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## The Scope of Protection for Patents after the Supreme Court's Warner-Jenkinson Decision: The Fair Protection--Certainty Conundrum

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## ARTICLES

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# THE SCOPE OF PROTECTION FOR PATENTS AFTER THE SUPREME COURT'S *WARNER- JENKINSON* DECISION: THE FAIR PROTECTION — CERTAINTY CONUNDRUM\*

Donald S. Chisum†

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## I. INTRODUCTION

The Supreme Court's March 3, 1997 decision in *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*<sup>1</sup> is a major step forward in bringing greater certainty to the difficult process of determining the proper scope of protection for patents. Unlike prior landmark decisions on this subject, *Warner-Jenkinson* was a unanimous decision, which enhances its potential for stabilizing the law. However, the decision not only fails to solve all existing problems within the law of patent infringement, but also raises some new questions that only subsequent developments in case law can answer.

Recognizing the interest of existing patent owners in a fair scope of protection, the Supreme Court declined to "speak the death" of the "doctrine of equivalents,"<sup>2</sup> which has been applied by the courts since 1853, and confirmed by the Court in the 1950 *Graver Tank*<sup>3</sup> decision. Under the doctrine, a "product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention."<sup>4</sup> Abolishing the doctrine or limiting it severely by confining it to equivalents known at the time a patent issues, or by confining it to cases of intentional infringement, or by applying a rigid rule of estoppel whenever the patentee amended a claim might provide "brighter lines" in determining infringement, but would "change so substantially the rules of the game" as to "subvert the various balances the PTO [Patent and Trademark Office] sought to strike when issuing the numerous patents which have not yet expired . . ."<sup>5</sup> Instead, the Court adopted an objective test of equivalency that is applied to each claim element, leaving to the Federal Circuit the task of developing the linguistic framework of equivalency.<sup>6</sup>

On the other hand, the Supreme Court acknowledged concerns that the doctrine of equivalents "has taken on a life of its own" and "when applied, broadly conflicts with the definitional and public-

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1. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040 (1997).

2. *Id.* at 1045.

3. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605 (1950); see 5 DONALD S. CHISUM, *CHISUM ON PATENTS*, § 18.04 (1997).

4. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1045.

5. *Id.* at 1050.

6. *Id.* at 1054.

notice functions of the statutory claiming requirement.”<sup>7</sup> To address these concerns, the Court adopted an element-by-element approach to the doctrine of equivalents as opposed to the overall approach previously administered by the Court.<sup>8</sup> The decision emphasized that courts should exercise “a special vigilance against allowing the concept of equivalence to eliminate completely any such elements.”<sup>9</sup> *Warner-Jenkinson* also confirmed “prosecution history estoppel” as a limitation on equivalency.<sup>10</sup> Although estoppel is not governed by a rigid rule precluding equivalency, whenever a claim is amended during prosecution there is a presumption that the amendment was made because an issue related to patentability existed. This presumption is rebutted if a patentee shows “an appropriate reason for a required amendment.”<sup>11</sup>

The *Warner-Jenkinson* decision does not resolve the issue regarding the role of juries in determining equivalency. The Supreme Court merely notes that there is ample authority supporting the Federal Circuit decision which states that disputed fact issues on equivalency are for resolution by a jury.<sup>12</sup> But the Court does offer *guidance* on how to reduce concerns about unreviewability due to “black box jury verdicts.”<sup>13</sup> First and foremost, the limitations on equivalency, including prosecution history estoppel and whether the patentee’s theory of equivalency would vitiate a claim element, are for resolution by the court presiding over the case.<sup>14</sup> However, the Supreme Court encourages the Federal Circuit to “implement procedural improvements to promote certainty, consistency, and reviewability to this area of the law.”<sup>15</sup> Procedures for sifting out unsupported or inappropriate charges of infringement under the doctrine of equivalents should work in tandem with the procedures already being developed in the district courts to implement the Supreme Court’s earlier decision in *Markman*,<sup>16</sup> which held that patent claim construction is a question of law for resolution by a judge, not

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7. *Id.* at 1048-49.

8. *Id.* at 1054.

9. *Id.*

10. *Id.*; see 5 CHISUM, *supra* note 3, § 18.05.

11. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1051.

12. *Id.* at 1053.

13. *Id.*

14. *Id.* at 1054.

15. *Id.*

16. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

a jury.

This article will review: (1) the history of the doctrine of equivalents and the Fair Protection-Certainty Conundrum, (2) the schism that developed in the decisions of the Court of Appeals for the Federal Circuit which led to the 1995 en banc decision in *Hilton Davis v. Warner-Jenkinson*, (3) the facts of the *Warner-Jenkinson* case, and (4) the Supreme Court's *Warner-Jenkinson* decision. In addition, this article will assess the likely impact of the Supreme Court's decision on issues concerning equivalency and estoppel, which have been dealt with previously by the Court of Appeals for the Federal Circuit. Included in this assessment are some critical comments directed to the Federal Circuit's June 12, 1997 order in the continuing *Hilton-Davis* litigation.

## II. BACKGROUND: THE DOCTRINE OF EQUIVALENTS AND THE FAIR PROTECTION - CERTAINTY CONUNDRUM

The most important issue in intellectual property is the scope of protection: given that an intellectual property right exists, to what does it extend? This is true for all the species of intellectual property, including copyright, trademark, trade secret and patent. For example, granted that there is a trademark property interest in the mark "McDonald's" for fast food restaurant services, what marks fall within the scope of right: McDonnell for fast food? McDevitt? Donald? If there were a current copyright on the play *Romeo and Juliet*, what dramatic works would fall within its scope: all plays that involve young lovers from warring families regardless of historical epoch, including *West Side Story*?

In addressing the preeminently important scope of protection issue, patent law is unique among intellectual rights<sup>17</sup> in that it has long required the inventor to set forth a precise, fixed verbal definition of the patented invention, the definition taking the form of a "claim."<sup>18</sup>

In the United States, patent infringement is defined by statute as the making, using, selling, offering for sale, or importing of a patented invention in the United States during the term of the patent

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17. Compare 35 U.S.C. § 112 (1994) (patent claim as including specifications) with 17 U.S.C. § 409 (1994) (copyright registration) and 15 U.S.C. § 1051 (1994) (trademark registration).

18. See 3 CHISUM, *supra* note 3, § 8.02.

without authority of the patent owner.<sup>19</sup> Though the statute does not expressly so state, the “patented invention” is determined by reference to the claims of the patent. This is a natural inference from the statutory requirement that the specification of the patent “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”<sup>20</sup>

That the claims of a patent should be clear and should control the determination of infringement has been emphasized by the Supreme Court for over a century.<sup>21</sup> In an 1877 decision, for example, the Court stressed that “nothing can be more just and fair both to the patentee and to the public, than that the former should understand and correctly describe just what he has invented and for what he claims a patent.”<sup>22</sup>

Although the courts have consistently recognized the importance of clear claiming, they have also been unwilling to confine patentees to the strict literal wording of their claims and have found infringement under some circumstances when an accused infringer has adopted an equivalent structure or process.<sup>23</sup> This willingness to extend the scope of a patent beyond the literal language of the patent claims is known as the doctrine of equivalents. Judge Learned Hand referred to the doctrine as an anomaly:

[A]fter all aids to interpretation have been exhausted, and the scope of the claims has been enlarged as far as the words can be stretched, on proper occasions courts make them cover more than their meaning will bear. If they applied the law with inexorable rigidity, they would never do this, but would remit the patentee to his remedy of re-issue, and that is exactly what they frequently do. Not always, however, for at times they resort to the “doctrine of equivalents” to temper unsparing logic and prevent an infringer from stealing the benefit of the invention. No doubt, this is, strictly speaking, an anomaly; but it is one which courts have frankly faced and accepted almost from the beginning.<sup>24</sup>

Underlying the anomalous doctrine of equivalents and the re-

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19. 35 U.S.C. § 271(a) (1994).

20. 35 U.S.C. § 112 (1994).

21. See generally 3 CHISUM, *supra* note 3, § 8.02[3].

22. *Merrill v. Yeomans*, 94 U.S. 568 (1877).

23. See 5 CHISUM, *supra* note 3, § 18.02.

24. *Royal Typewriter Co. v. Remington Rand, Inc.*, 168 F.2d 691, 692 (2d Cir. 1948).

lated doctrine of prosecution history estoppel is a policy dilemma. To coin a phrase, this dilemma can be termed as the "Fair Protection-Certainty Conundrum," which is inherent in any patent system that requires a fixed, written description of the invention (i.e., a "claim"). There is clearly an interest in providing a clear definition of the scope of the patent right; lack of clarity can impede legitimate investment in technology-based products and services. On the other hand, strict and literal adherence to the written claim in determining the scope of protection can invite subversion of a valuable right and substantially diminish the economic value of patents. Claims are often written by people with limited resources and time, imperfect expression skills, and incomplete understandings of the invention, the prior art that determines its patentability, and the forms in which it may later be cast.

The Conundrum was most clearly and directly confronted in Europe in the 1970s during the process of harmonizing the patent laws of the European nations. Traditionally, the United Kingdom focused heavily on claim language while Germany emphasized the nature of the underlying invention.<sup>25</sup> Reconciling these views was a considerable problem in drafting the European Patent Convention.<sup>26</sup> Article 69 of the Convention provides that the "extent of the protection conferred by a European patent . . . shall be determined by the terms of the claims" and that "[n]evertheless, the description and drawings shall be used to interpret the claims."<sup>27</sup> The parties adopted a "Protocol on the Interpretation of Article 69 of the Convention," which states the following:

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

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25. See 5 CHISUM, *supra* note 3, § 18.02.

26. Convention on the Grant of European Patents as amended, Dec. 21, 1978, European Community.

27. *Id.* at Art. 69.



extremes which combines a fair protection for the patentee with a reasonable degree of certainty for third parties.<sup>28</sup>

Article 69 and its Protocol address claim interpretation rather than the doctrine of equivalents. But the Protocol's goal of combining "a fair protection for the patentee with a reasonable degree of certainty for third parties" is the same goal the better-reasoned court decisions in the United States have sought to achieve.

