallback position that the precedent need not be overruled in its entirety, but could serve a useful function if the precedential rule of *Graver Tank* was properly read.¹⁸¹ The Court was not convinced that Congress' silence concerning *Graver Tank* and the doctrine of equivalents spoke to a statutory overruling of the precedent. Instead, the Court opined that Congress had in fact not overruled the *Graver Tank* precedent¹⁸² and that "Congress [could] legislate the doctrine of equivalents out of existence any time it chooses."¹⁸³ The policy arguments presented by both parties in *Hilton Davis II*, Justice Thomas suggested, should be addressed to Congress instead of to the Supreme Court.¹⁸⁴

2. Element by Element Analysis

With regard to the elemental approach to the doctrine of equivalents, the Court sided with the concerns mentioned in the dissents at the Federal

175. *Hilton Davis II*, 117 S. Ct. at 1047.

176. *Id.*

177. *Id.* at n.3.

178. *Id.* at 1047-48.

179. *Id.* at 1047.

180. Brief for Petitioner at 42-45, *Hilton Davis II* (No. 95-728).

181. United States Supreme Court Official Transcript at *18, *Hilton Davis II* (No. 95-728), 1996 WL 593639 (Oct. 15, 1996) (oral argument of Richard G. Taranto, Esq., on behalf of Warner-Jenkinson) (no departure of *Graver Tank* needs to take place "depending on how broadly one reads it") [hereinafter Transcript].

182. *Hilton Davis II*, 117 S. Ct. at 1048.

183. *Id.*

184. *Id.*

Circuit level that patent claims had become too unpredictable because of the automatic and divergent application of the doctrine and that the doctrine had taken on a life of its own.¹⁸⁵ The Court thereby adopted much of the logic presented in the dissent by the late Judge Nies¹⁸⁶ and held that the doctrine could best serve its proper function if it was applied on an *element-by-element* basis.¹⁸⁷ Each element of a patent claim is material and essential, the Court held, and the doctrine of equivalents must not be applied to the claimed invention as a whole, but to each element.¹⁸⁸ Also, the doctrine must not be so broadly applied as to effectively remove a required element.¹⁸⁹ The Court cited with approval the broad proposition that the doctrine must be applied so as to carefully distinguish between substituting an equivalent component *within* an invention and enlarging an invention beyond what is claimed.¹⁹⁰ The applicant, after all, negotiates the scope of protection to which the patentee is entitled with the Patent Office. That scope of protection cannot be enlarged at a later point so as to include a competitor within the claims. Only if the competitor copies the invention, i.e., practices a fraud on the patent,¹⁹¹ and replaces within the invention a component with one which is equivalent yet does not literally read on the claimed element, should the doctrine of equivalents be applied.¹⁹² The doctrine is equitable in nature and it is to be applied so as not to “place the inventor at the mercy of verbalism and . . . subordinat[e] substance to form.”¹⁹³

3. Prosecution History Estoppel

Next, the Court discussed the position of the doctrine of prosecution history estoppel in the context of the elemental approach and the new rebuttable presumption rule. Warner-Jenkinson had argued that any surrender by the patentee during prosecution before the Patent Office was essentially equivalent to a public notice of surrender¹⁹⁴ and that any

185. *Id.* at 1048–49.

186. *Hilton Davis I*, 62 F.3d at 1573–74 (Nies, J., dissenting).

187. *Hilton Davis II*, 117 S. Ct. at 1049.

188. *Id.*

189. *Id.*

190. *Id.*

191. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950) (“The essence of the doctrine is that one may not practice a fraud on a patent.”).

192. *Id.* at 608–09.

193. *Id.* at 607.

194. Reply Brief for Petitioner at 1, *Hilton Davis II* (No. 95-728) (“[T]he public is entitled to rely on a reading of those disclosures [made in the patent application], and not