#### A. *Supreme Court Decisions Prior to 1997*

Numerous United States Supreme Court decisions before *Warner-Jenkinson* discussed and applied the concept of infringement by equivalency.<sup>29</sup> However, two decisions, handed down almost a century apart, are of primary importance: *Winans v. Denmead*<sup>30</sup> (1853), the first major pronouncement on equivalency by the Court, and *Graver Tank & Mfg. Co. v. Linde Air Products*<sup>31</sup> (1950), the leading modern decision and the last pronouncement prior to *Warner-Jenkinson*. Both decisions are cited and quoted in *Warner-Jenkinson*.

##### 1. *Winans v. Denmead*

*Winans* was the first Supreme Court decision to use the doctrine of equivalents to do serious damage to the literal meaning of patent claim language. Mr. Winans' patent was for a new type of railroad car to carry coal.<sup>32</sup> Prior to Winans' invention, railroad cars were constructed with a rectangular floor plan. Winans perceived that the dispersion of the force of the coal in such a car was uneven, thus requiring substantial reinforcement. He designed a conically-shaped car which evenly distributed the pressure of the coal and facilitated its discharge through an aperture in the bottom. This shape of the car enabled the patentee to build cars with a much greater load weight as compared to the weight of the car.<sup>33</sup> In his patent, Winans stated the

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28. Protocol on the Interpretation of Article 69 of the Convention on the Grant of European Patents, Oct. 5, 1973, European Community.

29. See *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405 (1908); *Morley Sewing Mach. Co. v. Lancaster*, 129 U.S. 263 (1889).

30. *Winans v. Denmead*, 56 U.S. (15 How.) 330 (1853).

31. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605 (1950). For a thorough scholarly review of the *Graver Tank* decision and its commercial and technological implications, see Paul M. Janicke, *Heat of Passion: What Really Happened in Graver Tank*, 24 AIPLA Q.J. 1 (1996).

32. *Winans v. Denmead*, 56 U.S. (15 How.) 330 (1853).

33. *Id.* at 343.

following claim:

What I claim as my invention, and desire to secure by letters-patent, is making the body of a car for the transportation of coal, &c., [sic] in the form of a frustum of a cone, substantially as herein described, whereby the force exerted by the weight of the load presses equally in all directions, and does not tend to change the form thereof, so that every part resists its equal proportion, and by which, also, the lower part is so reduced as to pass down within the truck frame and between the axles, to lower the center of gravity of the load without diminishing the capacity of the car as described.<sup>34</sup>

The defendant constructed railroad cars that were “octagonal and pyramidal” in shape, rather than “cylindrical and conical” as provided in Winans’ patent.<sup>35</sup> In the infringement suit, all the evidence indicated that the defendant’s car achieved substantially all the advantages of the Winans car.<sup>36</sup> It also indicated that the plaintiff and defendant were competitors and that the defendant’s design was directly inspired by the plaintiff’s product. Nevertheless, the trial judge instructed the jury that there could be no infringement since the defendant’s car was rectilinear and the patent claim required a conical shape.<sup>37</sup>

A sharply divided Supreme Court reversed. For the majority, Justice Curtis relied on a presumption that the patentee claimed all that he was entitled to claim. He noted that it would be unreasonable to apply the term “cone” literally, because “neither the patentee nor any other constructor has made, or will make, a car exactly circular.”<sup>38</sup> Reasonably interpreted, the claim required only that the car “be so near to a true circle as substantially to embody the patentee’s mode of operation, and thereby attain the same kind of result as was reached by his invention.”<sup>39</sup>

Four justices dissented in an opinion written by Chief Justice Taney, who emphasized that the patentee confined his claim to the conical form and may have been “unwilling to expose the validity of

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34. *Id.* at 331 (emphasis added).

35. *Id.* at 343.

36. *Id.* at 340.

37. *Id.*

38. *Id.* at 343-44.

39. *Id.*

his patent, by the assertion of a right to any other."<sup>40</sup> The Patent Act required patentees to "specify and point out" what they claim as an invention. Requiring less than precision and particularity in claims would be "mischievous" and "productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexatious demands."<sup>41</sup>

The judicial debate in *Winans* has a remarkably contemporary tone. The two sides felt the full force of the Fair Protection-Certainty Conundrum.

## 2. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*

*Graver Tank* involved a patent claiming a flux for electric welding.<sup>42</sup> The specification of the patent stated that the inventors had used calcium silicate and silicates of sodium, barium, iron, *manganese*, cobalt, *magnesium*, nickel and aluminum.<sup>43</sup> It stated a preference for silicates of the alkaline earth metals (which include calcium, magnesium, barium, and an unlisted species — strontium).<sup>44</sup> One set of claims described the key element generically as "silicate" or "metallic silicate."<sup>45</sup> This set of claims was held invalid.<sup>46</sup> The basis for this ruling was that the claim included numerous embodiments that were inoperative as fluxes.<sup>47</sup> The Supreme Court affirmed the district court's ruling that the claim could not be narrowed by construction to the nine specific metallic silicates listed in the specification.<sup>48</sup> A second set of claims were for fluxes containing an "alkaline earth metal silicate."<sup>49</sup> This set of claims was held valid.<sup>50</sup>

The patent owner used for its commercial embodiment

40. *Id.* at 347.

41. *Id.*

42. *Linde Air Prods. Co. v. Graver Tank & Mfg. Co.*, 86 F.Supp 191 (1950).

43. *Id.* at 197.

44. Alkaline earth metals are metals whose oxides are alkaline earths. These bivalent metals are found in Group IIA of the periodic table. Radium is often not on the list of such metals, because its chemical properties do not track as closely as those of the others, i.e. beryllium, magnesium, calcium, strontium and barium. Calcium and beryllium occur naturally as complex silicates. The others occur naturally as phosphates, sulfates and carbonates.

45. *Linde Air Prods. Co. v. Graver Tank & Mfg. Co.*, 86 F.Supp 191, 197-198 (1950).

46. *Id.* at 198.

47. *Id.* at 198-199.

48. *Id.*

49. *Id.* at 198.

50. *Id.*

(“Unionmelt”) a silicate of *magnesium*, which is an alkaline earth metal silicate. The accused infringer used for its commercial embodiment (“Lincolnweld”) a silicate of *manganese*, which is a metallic silicate but not an alkaline earth metal silicate.<sup>51</sup> Consequently, the claims held valid were not literally infringed.<sup>52</sup>

An important point (and one that may have strengthened the patentee’s equities in the minds of the majority in *Graver Tank*) was that the infringer’s product used a species actually disclosed in the patentee’s specification, a species that was literally covered by generic claims that were held invalid only because of undue breadth. The reported opinions in *Graver Tank* do not indicate why the patentee failed to claim specifically the alternative embodiment with a silicate of *manganese*. One reason may well have been that at the time of *Graver Tank*, Patent Office policy restricted an inventor to no more than three species claims if a claim to a genus were allowed. (This was liberalized to five in 1949 and to a “reasonable number” in 1978).<sup>53</sup>

Despite the absence of literal infringement of the valid claims, the Supreme Court affirmed the finding of the trial court that there was infringement under the doctrine of equivalents.<sup>54</sup> Expert testimony indicated that manganese and magnesium serve the same purpose in fluxes. Prior art patents taught the use of manganese in welding fluxes.<sup>55</sup>

The Court noted the origin of the doctrine in *Winans* and stated that the doctrine “continues today ready and available for utilization when the proper circumstances for its application arise.”<sup>56</sup> Also, the Court quoted Judge Hand’s opinions in *Royal Typewriter* and *Sanitary Refrigerator* for the proposition that “a patentee may invoke this doctrine to proceed against the producer of a device if it performs substantially the same function in substantially the same way to obtain the same result.”<sup>57</sup> This latter phrasing has come to be known as the “triple identity” test.

The Court made the following points about the doctrine of

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51. *Id.* at 199.

52. *Id.*

53. See 4 CHISUM, *supra* note 3, § 12.02[2][e].

54. *Graver Tank & Mfg. Co. v. Linde Air Prods.*, 339 U.S. 605, 612 (1950).

55. *Id.*

56. *Id.* at 608.

57. *Id.* at 608-9 n.1.

## equivalents:

1. The doctrine is based on the notion that "one may not practice a fraud on a patent."
2. The doctrine operates not only in favor of the patentee of a pioneer invention but also in favor of secondary inventions that produce new and useful results (though the area of equivalency may vary under the circumstances).
3. The doctrine may be used against, as well as in favor of, a patentee in situations in which an accused device falls within the literal words of the claims but performs the same or a similar function in a substantially different way.
4. Equivalency is not determined by any particular formula but rather must be determined against the context of the patent, the prior art, and the particular circumstances of the case.
5. Complete identity for every purpose and in every respect is not required.
6. Things that are equal to the same thing may not be equal to each other; things for most purposes different may sometimes be equivalents to each other.
7. Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with other ingredients, and the function which it is intended to perform.
8. An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient that was not included in the patent with one that was so included.
9. Equivalency is a determination of fact and may be proved by the testimony of experts, by documents, by texts and treatises, and by the disclosures of the prior art.<sup>58</sup>

In affirming the trial court finding of equivalency, the Court noted the absence of evidence that the accused infringer had developed the accused process independently.<sup>59</sup>

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58. *Id.* at 608-9.

59. *Id.* at 612.

*Graver Tank* became a key judicial precedent, primarily because the Supreme Court did not return to the subject for nearly 50 years. Overall, the Court's opinion is weak because of its one-sidedness: it focuses almost exclusively on the fair protection side of the Fair Protection-Certainty Conundrum. It also contains analytic flaws. For example, it stated that "to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing"<sup>60</sup> and that "[o]utright and forthright duplication is a dull and very rare type of infringement."<sup>61</sup> These statements equate patent infringement standards with those standards used in copyright law, but this overlooks the fact that provisions for claims do not exist in copyright law. There are numerous instances of broad patent claims to fundamental technologies that have been or would be literally infringed — even by implementations that differ from the specific ones devised and disclosed in the patent.

An important aspect of the 1997 *Warner-Jenkinson* decision is that the Supreme Court restored balance to the law of patent claim scope; it brought the Conundrum, which can be masked but not eradicated, back into the open.

#### *B. Federal Circuit Reassessment Leading to Hilton Davis*

In 1982, Congress created the Court of Appeals for the Federal Circuit and conferred on it exclusive appellate jurisdiction over appeals from district court judgments in patent infringement suits. This made the decisions by the Federal Circuit of great significance in patent law. The Federal Circuit's decisions are subject to discretionary review by the Supreme Court, but this has occurred only rarely over the past 15 years. In *Warner-Jenkinson*, the Supreme Court expressly recognized the expertise and responsibility of the Federal Circuit to develop and apply the principles of patent law.<sup>62</sup>

Appeals to the Federal Circuit are heard panels of three judges. Under the court's practice, a panel is bound to follow the decisions of previous panels of the Federal Circuit (and of the Federal Circuit's two predecessor courts, the Court of Claims and the Court of Cus-

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60. *Id.* at 607.

61. *Id.*

62. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040 (1997).

toms and Patent Appeals).<sup>63</sup> However, significant divergence among Federal Circuit panel decisions has occurred. The Federal Circuit may seek to resolve any such splits or questions of exceptional importance by hearing a case en banc, that is, with all of the active judges participating.

The Federal Circuit first addressed the important issues of the doctrine of equivalents and prosecution history estoppel in the 1983 *Hughes Aircraft*<sup>64</sup> decision. It soon became clear that judges on the court held differing views about how to resolve difficult questions concerning patent claim scope, or in other words, about how to address the Conundrum. The Federal Circuit rendered en banc decisions in *SRI International*<sup>65</sup> (1984) and in *Pennwalt*<sup>66</sup> (1987). The cases produced multiple dissenting and concurring opinions. It was evident that the court had not reached a comfortable consensus.

Reassessment of the doctrine of equivalents in the 1995 *Hilton Davis* case occurred because Federal Circuit panel decisions after 1987 developed two separate schools of thought about the doctrine. One school leaned toward fair protection; the other toward clear notice. Each found support in the language of the *Graver Tank* opinion.

The first school held that:

1. The doctrine was a "second prong" for determining infringement, if literal infringement was absent, then the doctrine was potentially available in every case unless restricted by prosecution history estoppel or the prior art;
2. The test for equivalency was whether the accused product or process performed the same function, way, and result as the claimed invention (the "triple identity" test); and

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63. *E.g.*, *UMC Elecs. Co. v. United States*, 816 F.2d 647 (Fed. Cir. 1987).

64. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 (Fed. Cir. 1983). Begun in 1973, the Hughes litigation over a patent claiming an orbiting satellite has stretched on for decades. In a recent panel decision dealing with the case's proof of damages phase, the judges discussed whether the Hughes interpretation of the doctrine of equivalents had been undermined by later Federal Circuit decisions. *Hughes Aircraft Co. v. United States*, 86 F.3d 1566 (Fed. Cir. 1996). After Warner-Jenkinson, the Supreme Court remanded Hughes for further consideration. *Hughes Aircraft Co. v. United States*, 117 S. Ct. 1466. The case goes on!

65. *SRI Int'l v. Matsushita Elec. Corp. of America*, 775 F.2d 1107 (Fed. Cir. 1985) (The 11 participating judges voted as follow: five joined one opinion, five joined an opposing opinion, the eleventh took a middle position in a concurring opinion).

66. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 93 (Fed. Cir. 1987).

3. A genuine dispute between a patentee and accused infringer over whether the accused product or process met the triple identity test was resolvable as a question of fact by a jury if one party properly demanded trial by jury.<sup>67</sup>

The second school held that:

1. The doctrine applied only in "exceptional cases;"
2. The triple identity result was not the exclusive test but rather was supplemented by other "equitable" factors, including whether the accused infringer knew of and copied the patented invention, which favors finding equivalency, or developed the accused product or process independently, which favors finding no equivalency; and
3. The judge must determine whether the equitable "threshold" for applying the doctrine and extending the patent's claims beyond their literal scope has been established, either before or after submitting any factual issues on equivalency to the jury.<sup>68</sup>

The triple identity test itself came under scrutiny. The test's abstract character diminished its value as an objective determinant of equivalency. In litigation, patentees characterize the way, function and result broadly to show similarity between the patented invention and the accused product; accused infringers characterize them narrowly to show substantial differences.<sup>69</sup> In concurring opinions, Judge Lourie criticized the triple identity test, referred to as "FWR," as inadequate, especially when directed to chemical compounds, because it focuses on function even though the claimed invention is a structure (very different structures can perform the same function in the same way to achieve the same result).<sup>70</sup>

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67. See, e.g., *Miles Lab., Inc. v. Shandon Inc.*, 997 F.2d 870 (Fed. Cir. 1993); *Read Corp. v. Portec, Inc.*, 970 F.2d 816 (Fed. Cir. 1992); *Sun Studs, Inc. v. ATA Equip. Leasing, Inc.*, 872 F.2d 978 (Fed. Cir. 1989).

68. *Int'l Visual Corp. v. Crown Metal Mfg. Co.*, 991 F.2d 768 (Fed. Cir. 1993) (Lourie, concurring); *Charles Greiner & Co. v. Mari-Med Mfg., Inc.*, 962 F.2d 1031 (Fed. Cir. 1992); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534 (Fed. Cir. 1991). Cf. *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528 (Fed. Cir. 1987); *Great N. Corp. v. Davis Core & Pad Co.*, 782 F.2d 159 (Fed. Cir. 1986).

69. In two decisions involving chemical or biochemical inventions, the court used the prior art to reject a patentee's broad definition of function. See *Genentech, Inc. v. The Wellcome Found. Ltd.*, 29 F.3d 1555 (Fed. Cir. 1994); see also *Zenith Lab., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418 (Fed. Cir. 1994).

70. See *Genentech, Inc. v. The Wellcome Found. Ltd.*, 29 F.3d 1555 (Fed. Cir. 1994); *Int'l Visual Corp. v. Crown Metal Mfg. Co.*, 991 F.2d 768 (Fed. Cir. 1993) (Lourie, J., concur-



C. *The Hilton Davis - Warner-Jenkinson Patent Controversy:  
What is "Approximately 6.0 to 9.0 pH"?*

In *Hilton Davis*, a jury found infringement under the doctrine of equivalents even though the accused process (1) was developed independently and without knowledge of the patentee's work, and (2) failed to meet a claim limitation requiring that a solution have a 6.0 pH, to an extent (5.0) that was an order of magnitude (i.e. ten-fold) different in chemical terms.<sup>71</sup>

The Hilton Davis patent (No. 4,560,746) was for a process that removed impurities from food and drug dyes (Red Dye #40 and Yellow Dye #6).<sup>72</sup> In the prior art, dye manufacturers "used an expensive and wasteful process known as 'salting out' to purify the dyes," whereas the patent disclosed an "ultrafiltration" process, which entails using osmosis through a membrane.<sup>73</sup>

In 1982, the inventors, Hilton Davis employees Cook and Rebhahn, investigated a membrane separation process, hiring Osmonics, Inc., an equipment manufacturer, to test the membrane separation process.<sup>74</sup> The August 1982 test failed.<sup>75</sup> A second test in

ring). See also *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995) (en banc), *rev'd & remanded*, 117 S. Ct. 1040 (1996) (Lourie, J., dissenting).

71. The Supreme Court cited an encyclopedia's explanation of "pH":

The pH, or power (exponent) of Hydrogen, of a solution is a measure of its acidity or alkalinity. A pH of 7.0 is neutral; a pH below 7.0 is acidic; and a pH above 7.0 is alkaline. Although measurement of pH is on a logarithmic scale, with each whole number difference representing a ten-fold difference in acidity, the practical significance of any such difference will often depend on the context. Pure water, for example, has a neutral pH of 7.0, whereas carbonated water has an acidic pH of 3.0, and concentrated hydrochloric acid has a pH approaching 0.0. On the other end of the scale, milk of magnesia has a pH of 10.0, whereas household ammonia has a pH of 11.9. 21 *Encyclopedia Americana* 844 (Int'l ed. 1990).

*Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1045 n.1 (1997).

Later, on remand, the Federal Circuit gently corrected the Supreme Court's chemistry:

The significance of a change in pH depends on the context, as recognized by the Supreme Court. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1045 n.1. We observe, however, that the pH number is derived from hydrogen ion concentration, and a one unit change in pH states a ten-fold difference in hydrogen ion concentration, rather than literally indicating a ten-fold difference in "acidity."

*Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1164 (Fed. Cir. 1997).

72. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1515 (Fed. Cir. 1995) (en banc), *rev'd and remanded*, 117 S. Ct. 1040 (1996).

73. *Id.*

74. *Id.*

October 1982, with specified changes, succeeded.<sup>76</sup> The inventors filed an application and obtained a patent in 1985.<sup>77</sup> The patent's Jepson format claim 1 provided:

In a process for the purification of a dye selected from the group [including Red Dye #40 and Yellow Dye #6], *the improvement which comprises:* subjecting an aqueous solution of the reaction mixture resulting from said coupling or said sulfonation to *ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., at a pH from approximately 6.0 to 9.0,* to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing into the permeate on the downstream side of said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate, as evidenced by their essential absence in said permeate, recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.<sup>78</sup>

The inventors added the limitation of "at a pH from approximately 6.0 to 9.0" during prosecution to distinguish the Booth patent, which disclosed an ultrafiltration process that, among other differences from the claimed process, operated at a pH above 9.0 and preferably between 11.0 and 13.0.<sup>79</sup> As the Supreme Court later noted, the reason for the lower limit of 6.0 was disputed.<sup>80</sup> In the patent's

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75. *Id.*

76. *Id.*

77. *Id.*

78. *Id.* (emphasis added).

79. The Booth patent, No. 4,189,380, concerned ultrafiltration of "aqueous solutions of polymeric colorants." The patent claimed the improvement of adding to the solution salt above about 1%. It indicated that it was "often of advantage" to add base material to maintain the pH of the retentate "above 9, preferably from 11 to 13 during the period of salt maintenance." U.S. Patent 4,189,380 to Booth, et al. Thus, the Booth patent seemed to involve different dyes from those in the Hilton Davis patent and used salt, which the Hilton Davis patent sought to avoid.