limitation entered during patent prosecution should estop the patentee from later asserting broader coverage.¹⁹⁵ That argument, according to the Court, went too far.¹⁹⁶ The Court held that the reasons for such an amendment should have a bearing on proper claim interpretation.¹⁹⁷ First, the Court relied on its own precedent which included a line of cases in which the Court had considered the respective reasons why a certain amendment was required by the Patent Office.¹⁹⁸ Second, the Court referred to the *amicus brief* of the United States, which listed several additional reasons upon which the Patent Office may require an amendment to a claim.¹⁹⁹ The United States' *amicus brief* made reference to the testimony by one of the Hilton Davis' inventors according to whom the process could work with much lower pH values than those claimed, but that a pH below 6.0 would "cause 'tremendous foaming problems in the plant.'"²⁰⁰ Accordingly, the United States argued that the pH limit of 6.0 was added not to overcome prior art, but to limit the claims to what was enabled in the application, and therefore, the doctrine of prosecution history did not apply.²⁰¹ That conclusion, however, mischaracterizes the interplay between the enablement requirement in the first paragraph of 35 U.S.C. § 112 and the distinct claiming requirement in the second paragraph.²⁰² Only what is enabled in the specification is the applicant's invention and the claims are limited to that invention.²⁰³ To be sure, it may be true that the "purpose of the enablement requirement is not to limit the scope of the patent right" per se,²⁰⁴ but it is nevertheless the necessary result if the term *invention* is uniformly applied throughout the text of the statute.

undertake independent scientific experiments, to understand clearly the scope of the monopoly . . .").

195. *Hilton Davis II*, 117 S. Ct. at 1049.

196. *Id.*

197. *Id.*

198. *See, e.g.*, *Exhibit Supply Co. v. Ace Patents Corp.*, 315 U.S. 126, 136 (1942) (distinguishing a limitation in an original application claim from one which was added during prosecution); *Keystone Driller Co. v. Northwest Eng'g Corp.*, 294 U.S. 42, 42 (1935) (claims limited during prosecution could not be enlarged in infringement action because the enlarged claims would have been within the prior art which prompted the claim amendment).

199. *Hilton Davis II*, 117 S. Ct. at 1050.

200. Brief for United States as *Amicus Curiae* at 22, *Hilton Davis II* (No. 95-728) (quoting *Hilton Davis I*, 62 F.3d at 1542 (Plager, J., dissenting)).

201. *Id.*

202. 35 U.S.C. § 112 (1994).

203. *Id.*

204. Brief for United States as *Amicus Curiae* at 22, *Hilton Davis II* (No. 95-728) (citing 35 U.S.C. § 112 (1994)).

In the case at hand, the enabled *invention* was to be practiced at a pH of 6.0 to 9.0 and the Hilton Davis inventors could not teach an ordinarily skilled artisan how to make and use the invention outside that range.²⁰⁵ They were, in fact, faced with “tremendous foaming problems” below a pH of 6.0 and thus they could not teach the *invention* outside that range. The patent grant, however, is an exchange in which the inventor teaches the invention and everything outside the boundaries of that invention, belongs to the public or to a later inventor.

On questioning by the Court, counsel for Hilton Davis pursued a line of argument similar to that of the United States. Hilton Davis argued that “what the claim [sic] has to do is, it has to enable a person of ordinary skills in the art to practice the invention”²⁰⁶ and that the examiner suggested the lower pH limitation be added to the claim so as to assure the enablement requirement was satisfied.²⁰⁷ Again, the mischaracterization of the patent statutes is evident. Both the first and second paragraphs of 35 U.S.C. § 112 deal with one and the same *invention*.²⁰⁸ The first paragraph requires that the *invention* be described so that those skilled in the pertinent field could practice it, and the second paragraph requires that the same *invention* be defined and distinctly claimed.²⁰⁹

Notwithstanding the questionable line of argument, the Court reached the correct conclusion with regard to prosecution history estoppel by emphasizing the expert agency status of the Patent Office.²¹⁰ The Court “should be extremely reluctant to upset the basic assumptions” made by the Patent Office unless it had “substantial reasons to do so.”²¹¹ With special reference to the case at bar, the Court announced the rule that the burden rests on the patentee to show that the reason for the amendment during patent prosecution should not render the amendment available as a prosecution history estoppel.²¹² The Court held that the record did not contain clear enough evidence which would enable Hilton Davis to carry their burden to overcome the presumption of an estoppel.²¹³ The case was thus remanded with an invitation that the Federal Circuit study the record

205. *Id.*

206. Transcript, *supra* note 181, at *36 (oral argument of David E. Schmit, Esq., on behalf of Hilton Davis).

207. *Id.*

208. 35 U.S.C. § 112.

209. *Id.*

210. *Hilton Davis II*, 117 S. Ct. at 1051.