80. The Supreme Court described the dispute as follows:

Petitioner contends that the lower limit was added because below a pH of 6.0 the patented process created "foaming" problems in the plant and because the process was not shown to work below that pH level. Brief for Petitioner 4, n.5, 37, n.28. Respondent counters that the process was successfully tested to pH levels as low as 2.2 with no effect on the process because of foaming, but offers no particular explanation as to why the lower level of 6.0 pH was selected. Resp't Br. 34, n.34. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. 1040, 1046 n.2 (1997).

general description and examples, the 6.0 to 9.0 pH range was not described as critical.<sup>81</sup> The specification indicates that pH of the unfiltered reaction products is about 9.0 and indicates a preference to reduce the pH, preferably to about 6.0 to 8.0, which centers around the neutral pH value of 7.<sup>82</sup>

In 1982, the accused infringer, Warner-Jenkinson, hired Osmonics under a secrecy agreement to test a membrane separation process on a dye solution that had already been salted out.<sup>83</sup> Osmonics performed the test in August 1982, one week before the first Hilton Davis test.<sup>84</sup> The test failed. Warner Jenkinson ceased work on Red Dye #40 and Yellow Dye #6 filtration until 1986. In 1986, Warner-Jenkinson developed the accused process, which included membrane ultrafiltration.<sup>85</sup> After the patent issued, Hilton Davis sued for infringement.<sup>86</sup> Hilton Davis' evidence showed that Warner-Jenkinson's process operated at pressures somewhere in a range of 200 to nearly 500 p.s.i.g. and a pH of 5.<sup>87</sup>

#### *D. The Federal Circuit Hilton Davis Opinions*

In *Hilton Davis*, the Federal Circuit heard the case en banc in

81. U.S. Patent 4,560,746 to Rebhan, et al.

82. The specification of the patent in suit, No. 4,560,746, describes a process in which, first, a known reaction for making food dyes is carried out, and then the reaction product is subjected to ultrafiltration through a membrane. The specification states the following:

In carrying out the present process the reaction mixture, as produced in the diazo coupling and as fed to the ultrafiltration unit, *generally has pH of approximately 9.0*. While these solutions can be subjected successfully to ultrafiltration, *it is preferred to adjust the pH to approximately 6.0 to 8.0* before passage through the ultrafiltration membrane.

*Id.* (emphasis added). The specification's discussion of pH is reflected in the patent's claims. Claim 1 broadly claimed the process. Dependent claims 5 and 6 added the limitation that the reaction mixture be "adjusted to 6.0 to 8.0 before ultrafiltration." The addition of the 6 to 9 pH range to the independent claim created an awkward relationship to the dependent claims, which suggests that the claim amendment may have resulted from a compromise between an attorney and examiner, each of whom may have only imperfectly understood the nature of the invention disclosed in the specification and its relationship to the prior art. Such imperfections in claim drafting and prosecution are not uncommon, and a recurring issue with regard to the doctrine of equivalents is whether courts can provide effective protection for the substance of an invention despite flaws in the wording of the claims. *See id.*

83. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1515 (Fed Cir. 1995) (in banc), *rev'd & remanded*, 117 S. Ct. 1040 (1997).

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.* at 1516.

order to clarify its position on the doctrine of equivalents. The Federal Circuit voted 7 to 5 to affirm the verdict of infringement. The majority indicated that the triple identity (FWR) test is not the sole test of equivalency, adopting instead a “substantiality” standard, otherwise rejecting the second school’s views regarding an “equitable threshold” to applying the doctrine of equivalents.<sup>88</sup> Lengthy opinions were delivered by Judges Newman (concurring), Plager (dissenting, joined by Chief Judge Archer and Judges Rich and Lourie), Lourie (dissenting, joined by Judges Rich and Plager), and Nies (dissenting, joined, as to some parts, by Chief Judge Archer).

The majority upheld the jury’s verdict of infringement, because “one of skill in the art would know that performing ultrafiltration at a pH of 5 would allow the membrane to perform the same function, in an equivalent way, to achieve the same result as at a pH of approximately 6 to 9.”<sup>89</sup> The accused process’ pH variation from the claimed approximate range was insubstantial.<sup>90</sup> The pH limitation prevented damage to the membrane and produced a neutral final dye product.<sup>91</sup> An inventor testified that any pH above 2.0 would have this effect.<sup>92</sup> The accused infringer’s expert admitted the patented process would operate at a 5.0 pH.<sup>93</sup>

In coming to its decision, the Federal Circuit clarified certain issues regarding the doctrine of equivalents. First, the majority rejected the argument that the doctrine of equivalents had an equitable or subjective component.<sup>94</sup> A patentee need not prove bad faith or intentional conduct by the accused infringer.<sup>95</sup> Copying and “designing around” may “inform the test for infringement under the doctrine of equivalents.”<sup>96</sup> “When an attempt to copy occurs, the fact-finder may infer that the copyist, presumably one of some skill in the art, has made a fair copy, with only insubstantial changes.”<sup>97</sup>

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88. *Id.* at 1518, 1523.

89. *Id.* at 1524.

90. *Id.*

91. *Id.*

92. *Id.*

93. *Id.*

94. *Id.* at 1519, 1524.

95. *Id.* at 1519.

96. *Id.*

97. *Id.*

“Designing around” may be evidence of a substantial difference.<sup>98</sup> Second, independent development by the accused infringer, which the Supreme Court mentioned in *Graver Tank*, provides, as such, “no information about the substantiality of the differences,” but an accused infringer may rely on independent development to refute a patentee’s charge of copying.<sup>99</sup> Third, the majority viewed “known interchangeability,” that is, the interchangeability of a claimed ingredient and allegedly equivalent ingredient, as an important factor. Without evidence of known interchangeability, to establish equivalency the patentee must present “other objective technological evidence”<sup>100</sup> to demonstrate that the change is one that a person of ordinary skill in the art “would have considered insubstantial at the time of infringement.”<sup>101</sup> Fourth, the majority rejected a dissenting judge’s argument that the doctrine of equivalents was limited to substitutions of components that were known to be equivalents when the patent issued.<sup>102</sup>

Finally, the majority held that the patentee’s amendment adding the 6.0 to 9.0 pH limitation did not estop it from claiming equivalency for processes using a pH below 6.0. Since the purpose of the amendment was to distinguish the Booth reference, which had a pH above 9.0, it did “not bar [the patentee] from asserting equivalency to processes such as [the accused infringer’s] operating sometimes at a pH below 6”<sup>103</sup> because the amended lower limit was not due to prior art.

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98. Federal Circuit panel decisions after *Hilton Davis* found no infringement when the facts showed that the accused infringer “designed around” the claimed invention rather copied it. *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1570 (Fed. Cir. 1996) (The district court correctly found the “original” accused device infringing under the doctrine of equivalents but clearly erred in finding the “redesign” accused device infringing. Substituting a prism alignment system for the claimed reticle alignment system in the patented interferometer “simply can not be deemed an insubstantial change.”); *Roton Barrier, Inc. v. Stanley Works*, 79 F.3d 1112, 1127 (Fed. Cir. 1996) (The district court committed clear error in finding infringement under the doctrine of equivalents; the accused infringer’s design-around activities, which included substantial changes “for a reason . . . provide[d] an inference of no infringement under the doctrine” of equivalents).

99. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1515, 1520 (Fed. Cir. 1995).

100. *Id.* at 1519.

101. *Id.*

102. *Id.*

103. *Id.* at 1519.

### III. WARNER-JENKINSON

The Supreme Court granted Warner-Jenkinson's petition for a writ of certiorari. In an opinion by Justice Thomas, the Supreme Court reversed and remanded the case for further proceedings in the Federal Circuit in view of the "requirements as described by us today, particularly as related to prosecution history estoppel and the preservation of some meaning for each element in a claim."<sup>104</sup>

#### A. *Survival of the Doctrine of Equivalents under the 1952 Patent Act*

The Court reviewed the 1950 *Graver Tank* decision and its description of "some of the considerations that go into applying the doctrine of equivalents."<sup>105</sup>

The Court rejected the petitioner's argument that the 1952 Patent Act implicitly abrogated the doctrine of equivalents.<sup>106</sup> The Act's claiming, examination, and reissue provisions were "not materially different from the 1870 Act"<sup>107</sup> and *Graver Tank*, over dissents, rejected arguments for abolition of the doctrine based on those provisions.<sup>108</sup> Indeed, similar arguments were rejected a century earlier in *Winans*.<sup>109</sup> Any minor differences between the 1870 and 1952 Acts "have no bearing on the result reached in *Graver Tank*, and thus provide no basis for our overruling it."<sup>110</sup>

The 1952 Act's reference to equivalency in paragraph 6 of § 112, on the interpretation of means-plus-function limitations, was new. The petitioner argued that "the doctrine [of equivalents] was implicitly rejected as a general matter by Congress' specific and limited inclusion of the doctrine in one section regarding 'means'

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104. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. 1040, 1054 (1997).

105. *Id.* at 1047.

106. *Id.*

107. *Id.* In fact, the 1952 Act did make significant changes to the reissue procedure. For example, it added a two-year limitation on applications for reissues to broaden a patent's claims. The 1870 Act did not contain a time limit on issues, but the courts imposed a flexible two-year laches period. This is not to say that the Court erred in concluding that these changes were not material to the question of whether statutory reissue preempts any judicial doctrine of equivalents. Reissue to broaden a patent's claims was available under the 1870 Act as it is under the current 1952 Act.

108. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. 1040, 1047 (1997).

109. *Winans v. Denmead*, 56 U.S. (15 How.) 62 (1853).

110. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. at 1047-48.

claiming, 35 U.S.C. § 112, ¶ 6.”<sup>111</sup> The Court disagreed: “Because § 112, ¶ 6 was enacted as a targeted cure to a specific problem, and because the reference in that provision to ‘equivalents’ appears to be no more than a prophylactic against potential side effects of that cure, such limited congressional action should not be over-read for negative implications.”<sup>112</sup>

*B. Reconciling the Doctrine with the “Definitional and Public Notice” Functions of Patent Claims Through the Element-by-Element Approach*

Having upheld the doctrine’s continuing vitality, the Court noted that it shared “the concern of the dissenters below that the doctrine of equivalents, as it has come to be applied since *Graver Tank*, has taken on a life of its own that is unbounded by the patent claims.<sup>113</sup> There can be no denying that the doctrine of equivalents, when applied broadly, conflicts with the definitional and public-notice functions of the statutory claiming requirement.”<sup>114</sup>

To respond to these concerns, the Court adopted the suggestion of the late Judge Helen Nies, who dissented in the Federal Circuit decision below.<sup>115</sup> According to Nies, the Supreme Court’s two separate lines of precedent, one emphasizing that “it is the claim that defines the invention and gives notice to the public of the limits of the patent monopoly” and the other recognizing the doctrine of equiva-

111. *Id.* at 1047.