211. *Id.* at 1050.

212. *Id.* at 1051.

213. *Id.*

and decide whether or not Hilton Davis should be given an opportunity to proffer additional evidence.²¹⁴

4. No Equitable Threshold to Trigger Doctrine of Equivalents

Based on the premise that the *Graver Tank* rule was developed in response to problems with the “unscrupulous copyist” and “pirate,”²¹⁵ Warner-Jenkinson argued that proof of intent was a necessary threshold before the doctrine of equivalents could be triggered.²¹⁶ That argument appeared to be further supported in the Federal Circuit majority opinion which hinted to evidence of copying as being an important factor in the application of the doctrine.²¹⁷ The majority nevertheless acknowledged that intent is not an element of infringement.²¹⁸ In his dissent, however, Judge Plager vehemently argued that the doctrine of equivalents belonged entirely to the equity courts,²¹⁹ and was thus available only after a corresponding equitable threshold had been overcome.²²⁰ The Supreme Court sided with the Federal Circuit majority, yet cast a doubtful eye on the applicability of standards such as independent development and intentional designing around a patent.²²¹ It would be difficult, the Court stated, to distinguish between those who intentionally copied the invention with minor changes and those who tried to design around the claims of the patent, thus appropriating for themselves as much of the patented invention as they could.²²²

214. *Id.*

215. Brief for Petitioner at 32, *Hilton Davis II* (No. 95-728) (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607 (1950)).

216. *See generally id.* at 32–41.

217. *Hilton Davis I*, 62 F.3d at 1519.

218. *Id.*; *see also Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974) (the monopoly grant is effective regardless of whether the infringer knows of the patent).

219. *Hilton Davis I*, 62 F.3d at 1543 (Plager, J., dissenting) (“By virtue of its unique place in our legal system, and by long-standing custom and tradition, equity powers are exercisable only by judges. The authority to exercise the unique remedy which is the doctrine of equivalents lies exclusively in courts of equity.”).

220. *Id.*

221. *Hilton Davis II*, 117 S. Ct. at 1052.

222. *Id.*

5. Not Limited to Equivalents Disclosed in Specification

Next, the Court tackled Warner-Jenkinson's argument that the notice function of the claims would be best served if equivalents were limited to those disclosed in the patent.²²³ The dissenters in the Federal Circuit had argued a similar proposition, namely that equivalence should be determined with a view to what is considered equivalent at the time the patent issues.²²⁴ In oral argument, the Court presented Hilton Davis' counsel with a pertinent hypothetical: a chemical composition with five ingredients, A, B, C, D, and E, for growing hair.²²⁵ After fifteen years, new chemicals are developed which replace each of the ingredients until none of the original ingredients remain.²²⁶ On questioning whether the composition with the new ingredients were equivalent, Hilton Davis answered in the affirmative, which prompted the Court to respond:

I think the lawyers on the other side are arguing, my goodness, we're supposed to advise clients, and we have no idea how to do it, because we read the patent thing and we know with this doctrine people might discover all kinds of new chemicals in the future, and we just don't know how to do it, and so what we're groping for, is there then no limitation on this doctrine of equivalents?²²⁷

Even in the light of these apparently substantial reservations, the Court summarily rejected the argument that equivalence turned on what was known at the time the patent issued and held that the proper time for equivalence analysis was at the time of infringement.²²⁸

B. *No Ruling in the Judge-Jury Question*

The Court declined to rule on the question of whether the doctrine of equivalents was for the jury or for the judge. The issue need not be resolved, the Court stated, to answer the question presented in the case, and declined to rule on it.²²⁹ However, the Court hinted that it was in likely agreement

223. *Id.*

224. *Id.*

225. Transcript, *supra* note 181, at 39 (oral argument of David E. Schmit, Esq.).

226. *Id.*

227. *Id.* at 40.

228. *Hilton Davis II*, 117 S. Ct. at 1053.

229. *Id.*

with the Federal Circuit and that the Court's recent *Markman*²³⁰ ruling did not suggest a different outcome.²³¹

C. *Markman v. Westview*

In one of the most anticipated decisions of patent law in recent years, the Supreme Court, in 1996, affirmed a Federal Circuit en banc decision in *Markman*.²³² There, a jury had found a patent for a dry cleaning inventory system infringed and thus found for the patentee.²³³ The trial judge, however, based on his interpretation of the term "inventory" in the patent claims in question, entered judgment against the patentee, notwithstanding the jury verdict to the contrary.²³⁴ The Federal Circuit, sitting en banc, affirmed the trial judge and held that he had correctly taken the claim interpretation from the jury.²³⁵

The unanimous Supreme Court also agreed and held that patent claim construction was "exclusively within the province of the court."²³⁶ The decision affirmed three basic tenets of patent law, namely that patent infringement was subject to the right of jury trial under the Seventh Amendment,²³⁷ that the historical test of the right to jury trial did not compel a conclusion that terms of art and the claims were interpreted by the jury;²³⁸ and that precedent, judicial efficiency, reviewability issues, and policy considerations compelled a finding that claim interpretation was exclusively for the judge.²³⁹ Citing to potential uncertainty in reviewing jury verdicts and, particularly, to the virtual impossibility of establishing issue preclusion even within a given jurisdiction, the Court concluded that "treating interpretive issues as purely legal will promote (though it will not guarantee) intrajurisdictional certainty through the application of stare decisis on those questions not yet subject to interjurisdictional uniformity under the authority of the single appeals court."²⁴⁰

230. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en banc).

231. *Hilton Davis II*, 117 S. Ct. at 1053.

232. *Markman*, 52 F.3d at 967.

233. *Id.* at 973.

234. *Id.*

235. *Id.* at 979.

236. *Markman v. Westview Instruments, Inc.*, 116 S. Ct. 1384, 1387 (1996).

237. U.S. CONST. amend. VII ("In Suits at common law . . . the right of trial by jury shall be preserved . . .").

238. *Markman*, 116 S. Ct. at 1393.

239. *Id.* at 1396.

240. *Id.*

1. The *Markman* Hearing

The decision in *Markman* soon spawned the creation of the so-called *Markman* hearing, a pretrial bench hearing during which the questions of claim interpretation are settled.²⁴¹ Following the *Markman* hearing, the trial judge decides on the proper scope and interpretation of the patent claims and, if the trial is to a jury, instructs the jury accordingly. The jury then, in the second phase of an infringement trial under the *Markman* doctrine, decides whether or not the accused product or process indeed infringes the claims as interpreted by the trial judge.²⁴²

The decision in *Markman* was not specific with regard to the issues to be resolved in the *Markman* hearing and with regard to the type of evidence to be admitted into the hearing.²⁴³ The Federal Circuit has recently shed some light on these issues.²⁴⁴ For instance, the court held in *Vitronics*²⁴⁵ that intrinsic evidence such as the patent claims, the specification, and the file history were dominant over extrinsic evidence such as prior art documents, dictionaries, and expert testimony.²⁴⁶ Extrinsic evidence should be allowed into the hearing only if ambiguities remain after considering all of the intrinsic evidence.²⁴⁷

2. Reconciling *Hilton Davis II* with *Markman*

Markman was primarily concerned with ensuring predictability and reviewability in infringement actions and thus took all of the claim interpretation from the jury.²⁴⁸ *Hilton Davis II*, on the other hand, appears to have affirmed the jury's role in claim interpretation where literal infringement could not be shown.²⁴⁹ Referring to the seminal Supreme Court decision in *Winans v. Denmead*,²⁵⁰ which hinted at the proposition that

241. See *Vitronics Corp. v. Conceptoronic Inc.*, 90 F.3d 1576 (Fed. Cir. 1996); *General Am. Transp. Corp. v. Cryo-Trans, Inc.*, 93 F.3d 766 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997); *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572 (Fed. Cir. 1996).

242. *Vitronics Corp. v. Conceptoronic Inc.*, 90 F.3d 1576, 1581-82 (Fed. Cir. 1996) (citing *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995)).

243. *Markman*, 52 F.3d at 967.

244. See *Vitronics*, 90 F.3d at 1576.

245. *Id.*

246. *Id.* at 1583.