112. *Id.* at 1048. The Court said that “under this new provision, an applicant can describe an element of his invention by the result accomplished or the function served, rather than describing the item or element to be used (e.g., ‘a means of connecting Part A to Part B,’ rather than ‘a two-penny nail’).” *Id.* The Court continued by stating:

Congress enacted § 112, ¶ 6 in response to *Halliburton Oil Well Cementing Co. v. Walker*, which rejected claims that “do not describe the invention but use ‘conveniently functional language at the exact point of novelty,’” 329 U.S. 1, 8 (1946) (citation omitted). . . . Section 112, ¶ 6 now expressly allows so-called “means” claims, with the proviso that application of the broad literal language of such claims must be limited to only those means that are “equivalent” to the actual means shown in the patent specification. This is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad literal claim elements. We recognized this type of role for the doctrine of equivalents in *Graver Tank* itself. . . . The added provision, however, is silent on the doctrine of equivalents as applied where there is no literal infringement.

*Id.*

113. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1048-49.

114. *Id.*

115. *Id.*

lents, can be reconciled by applying equivalency on an element-by-element basis.<sup>116</sup>

### C. Arguments for Restricting the Doctrine

The Court addressed the petitioner's three "alternative arguments in favor of a more restricted doctrine of equivalents than it feels was applied in this case."<sup>117</sup>

#### 1. Prosecution History Estoppel

The first argument concerned prosecution history estoppel. The fundamental notion of prosecution history (or "file wrapper") estoppel is that a patentee who surrendered a broad scope of protection by claim amendments or other actions during proceedings to obtain the patent in the Patent and Trademark Office ("PTO") should not be able to "recapture" the surrendered subject matter. Estoppel is a well-recognized limitation on a patentee's ability to assert infringement under the doctrine of equivalents, but the evolving case law of the Federal Circuit has created uncertainty as to the circumstances that can create an estoppel and the scope of an estoppel.<sup>118</sup>

Petitioner argued for a "rigid" rule that "any surrender of subject matter during patent prosecution, regardless of the reason for such surrender, precludes recapturing any part of that subject matter, even if it is equivalent to the matter expressly claimed."<sup>119</sup> Petitioner also argued that "[a]ny inquiry into the reasons for a surrender . . . would undermine the public's right to clear notice of the scope of the patent as embodied in the patent file."<sup>120</sup>

The Court agreed that "*Graver Tank* did not dispose of prosecution history estoppel as a legal limitation on the doctrine of equivalents" but rejected the petitioner's position that "the reason for an amendment during patent prosecution is irrelevant to any subsequent estoppel."<sup>121</sup> In prior Supreme Court decisions applying prosecution history estoppel, the estoppel "was tied to amendments made to avoid the prior art, or otherwise to address a specific concern —

116. *Id.* at 1046.

117. *Id.* at 1049.

118. See discussion *infra* at Part IV[F][1], Pre-Warner-Jenkinson Federal Circuit Decisions and Part IV[G][1][b], Federal Circuit Decisions.

119. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. at 1049.

120. *Id.*

121. *Id.*



such as obviousness — that arguably would have rendered the claimed subject matter unpatentable.”<sup>122</sup> The Court noted that the United States, through its amicus curiae brief, “informs us, that there are a variety of other reasons why the PTO may request a change in claim language.”<sup>123</sup> Conceding that “petitioner’s rule might provide a brighter line for determining whether a patentee is estopped under certain circumstances,” this was “not a sufficient reason for adopting such a rule,” “especially . . . where . . . the PTO may have relied upon a flexible rule of estoppel when deciding whether to ask for a change in the first place.”<sup>124</sup>

The case at bar posed a problem, because “the record seems not to reveal the reason for including the lower pH limit of 6.0.”<sup>125</sup> To solve the problem, the Court recognized a presumption that amendments were patentability-related, thus placing the burden of showing otherwise on the patentee.<sup>126</sup>

## 2. Intent to Infringe

The second restriction on the doctrine of equivalents that the petitioner proposed stemmed from the language in *Graver Tank* concerning “unscrupulous copyist” and “piracy.” *Graver Tank*’s indication that, given the explicit disclosure of the accused equivalent element (manganese silicate, the claimed element being magnesium silicate) in the patent’s specification and evidence that “specialists” in the art understood that the claimed and allegedly equivalent elements were equivalent and could be substituted, it was proper to “infer that the accused [product] is the result of imitation rather than experimentation or invention,”<sup>127</sup> even “[w]ithout some explanation or indication that [the accused product] was developed by independ-

122. *Id.*

123. *Id.* at 1050. See the discussion of the amicus brief *infra* Part IV[F].

124. *Id.* at 1050 n.6.

125. *Id.* at 1051. One reason for choosing the numbers 6 and 9 may have been that they were the only pH limitations for which there existed support in the patent specification. The “written description” requirement of 35 U.S.C. § 112 prevents a patent applicant from adding a limitation to a claim if the limitation is not expressly or inherently described in the specification. See *Eiselstein v. Frank*, 52 F.3d 1035 (Fed. Cir. 1995).

As noted *supra* in Part II[C], the patent described the usual unadjusted pH of the solution as 9.0 and recommended lowering it to 6 to 8 pH. The specific examples describe pH levels and adjustments of “6.0 to 8.0,” “8.3 to 8.8,” “6.5 to 6.7,” “9.3 to 9.5,” “8.5 to 9.0,” “8-10,” “9-11,” “6-7.”

126. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1051.

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

ent research.”<sup>128</sup> Petitioner argued that these statements “require judicial exploration of the equities of a case before allowing application of the doctrine of equivalents.”<sup>129</sup> The Court disagreed because

[T]he essential predicate of the doctrine of equivalents is the notion of identity between a patented invention and its equivalent, [thus] there is no basis for treating an infringing equivalent any differently than a device that infringes the express terms of the patent. Application of the doctrine of equivalents, therefore, is akin to determining literal infringement, and neither requires proof of intent.<sup>130</sup>

As to *Graver Tank*'s reference to independent development, the Court found the Federal Circuit's explanation that “an alleged infringer's behavior, be it copying, designing around a patent, or independent experimentation, indirectly reflects the substantiality of the differences between the patented invention and the accused device or process”<sup>131</sup> to be unsatisfactory. The Court asserted, “At a minimum, one wonders how ever to distinguish between the intentional copyist making minor changes to lower the risk of legal action, and the incremental innovator designing around the claims, yet seeking to capture as much as is permissible of the patented advance.”<sup>132</sup>

The Court found that:

[A]nother explanation is available that does not require a divergence from generally objective principles of patent infringement. In both instances in *Graver Tank* where we referred to independent research or experiments, we were discussing the known interchangeability between the chemical compound claimed in the patent and the compound substituted by the alleged infringer. The need for independent experimentation thus could reflect knowledge — or lack thereof — of interchangeability possessed by one presumably skilled in the art. The known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by *Graver Tank* as bearing upon whether the accused device is substantially the same as the patented invention. Independent experimentation by the alleged infringer would not always reflect upon the objective question whether a person skilled

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128. *Id.*

129. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. at 1052.

130. *Id.* at 1052.

131. *Id.*

132. *Id.*

in the art would have known of the interchangeability between two elements, but in many cases it would likely be probative of such knowledge.<sup>133</sup>

### 3. "Time of Infringement" Standard

The third restriction petitioner proposed would limit the doctrine to those "equivalents that are disclosed within the patent itself."<sup>134</sup> This proposal may have stemmed from the fact pattern in *Graver Tank*, in which the alleged equivalent element was expressly set forth in the patent's specification. As a "milder version of this argument," the petitioner proposed that "the doctrine should be limited to equivalents that were known at the time the patent was issued, and should not extend to after-arising equivalents."<sup>135</sup> The Court rejected both versions of the proposed restriction.

As we have noted . . . with regard to the objective nature of the doctrine, a skilled practitioner's knowledge of the interchangeability between claimed and accused elements is not relevant for its own sake, but rather for what it tells the fact-finder about the similarities or differences between those elements. Much as the perspective of the hypothetical "reasonable person" gives content to concepts such as "negligent" behavior, the perspective of a skilled practitioner provides content to, and limits on, the concept of "equivalence." Insofar as the question under the doctrine of equivalents is whether an accused element is equivalent to a claimed element, the proper time for evaluating equivalency — and thus knowledge of interchangeability between elements — is at the time of infringement, not at the time the patent was issued. And rejecting the milder version of petitioner's argument necessarily rejects the more severe proposition that equivalents must not only be known, but must also be actually disclosed in the patent in order for such equivalents to infringe upon the patent.<sup>136</sup>

#### *D. Procedural Improvements in Jury Trials*

On the issue of the role of juries in determining equivalence, the Court indicated that it would "decline to take it up . . . whether, or how much of, the application of the doctrine of equivalents can be

133. *Id.*

134. *Id.*

135. *Id.* at 1052.

136. *Id.* at 1052-53.

resolved by the court,"<sup>137</sup> because, although the opinions of the Federal Circuit judges, the parties, and amici devoted "considerable attention" to the issue, the petitioner made "only passing reference"<sup>138</sup> to the issue in its briefs to the Supreme Court. Petitioner's comments "go more to the alleged inconsistency between the doctrine of equivalents and the claiming requirement than to the role of the jury in applying the doctrine as properly understood."<sup>139</sup>

Nevertheless, the Court noted that there is "ample support" in its prior cases for the Federal Circuit's holding that "it was for the jury to decide whether the accused process was equivalent to the claimed process."<sup>140</sup> Further, in a footnote, it offered "guidance, not a specific mandate . . . [w]ith regard to the concern over unreviewability due to black-box jury verdicts:"<sup>141</sup>

Where the evidence is such that no reasonable jury could determine two elements to be equivalent, district courts are obliged to grant partial or complete summary judgment. See Fed. Rule Civ. Proc. 56; *Celotex Corp. v. Catrett*, 477 U.S. 317, 322-323 . . . (1986). If there has been a reluctance to do so by some courts due to unfamiliarity with the subject matter, we are confident that the Federal Circuit can remedy the problem. Of course, the various legal limitations on the application of the doctrine of equivalents are to be determined by the court, either on a pretrial motion for partial summary judgment or on a motion for judgment as a matter of law at the close of the evidence and after the jury verdict. Fed. Rule Civ. Proc. 56; Fed. Rule Civ. Proc. 50. Thus, under the particular facts of a case, if prosecution history estoppel would apply or if a theory of equivalence would entirely vitiate a particular claim element, partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve. Finally, in cases that reach the jury, a special verdict and/or interrogatories on each claim element could be

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137. *Id.* at 1053.