247. *Id.*

248. See *Markman*, 52 F.3d at 967.

249. See *Hilton Davis II*, 117 S. Ct. at 1053.

250. 56 U.S. (15 How.) 330 (1853).

equivalence was a question for the jury,²⁵¹ the Court in *Hilton Davis II* opined that *Markman* did not appear to necessitate a different result.²⁵² With regard to the reviewability issue, the Court suggested that procedural vehicles such as partial or complete summary judgment, judgment as a matter of law, special verdict forms, interrogatories on each claim element, and post verdict judgments as a matter of law should be considered by the Federal Circuit.²⁵³

In a realistic context, there is a curious interplay between the *Markman* hearing and the proposition that the doctrine of equivalents lies within the province of the jury. Assume, for instance, that the trial court decides on close of a *Markman* hearing for a certain construction of the patent claims and that the claims so interpreted were not literally infringed. The entire case would now be tried to the jury, including the question of equivalence and the interpretation of the specific claim element for which no literal infringement could be found. However, claim interpretation necessarily requires a review of the combination of elements and the interaction among the individual elements. The issue of claim interpretation as a whole is thus back in the jury's hands and the importance of the *Markman* hearing is effectively reduced to having a minor impact on the outcome of the infringement action. In the alternative situation, of course, where the *Markman* hearing results in an interpretation of the claims which literally encompasses the accused product or process, the jury's role is substantially reduced and infringement can often be found immediately as a matter of law.

It is also quite telling that the jury instructions in *Hilton Davis I* included several issues which, according to *Markman*, would not be given to the jury in literal infringement.²⁵⁴ The trial judge instructed the jury to interpret the claims as one with ordinary skill in the pertinent art would read the claims.²⁵⁵ He further instructed the jury to consider intrinsic evidence such as the patent specification, other claims of the patent, the prosecution history, extrinsic evidence such as expert testimony, "the circumstances surrounding the inception of the patent application," technical literature, and the prior art.²⁵⁶ Allowing the jury to consider extrinsic evidence to such a degree—and indeed the fact finding function of the jury can only be met by allowing the jury to look to extrinsic evidence—suggests that the concern

251. *Id.* at 344.

252. *Hilton Davis II*, 117 S. Ct. at 1053.

253. *Id.* at n.8.

254. See generally *Hilton Davis I*, 62 F.3d at 1520–21, 1538; *Markman*, 52 F.3d at 970–71.

255. *Hilton Davis I*, 62 F.3d at 1556 (Nies, J., dissenting).

256. *Id.*

with a lack of reviewability due to black-box jury verdicts²⁵⁷ has fallen victim to the broader proposition that the doctrine of equivalents must be given to the jury.²⁵⁸

D. *The Remand*

On remand, the Federal Circuit held that Hilton Davis, in light of the new rebuttable presumption rule, should be given an opportunity to proffer evidence in their favor.²⁵⁹ The prosecution history of the Hilton Davis patent was silent with regard to the reasons for the amendment. Accordingly, Hilton Davis was faced with the presumption that the pH was limited from 6.0 to 9.0 for patentability reasons. The court held that even if the patentee can show that the amendment was not related to patentability, the court must still settle the issue of whether that reason is sufficient to overcome prosecution history estoppel.²⁶⁰ Finally, the court specifically cautioned the district court to carefully balance between the interests of public notice and the dependability of prosecution history on the one hand, and the preliminary purpose of the doctrine of equivalents of assuring fairness to the patentee and of preventing fraud on the patent, on the other hand.²⁶¹

E. *The Argument Warner-Jenkinson Failed to Make*

The primary case at hand is quite simple. Yet, Warner-Jenkinson failed to make the very argument which won their case. Hilton Davis obtained a patent with claims calling for clear and unambiguous numerical boundaries. As noted above,²⁶² the doctrine of prosecution history estoppel is not a recent creation by any stretch of the imagination. Hilton Davis made a mistake.²⁶³ Warner-Jenkinson, on the other hand, acted prudently and

257. *Hilton Davis II*, 117 S. Ct. at 1053 n.8.

258. *Id.* at 1054 n.8.

259. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1164 (Fed. Cir. 1997) (per curiam), *enforcing Hilton Davis II*, 117 S. Ct. 1040 (1997) [hereinafter *Hilton Davis III*].

260. *Id.* at 1163.

261. *Id.* (citing *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1051 (1997)).

262. *See supra* Part IV.A.

263. Transcript, *supra* note 181, at 31. On questioning by the Court, counsel for Hilton Davis quipped: “[H]ad I written the claim today knowing what I know, it would have been written differently.” *Id.*

compared their process with the Hilton Davis patent.²⁶⁴ Relying on the notice content of the Hilton Davis patent, Warner-Jenkinson's patent counsel advised that a pH of 5.0 in his client's process was not equivalent to a pH of 6.0 or more.²⁶⁵ Nothing in the file wrapper of the patent indicated otherwise.²⁶⁶ Yet, the Federal Circuit would have punished Warner-Jenkinson without faulting Hilton Davis for their mistake.

The doctrine of equivalents is an equitable doctrine and it has been devised to protect the patentee against unscrupulous copycats.²⁶⁷ Here, the accused infringer did not act on inequitable principles and should therefore not be punished. Short of abolishing the doctrine of equivalents, the Supreme Court found the proper demarcation²⁶⁸ which will probably absolve Warner-Jenkinson from a holding of infringement. Whether or not the new rebuttable presumption rule is a good rule, remains to be seen. As acknowledged by the Federal Circuit, prosecution before the Patent Office will be quickly adapted to the new rule in that applicants and the Patent Office will add express statements with reasons for amendments or remarks.²⁶⁹ It appears, however, that such statements may not render the scope of equivalents easier to apply. The Patent Office, naturally, will tend to add statements which would support estoppel, while the applicant will try to add statements to the contrary. Questions of this nature are often dealt with just prior to the allowance of the application at a time when both the patent examiner and applicant's counsel are satisfied to have concluded the adverse examination phase and to have come to a mutually satisfactory agreement. Naturally, neither will at that point risk aggravating the situation and endangering the allowance.

264. Brief for Petitioner at 5-6, *Hilton Davis II* (No. 95-728). Upon learning of Hilton Davis' patent in late 1986, Warner-Jenkinson immediately had their patent counsel prepare an infringement opinion. *Id.* Counsel came to the conclusion that the patent was invalid and the claims were not infringed primarily because of the fact that Hilton Davis had added the pH range of 6.0 to 9.0 by amendment. *Id.* at 6.

265. *Id.* at 6.

266. *Id.*

267. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991).

268. *See Hilton Davis II*, 117 S. Ct. at 1040.

269. *Hilton Davis III*, 114 F.3d at 1163.

VI. A PROPOSAL

One may safely assume that the doctrine of equivalents will remain applicable into the foreseeable future, whether under judicial precedent or under statutory codification.²⁷⁰ The Supreme Court decision, while appropriately strengthening the doctrine of prosecution history estoppel as a balancing tool against the doctrine of equivalents, has not provided any guidance with regard to the division within the Federal Circuit. To the contrary, the Court essentially offered the Federal Circuit *carte blanche* for further clarification of the doctrine.²⁷¹ The difference between the *function-way-result* test and the *insubstantial changes* test does not appear to be significant beyond specific fact-driven application to a particular claimed element. Based on this premise, the courts will now have to define the interplay between the jury-exclusive *Markman* hearing and the jury-inclusive claim construction under the doctrine of equivalents. Besides the Supreme Court's suggestion towards more particularized jury verdict forms and special interrogatories,²⁷² it would appear that a more gradual approach to infringement could further aid in devising a more equitable doctrine which exhibits concern for both parties' positions. Such a gradual approach could define various levels of equivalence, ranging from virtual identity to substantially outside the range of equivalence.

By way of example, assume that following a *Markman* hearing the court comes to the conclusion that one element of the claim in question is not literally infringed. Thereupon, the patentee shifts his allegation to infringement under the doctrine of equivalents. At this point, the court conducts a further hearing during which equivalence is defined in various degrees. In *Hilton Davis*, for instance, the court could have held that a pH of 5.8 was squarely equivalent to the claimed lower limit of 6.0 and the court

270. The former situation appears to be more likely than the latter. Judge Newman wrote:

The doctrine of equivalents has neither greatly excited the centers of legal scholarship, nor seriously stirred action-oriented industry. Indeed, there remains a telling silence on the part of the technology community, for or against. Despite the controversial changes proposed in opinions of this court, there has been little objective policy exploration, economic analysis, legislative proposal, or even a search for consensus. There has, of course, been a good deal of speculation flowing from the inconsistency of our decisions.

Hilton Davis I, 62 F.3d at 1529 (Newman, J., concurring).