138. *Id.*

139. *Id.* at 1053.

140. *Id.*

141. *Id.* at 1053 n.8. The Court offered the "guidance" in a footnote, but that the Court intended the guidance to be taken seriously by the district courts and the Federal Circuit is confirmed by the Court's earlier statement in text that "[s]o long as the doctrine of equivalents does not encroach beyond the limits just described, or beyond related limits *to be discussed* . . . at 1047-1048, 1053 n.8 and 1054-55, we are confident that the doctrine will not vitiate the central functions of the patent claims themselves." *Id.* at 1049, *Id.* at 1871 (emphasis added).

very useful in facilitating review, uniformity, and possibly post verdict judgments as a matter of law. See Fed. Rule Civ. Proc. 49; Fed. Rule Civ. Proc. 50. We leave it to the Federal Circuit how best to implement procedural improvements to promote certainty, consistency, and reviewability to this area of the law.<sup>142</sup>

### *E. Linguistic Framework of the Doctrine of Equivalents*

The final topic addressed by the Court was the debate among the Federal Circuit judges and between the parties over “the linguistic framework under which ‘equivalence’ is determined,”<sup>143</sup> in particular, whether an “insubstantial differences” test is better than a “triple identity” test.<sup>144</sup> The Court noted weaknesses in each test:

Both the parties and the Federal Circuit spend considerable time arguing whether the so-called “triple identity” test — focusing on the *function* served by a particular claim element, the *way* that element serves that function, and the *result* thus obtained by that element — is a suitable method for determining equivalence, or whether an “insubstantial differences approach” is better. There seems to be substantial agreement that, while the triple identity test may be suitable for analyzing mechanical devices, it often provides a poor framework for analyzing other products or processes. On the other hand, the insubstantial differences test offers little additional guidance as to what might render any given difference “insubstantial.”<sup>145</sup>

Rather than resolving the debate, the Court emphasized “limiting principles” and stated its expectation that the Federal Circuit would formulate and refine the test of equivalence.<sup>146</sup>

In our view, the particular linguistic framework used is less important than whether the test is probative of the essential inquiry: Does the accused product or process contain elements identical or equivalent to each claimed element of the patented invention? Different linguistic frameworks may be more suitable to different cases, depending on their particular facts. A focus on individual elements and a special vigilance against allowing the concept of equivalence to eliminate completely any such elements should re-

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142. *Id.* at 1053 n.8.

143. *Id.* at 1054.

144. *Id.*

145. *Id.* (emphasis in original).

146. *Id.*

duce considerably the imprecision of whatever language is used. An analysis of the role played by each element in the context of the specific patent claim will thus inform the inquiry as to whether a substitute element matches the function, way, and result of the claimed element, or whether the substitute element plays a role substantially different from the claimed element. With these limiting principles as a backdrop, we see no purpose in going further and micro-managing the Federal Circuit's particular word-choice for analyzing equivalence. We expect that the Federal Circuit will refine the formulation of the test for equivalence in the orderly course of case-by-case determinations, and we leave such refinement to that court's sound judgment in this area of its special expertise.<sup>147</sup>

Justice Ginsburg, joined by Justice Kennedy, concurred in the remand but expressed a concern that the new presumption regarding prosecution history estoppel "if applied woodenly, might in some instances unfairly discount the expectations of a patentee who had no notice at the time of patent prosecution that such a presumption would apply."<sup>148</sup>

#### IV. A CRITICAL ASSESSMENT OF THE EFFECT OF *WARNER-JENKINSON* ON EQUIVALENCY AND ESTOPPEL LAW

Of great interest is the impact that *Warner-Jenkinson* will have on the existing lines of Federal Circuit precedent dealing with issues that were either not directly or exhaustively addressed by the Supreme Court or were explicitly delegated to the Federal Circuit for "refinement." The following sections critically review some of those lines of precedent.

##### A. *The Objective Standard for Equivalency*

The overall message in *Warner-Jenkinson* is that a theoretically imprecise standard of equivalency will not create excessive uncertainty if, in applying the doctrine, the courts are sensitive to the underlying policies and insist that any theory of equivalence put forth by a patentee not operate to "eliminate completely" the technological substance behind a claim element and thereby undermine the "definitional and notice" functions of claims. Properly and consis-

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147. *Id.*

148. *Id.* at 1055.

tently applied, the stricture against "vitiating" a claim element will be meaningful for its rhetorical force if not for its logic. On the other hand, there is a risk that the "all elements" approach will be applied with excessive strictness, causing the result in particular cases to turn more on formal distinctions than on substance and leading to unfairness to patentees without any significant increase in the level of certainty concerning patent scope.

### 1. "Linguistic Framework"

The Federal Circuit *Hilton Davis* majority adopted "insubstantial differences" as the "ultimate test," retaining the triple identity (function-way-result) as a permissible formulation in particular cases.<sup>149</sup> The Supreme Court suggested that insubstantial differences offer "little additional guidance" in determining equivalency and urged the Federal Circuit to formulate further tests "in the orderly course of case-by-case determinations."<sup>150</sup> Given that 150 years of judicial experience with the doctrine of equivalents has failed to evolve an acceptable, precise linguistic framework, one can be skeptical whether satisfactory general standards or rules exist, and it may be a waste of intellectual energy to search for and refine an analytic test of equivalency, just as it has been for the related "obviousness" standard of patentability.<sup>151</sup>

### 2. All Elements

The Supreme Court's "all elements" approach to equivalency was adopted earlier by the 1988 Federal Circuit in the en banc *Pennwalt*<sup>152</sup> decision and it was adhered to in subsequent panel decisions.<sup>153</sup> A significant post-*Pennwalt* decision, *Corning Glass*,<sup>154</sup> recognized that the all elements rule did not require that there be a one-to-one correspondence between claim limitations and elements in an

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149. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1521-22 (Fed. Cir. 1995).

150. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1054 (1997).

151. See 2 CHISUM, *supra* note 3, § 5.04[5].

152. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987).

153. *E.g.*, *Spectra Corp. v. Lutz*, 839 F.2d 1579 (Fed. Cir. 1988).

154. *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251 (Fed. Cir. 1989). The *Corning Glass* opinion was written by the late Judge Helen Nies, whose analysis of Supreme Court precedent as requiring an element-by-element approach was later expressly adopted by the Supreme Court in *Warner-Jenkinson*.

accused product or process.<sup>155</sup> *Corning Glass* may have reached a sensible conclusion on its facts, but its analysis invited subversion of the all elements rule; creative patentees can be expected to always postulate some match between claim limitations and single or combined elements in the accused product or process. But, decisions subsequent to *Corning Glass* have carefully confined its scope<sup>156</sup> and have stressed that equivalency “cannot embrace a structure that is specifically excluded from the scope of the claims.”<sup>157</sup>

The 1995 en banc *Hilton Davis* decision did not mention *Pennwalt* or the all elements rule; one panel after the *Hilton Davis* case showed a lack of enthusiasm for the all elements rule,<sup>158</sup> while others confirmed the rule’s vitality.<sup>159</sup> The sentiments expressed in the latter decisions gained rhetorical force in view of the Supreme Court’s emphasis on not vitiating patent claim limitations.

If the all elements rule is applied strictly as an analytic tool rather than as a general direction, it will not operate as an effective and fair means for limiting the doctrine of equivalents and increasing certainty, as the Supreme Court in *Warner-Jenkinson* assumes. How the technological substance of a patent claim breaks down into “elements” or “limitations” is dependent both on what constitutes an element and the form that a claim drafter uses.

Neither the Supreme Court nor the Federal Circuit has offered a definition of an element of § 112 regarding “means” clauses, or uses “element” to refer to a “step” for performing a function. In this sense, the claim at issue in *Warner-Jenkinson* had only two steps: a

155. *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d at 1259.

156. *Dolly, Inc. v. Spalding & Evenflo Cos., Inc.*, 16 F.3d 394 (Fed. Cir. 1994).

157. *American Permahedge, Inc. v. Barcana, Inc.*, 105 F.3d 1441 (Fed. Cir. 1997); *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573 (Fed. Cir. 1996).

158. See, e.g., *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 72 F.3d 857, 861 (Fed. Cir. 1995), *vacated and remanded*, 117 S. Ct. 1240 (1997). In *Festo*, the district court properly granted summary judgment of infringement under the doctrine of equivalents. The Federal Circuit stated:

Although [the infringer] now argues that there has not been compliance with the “all elements rule” of *Pennwalt Corp. v. Durand-Wayland, Inc.* . . . we take note that . . . there need not be one-to-one correspondence between the components of an accused device and the claimed invention.

*Id.* After *Warner-Jenkinson*, the Supreme Court remanded the *Festo* case to the Federal Circuit. *Shoketsu Kinzoku Kogyo Kabushiki Co. v. Festo Corp.*, 117 S. Ct. 1240 (1997).

159. E.g. *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1566-67, n.7 (Fed. Cir. 1996) (in *Hilton Davis*, “we did not eliminate the need to prove equivalency on a limitation-by-limitation basis. . . . In fact, the majority opinion in *Hilton Davis* cites *Pennwalt* on several occasions as support for the ‘insubstantial differences’ standard.”).



“subjecting” step and a “recovering” step. But the Supreme Court implicitly treated the lower end of the pH range as an element, because the Court remanded for a determination whether that element had been vitiated by the finding that 5.0 was equivalent to approximately 6.0 to 9.0 pH.

To illustrate, simplistically, how dependent on formal claim drafting the all elements rule is, consider a claim to a snuffbox with six sides. The drafter could claim (1) “a snuffbox comprising a first side, a second side, a third side, a fourth side, a fifth side, and a sixth side” or (2) “a six-sided snuffbox.” Both claims define exactly the same literal scope. Does a *five*-sided snuffbox infringe under the doctrine of equivalents? The all elements rule, applied woodenly, would exclude infringement with the first claim because there is a missing side element. However, there would be equivalency infringement of the second claim if it were shown that five sides were substantially the same as six sides.