271. *Hilton Davis II*, 117 S. Ct. at 1054. "[W]e see no purpose in going further and micro-managing the Federal Circuit's particular word-choice for analyzing equivalence." *Id.*

272. *Id.* at 1053 at n.8.

could have thus assigned 100% equivalence to that expanded range; a lower pH of 5.5 could be assigned 80% equivalence, a pH of 5.2 could be assigned 60% equivalence, etc. The jury, however, will not learn of these discrete levels, but will determine the facts as to which pH level is prevalent in the infringing process. The jury is then regularly charged following the trial, with the various fact questions, including the graduated scale of equivalence.

The foregoing graduated equivalence model appears to be applicable in the mechanical, chemical, and electrical arts. Whether or not the model may be properly utilized in the pharmaceutical and biochemistry arts cannot be easily answered. However, it is evident that the graduated equivalence model will not apply where the question regards two discrete elements not subject to a gradual differentiation. By way of example, one chemical may be substituted for a claimed chemical in a composition; or in a mechanical device, a two-part hinge of the claim may be replaced with a weakened material structure, which allows bending similarly to a hinge, or a screw connection may be replaced with a glue connection. Similarly to an independent examination or a reexamination,²⁷³ the accused product or process may thereby be subjected to an independent review, whether by jury, judge, Patent Office, or an independent, specifically established panel. That review must be made without considering the prior art. Instead, only the claimed invention is compared with the accused product or process. If it is found in that review that the added feature²⁷⁴ renders the claim describing the accused product or process patentable over the patented invention, then the accused party will be presumed to have carried its burden of proving non equivalence. In other words, did the accused infringer substitute his own *invention* which would, had he filed an application, have resulted in the issuance of his own patent? The independent review could thereby utilize the same examination guidelines as used by patent examiners in obviousness questions with only slight modifications.²⁷⁵ The determination of the prior

273. Any patent may be reexamined upon the request of the patent owner or a third party and the patentability of the claims may thereby be reviewed in light of additional prior art. 35 U.S.C. § 302 (1994).

274. The element or elements which are the subject of the equivalence determination.

275. The practice with respect to determining whether an invention, as claimed, is obvious, generally follows the decision in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), wherein the Court stated:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to

art, as required in the first prong of the *Graham v. John Deere*²⁷⁶ test would be limited to determining the content and disclosure of the patent. The second prong, namely the determination of the difference between the claims and the accused device,²⁷⁷ goes to the heart of the equivalence determination. The third prong, namely the determination of the level of skill in the art,²⁷⁸ satisfies the requirement that equivalence be determined at the time of infringement.²⁷⁹ If the review is given to the jury, each of the three prongs may be separately listed on a jury verdict form, thus facilitating specific and itemized appellate review of the verdict.²⁸⁰

The independent examination review model and the graduated equivalence model may be applied separately and independently of each other, depending on the facts of a specific case. The two models may also be used in conjunction with one another, with the independent examination review model defining the outer boundaries of the range of equivalence and the graduated equivalence model defining discrete levels within that range.

VII. CONCLUSION

The doctrine of equivalents is here to stay. The Federal Circuit will probably adhere to the *insubstantial changes* test for the doctrine within the near future. Whether or not district court decisions that retain the *function-way-result* test will be reversed on this ground remains to be seen. The doctrine of prosecution history estoppel has been slightly fortified with the new rebuttable presumption rule. However, its impact will fade within the next few years as the Patent Office and applicants will ensure that explicit statements concerning the reasons for a claim amendment become part of the prosecution history.

As the interplay between the jury-exclusive *Markman* hearing and the jury-inclusive fact-finding issues surrounding the doctrine of equivalents is further defined in the courts, the doctrine of equivalents and the doctrine of prosecution history estoppel will continue to inject a certain amount of ambiguity and uncertainty into patent protection and patent infringement. Nevertheless, the additional protection afforded diligent inventors who contribute to the arts and further science against unscrupulous

the circumstances surrounding the origin of the subject matter sought to be patented.

Id. at 17–18.

276. *Id.* at 17.

277. *Id.*

278. *Id.*

279. See *supra* Part V.A.5.

280. See *Hilton Davis II*, 117 S. Ct. at 1053 n.8.

copycats and against fraud on the patent may be well worth the price for that uncertainty. The graduated equivalence model and the independent examination review model proposed above may further aid the equitable principles involved in patent protection and patent infringement without offending the notice function of the patent system.

Werner Stemer