In the wake of *Warner-Jenkinson*, this lesson will not be lost for perceptive patent claim drafters, who will make every effort to reduce the number of elements and to group elements together.

### 3. “Vitiating” a Claim Element

The Federal Circuit’s precedents after *Pennwalt* provide some guidance on the issue of when a claim element has been “vitated” or eliminated.

In *Conopco Inc.*,<sup>160</sup> a fact pattern not dissimilar to that in *Warner-Jenkinson*, the court held that a district court finding of doctrine of equivalents infringement was clearly erroneous.<sup>161</sup> The patent claimed an improved skin care lotion, based on a discovery that a combination of two ingredients, isoparaffin and DEA-cetyl phosphate, unexpectedly increased the lotion’s viscosity.<sup>162</sup> The claim required that the ingredients be in a ratio of “from about 40:1 to about 1:1.”<sup>163</sup> The accused product used a 162.9:1 formulation.<sup>164</sup> There was no prior art precluding an expansion of the claim as the patentee proposed, but the court held that “[a] conclusion that the 162.9:1

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160. *Conopco, Inc. v. May Dep’t Stores Co.*, 46 F.3d 1556, 32 U.S.P.Q. 2d (BNA) 1225 (Fed. Cir. 1994).

161. *Id.* at 1571.

162. *Id.* at 1559.

163. *Id.* at 1560.

164. *Id.* at 1560.

formulation infringes under the doctrine of equivalents would eviscerate the plain meaning of the limitation.”<sup>165</sup>

Another example is *Wiener*,<sup>166</sup> in which the word “column” in a patent claim to an integrated circuit memory chip with a data matrix that stores bits of data as columns in a row, the claim providing the means for extracting data from a row one byte (8-bits) at a time, was held to be limited to columns located on the chip’s data matrix.<sup>167</sup> So construed, the patent’s claims are not infringed, literally or by equivalents, by a VRAM device in which all the data in a row is extracted and sent to a register from which the data is then extracted one byte at a time.<sup>168</sup>

Because the VRAM does not call on columns on the data matrix, it does not have an element that functions as required by the . . . means in the claim. Although the VRAM’s data register may have “columns” similar to the columns claimed in the patent, the columns in the patent are on the data matrix. The VRAM’s “columns” are not. . . This court could not extend protection to the VRAM without ignoring the meanings and limitations of the language of claim 9. See *Dolly* . . . (“The doctrine of equivalents is not a license to ignore claim limitations.”).<sup>169</sup>

On the other hand, an example of a case in which a claim was found to be infringed under the doctrine of equivalents is *Zygo Corp. v. Wyko Corp.*<sup>170</sup> The patent claimed an interferometer that operated in both alignment and viewing modes.<sup>171</sup> It required that a monitor screen have a visible “cross-hair” reticle to be used for alignment.<sup>172</sup> The accused device had no physical reticle, but generated an alignment marking with software.<sup>173</sup> The court had “no difficulty agreeing that the image of the reticle generated on the monitor is the equivalent of the physical reticle.”<sup>174</sup>

### *B. Time of Infringement Approach and Impact of Patentability*

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165. *Id.* at 1562.

166. *Wiener v. NEC Elecs., Inc.*, 102 F.3d 534 (Fed. Cir. 1996).

167. *Id.* at 540.

168. *Id.* at 540-41.

169. *Id.* at 541.

170. 79 F.3d 1563 (Fed. Cir. 1996).

171. *Id.* at 1565.

172. *Id.* at 1566.

173. *Id.*

174. *Id.* at 1569.

*of Accused Product or Process*

The Supreme Court's "time of infringement" approach to determining equivalency affirms the approach taken by the Federal Circuit majority in *Hilton Davis*.<sup>175</sup> The approach flows logically from the Court's equation of infringement by equivalents with "literal infringement": the infringement inquiry is an objective one — does the accused product or process conform to the language of the claim, literally or in substance? Other subjective or time-variable issues, such as when or how the accused infringer developed the accused product or process, are not determinative.

Potentially, questions could be asked as to what is meant by the "time of infringement," especially when the infringement occurs over a lengthy period of time during which the state of the art evolves. Is it the date when the accused product or process was designed? When the first infringing act occurred? Can the same product or process infringe at one point in time but not at another because of changing knowledge in the art as to how an alleged equivalent element functions and hence whether it is equivalent? Careful analysis of the *Warner-Jenkinson* opinion suggests that these issues are essentially irrelevant. Equivalency, for purposes of the doctrine of equivalents, is treated as an objective fact, provable at trial, just as identity is evaluated for purposes of literal infringement. The issue is

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175. The Court cited a portion of the United States amicus brief in its discussion of prosecution history estoppel. In the cited portion of the amicus brief, a footnote contains an argument and an example concerning later-developed equivalents:

Of course, when an accused equivalent (meeting the objective standard of insubstantiality) could not have been known because it was developed or discovered only after the patent issued, the case for application of the doctrine of equivalents becomes especially clear. For example, a claim to a chemical composition might include an inactive filler as a minor, unimportant ingredient. After the patent issues, a competitor of the patentee might manufacture a composition exactly as claimed but use a different, inactive filler, unknown in the art at the time the patent application was filed, that performs exactly as those literally covered by the claim. Such a substitution, once it became available, might be known to persons of skill in the relevant art to be interchangeable with the claimed filler, and yet it would not have been possible to include the accused element in the patent because it did not exist at the time of issue. See Martin Adelman & Gary Francione, *The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer*, 137 U. Pa. L. Rev. 673, 707-708, 712-715 (1989) (endorsing legitimacy of doctrine of equivalents to capture equivalents generated by new technology).

Brief for the United States as Amicus Curiae, *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040 (1997) (No. 95-728), available in 1996 WL 172221, \*23 n.7.

not whether the equivalency of a substituted element was known in or obvious from the art at any point in time. The Court noted that the “known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by *Graver Tank* as bearing upon whether the accused device is substantially the same as the patented invention.”<sup>176</sup> This indicates that the knowledge and the state of the art is a “factor” that “bears upon” substantial similarity but is not the ultimate test of substantial similarity or equivalency. Later, the Court again stressed that “a skilled practitioner’s knowledge of the interchangeability between claimed and accused elements is not relevant for its own sake, but rather for what it tells the fact-finder about the similarities or differences between those elements.”<sup>177</sup>

The Court did not directly address the related, difficult issue of whether the patentability of a later-developed accused device or method is relevant to equivalency. However, it is well-settled that a patent on an accused product or process does not give the owner of the patent a right to exploit the product or process by using without authority an earlier patentee’s technology.<sup>178</sup> The existence of a patent does not provide a defense to literal infringement of a claim. For example, in *Bio-Technology General Corp.*,<sup>179</sup> Genentech’s patent claiming a recombinant process for producing a hormone read literally on the accused infringer’s process. The accused infringer argued that its process involved a unique, patented purification method. The court dismissed the argument:

That [the accused infringer] patented its unique purification method is irrelevant: “[T]he existence of one’s own patent does not constitute a defense to infringement of someone else’s patent. It is elementary that a patent grants only the right to exclude others and confers no right on its holder to make, use, or sell.”<sup>180</sup>

Some Federal Circuit decisions suggest that a patent granted by the PTO on the accused device may be relevant to the substantiality of the difference between the patent claim and the accused device, at least when the patent in suit was cited and considered by the PTO

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176. Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 117 S. Ct. 1040, 1052 (1997).

177. *Id.* at 1053 (emphasis added).

178. See 5 CHISUM, *supra* note 3, § 16.02[1][a].

179. *Bio-Technology Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553 (Fed. Cir. 1996).

180. *Id.* at 1559.

when issuing the subsequent patent.<sup>181</sup> Other decisions limit the significance of the subsequent patenting.<sup>182</sup>

The Supreme Court's adoption in *Warner-Jenkinson* of an objective test of substantial equivalency at the time of infringement strongly suggests that patentability, which turns on the state of the art prior to an invention, may be of only limited relevance.

The patentability of an accused product or process often stems from what may be characterized as an additive or selective improvement, adding elements, features, or functions to the earlier patented invention or discovering preferred species for generic elements in the earlier invention, rather than from a mere substitution of one element for another.<sup>183</sup> In such cases, Federal Circuit decisions recognize that an accused product or process does not avoid infringement by adding functions or features if it contains literally or by equivalents all the elements of patent claim in question.<sup>184</sup>

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181. *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563 (Fed. Cir. 1996); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948 (Fed. Cir. 1993).

182. *Hoechst Celanese Corp. v. BP Chem. Ltd.*, 78 F.3d 1575 (Fed. Cir. 1996); *Nat'l Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185 (Fed. Cir. 1996).

183. *Cf. Roton Barrier, Inc. v. Stanley Works*, 79 F.3d 1112 (Fed. Cir. 1996) (Nies, J., additional views):

It is a truism that the fact that an accused device is itself patented does not preclude a finding that such device infringes an earlier patent of another. However, the fact of a second patent, depending on its subject matter, may be relevant to the issue of whether the changes are substantial.

If the second patent requires practice of the first, i.e., the second merely adds an element "D" to a patented combination A+B+C, the combination A+B+C+D clearly infringes. Conversely, if the second patent is granted for A+B+D over one claiming A+B+C, the change from C to D must not have been obvious to be validly patented. Evidence of a patent covering the change, in my view, is clearly relevant unless the patent is invalid . . . A substitution in a patented invention cannot be both nonobvious and insubstantial. I would apply nonobviousness as the test for the "insubstantial change" requirement of *Hilton Davis*.

184. *Miles Labs., Inc. v. Shandon Inc.*, 997 F.2d 870 (Fed. Cir. 1993) ("Infringement under the doctrine of equivalents does not vanish merely because the accused device performs functions in addition to those performed by the claimed device."); *Insta-Foam Products, Inc. v. Universal Foam Systems, Inc.*, 906 F.2d 698, 702 (Fed. Cir. 1990) ("It is the limitations and functions of the invention described in the claim, not the elements or functions of the accused device, which establish the reference point for the doctrine of equivalents analysis.").

C. *Equivalency of Disclosed But Unclaimed Alternative Embodiments*

Recent Federal Circuit decisions,<sup>185</sup> following an 1881 Supreme Court decision,<sup>186</sup> apply a theory of “dedication by unclaimed disclosure” to bar a finding of equivalency when the alleged equivalent is expressly disclosed but not literally claimed in the patent itself. For example, in *Maxwell*,<sup>187</sup> the patent concerned a system for attaching mated pairs of shoes. The patent’s claims required an “extended separate tab” arrangement. An accused product used an “under the sock lining” arrangement. The patent disclosed an “under the sock lining” arrangement as an alternative embodiment. The Federal Circuit, in an opinion by Judge Lourie, reversed a judgment of infringement based on a jury verdict.<sup>188</sup> It reasoned that to allow an equivalency finding in such a case would permit patentees to file broad disclosures and then escape PTO examination by presenting only narrow claims.<sup>189</sup> It noted that a patentee who claims too narrowly can seek reissue within two years of the patent’s issuance.<sup>190</sup>

In *Maxwell*, Judge Lourie carefully distinguished the Supreme Court’s *Graver Tank* decision, in which the alleged equivalent element (manganese silicate) was disclosed in the specification.<sup>191</sup> In *Graver Tank*, the patent contained both a broad claim that included manganese silicates and a narrower claim that was limited to alkaline earth silicates and excluded manganese silicates. The Supreme Court held that the broader claim was invalid but that the narrower claim was valid and infringed under the doctrine of equivalents.<sup>192</sup> Thus, as Judge Lourie noted, the disclosed equivalent was not in fact “unclaimed” and could not be said to have been dedicated by the patentee.<sup>193</sup>

In *Warner-Jenkinson*, the Supreme Court did not directly ad-

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185. *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098 (Fed. Cir. 1996); *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558 (Fed. Cir. 1881).

186. *Miller v. Brass Co.*, 104 U.S. 350, 352 (1981) (“the claim of a specific device or combination, an omission to claim other devices or combinations apparent on the face of the patent are, in law, a dedication to the public of that which is not claimed”).

187. *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098 (Fed. Cir. 1996).

188. *Id.* at 1112.

189. *Id.* at 1107.

190. *Id.* at 1107 n.2.

191. *Id.* at 1107.

192. *Id.* at 1107.

193. *Id.*

dress the issue of dedication by unclaimed disclosure. It did reject the opposite argument—that equivalents should be *limited* to equivalents disclosed in the patent.<sup>194</sup> The rejected argument assumed that unclaimed disclosed alternative embodiments might be equivalent, but it does not follow that the Court accepted the assumption behind the rejected argument. The dedication theory relies in part on the view that equivalency subverts the claiming, examination, and reissue provisions of the patent. *Warner-Jenkinson* rejects the argument that those provisions completely abolished the doctrine of equivalents, but, again, it does not follow that those provisions should not be looked to as a reason for imposing a more specific, policy-based limitation on the doctrine.

*D. Effect of Prior Art on the Analysis of Equivalency and the Special Case of Pioneer Inventions*

In *Warner-Jenkinson*, the Supreme Court did not address the limiting effect of prior art on the doctrine of equivalents because a question concerning that effect was not presented.

Nothing in the Court's analysis of equivalents undermines the settled rule, recognized in Federal Circuit decisions, that the doctrine of equivalents cannot encompass a product or process that is identical to or an obvious variation of the prior art.<sup>195</sup> On the other hand, as a Federal Circuit panel stressed in *Conroy*,<sup>196</sup> the standard of comparison is the accused device as a whole to the prior art; "the mere existence of an element in the prior art" does not "automatically preclude a patentee from asserting a scope of equivalency sufficient to encompass the corresponding element in the accused device."<sup>197</sup>

The Supreme Court did mention in a footnote the special status of "pioneer" inventions under the doctrine of equivalents in the course of rejecting an argument that "the evolution in patent practice from 'central' claiming (describing the core principles of the invention) to 'peripheral' claiming (describing the outer boundaries of the invention)" required treating *Graver Tank* and the doctrine of

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194. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1040 (1997).

195. *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d (Fed. Cir. 1990). See also *Lemelson v. General Mills, Inc.*, 968 F.2d 1202 (Fed. Cir. 1992); *We Care, Inc. v. Ultra Mark Int'l Corp.*, 930 F.2d 1567 (Fed. Cir. 1991).

196. *Conroy v. Reebok Int'l, Ltd.*, 14 F.3d 1570 (Fed. Cir. 1994).

197. *Id.* at 1048 n.4.

equivalents as an “aberration.”<sup>198</sup>

[J]udicial recognition of so-called “pioneer” patents suggests that the abandonment of “central” claiming may be overstated. [The possibility of judicial recognition that] a claim describing a limited improvement in a crowded field will have a limited range of permissible equivalents does not negate the availability of the doctrine *vel non*.<sup>199</sup>

### E. “Procedural Improvements”

In *Warner-Jenkinson*, the Supreme Court clearly empathized with the concerns expressed by the dissenting Federal Circuit judges about abuses in assertions of equivalency, especially “the concern over unreviewability due to black-box jury verdicts.”<sup>200</sup> In addition to requiring a more strict substantive equivalency standard that precludes vitiation of claim limitations, the Court discussed “procedural improvements” in footnote 8 of the case.<sup>201</sup>

#### 1. Summary Judgment

Footnote 8 directs the district courts to entertain favorable motions for summary judgment to dismiss equivalency claims when (1) “no reasonable jury could determine two elements to be equivalent” or (2) a “legal limitation”<sup>202</sup> on equivalency applies, including (a) prosecution history estoppel, or (b) “a theory of equivalence would entirely vitiate a particular claim element [such that] partial or complete judgment should be rendered by the court, as there would be no further material issue for the jury to resolve.”<sup>203</sup>

If a district court declines to grant summary judgment, the decision is normally not appealable. But the Supreme Court in *Warner-Jenkinson* suggested “[i]f there has been a reluctance to [grant summary judgment] by some courts due to unfamiliarity with the subject matter, we are confident that the Federal Circuit can remedy the problem.”<sup>204</sup> One expects the Federal Circuit, in response to the Supreme Court’s urging, to find means to encourage district courts to

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198. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. at 1040.

199. *Id.*

200. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. at 1053 n.8.

201. *Id.*

202. *Id.*

203. *Id.*

204. *Id.*



grant proper motions.<sup>205</sup>

A line of Federal Circuit decisions approving summary judgment against groundless equivalency claims predates *Warner-Jenkinson*.<sup>206</sup> Indeed, the granting of summary judgment against equivalency has become a regular occurrence.<sup>207</sup>

Since the *Markman* decisions,<sup>208</sup> which held that construction of a patent claim is a question of law, a practice of holding "Markman hearings" started in the district courts.<sup>209</sup> In the course of ruling on claim construction, the court must necessarily become familiar with the patent and the technology. It would be a logical and practical extension of "Markman hearings" to include the threshold legal issues concerning assertion of infringement under the doctrine of equivalents.

## 2. Verdict Forms, and Linking Evidence and Argument in Jury Presentations

In footnote 8, the Supreme Court also suggested that district courts in jury trials on equivalency use "a special verdict and/or interrogatories on each claim element," which "could be very useful in facilitating review, uniformity, and possibly post-verdict judgments

205. *Id.*

206. *Gentex Corp. v. Donnelly Corp.*, 69 F.3d 527, 530 (Fed. Cir. 1995); *Wolverine World Wide, Inc. v. Nike Inc.*, 38 F.3d 1192 (Fed. Cir. 1994); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 954 (Fed. Cir. 1993); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534 (Fed. Cir. 1991).

207. The following are some district court decisions granting summary judgment against equivalency assertions reported in the past three years: *Monroe Eng'g Products, Inc. v. J.W. Winco, Inc.*, 915 F. Supp. 901 (E.D. Mich. 1996); *Soil Solutions Inc. v. Spraying Devices Inc.*, 40 U.S.P.Q. 2d (BNA) 1321 (E.D. Cal. 1996); *Chalais v. Milton Bradley Co.*, 39 U.S.P.Q. 2d (BNA) 1197 (S.D. N.Y. 1996); *GTY Indus. v. Genlyte Group Inc.*, 38 U.S.P.Q. 2d (BNA) 1801, 1805 (C.D. Cal. 1995); *Chim-Cap Corp. v. American Chimney Supplies Inc.*, 38 U.S.P.Q. 2d (BNA) 1798 (E.D. N.Y. 1996); *Rolite, Inc. v. Wheelabrator Techs., Inc.*, 903 F. Supp. 870 (E.D. Pa. 1995); *Ferag AG v. Grapha-Holding AG*, 905 F. Supp. 1, (D. D.C. 1995); *Atlantia Corp. v. Sea Eng'g Associates Inc.*, 36 U.S.P.Q. 2d (BNA) 1283 (S.D. Tex. 1995); *Development Ctr. Hansen- Hundebol A/S v. QW Inc.*, 35 U.S.P.Q. 2d (BNA) 1722 (N.D. Ga. 1995); *L.A. Gear Inc. v. E.S. Originals Inc.*, 35 U.S.P.Q. 2d (BNA) 1497 (C.D. Cal. 1995); *Laminating Co. of Am. v. Tri-Star Laminates Inc.*, 35 U.S.P.Q. 2d (BNA) 1149 (C.D. Cal. 1995); *Hoppe v. Baxter Healthcare Corp.*, 878 F. Supp. 303, 310 (D. Mass. 1995).

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

209. *See, e.g., Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1577 (Fed. Cir. 1996) (trial judge held a five day pre-trial "Markman hearing . . . to determine the scope of the claims at issue").

as a matter of law."<sup>210</sup> In the past, Federal Circuit decisions did not mandate the use of special verdicts or interrogatories.<sup>211</sup> To obtain greater predictability, especially when infringement is tried before a jury, the *Lear Siegler* and *Malta* decisions imposed a special proof standard, requiring a patentee to provide evidence and "linking" argument on all three FWR (triple identity) prongs (function, way, result).<sup>212</sup> Recent Federal Circuit panel decisions expressed opposing views on whether the *Lear-Siegler-Malta* requirement survived the en banc *Hilton Davis* decision.<sup>213</sup> The Supreme Court's encouragement of procedural improvements to assure reviewability of jury verdicts supports the reasoning underlying the *Lear-Siegler-Malta* re-

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210. Warner-Jenkinson Co. v. Hilton Davis Chem., 117 S. Ct. at 1053 n.8.

211. Compare *Weiner v. Rollform Inc.*, 744 F.2d 797 (1984) (refusing to consider special verdicts and interrogatories because they are not mandatory) with *Structural Rubber Products Co. v. Park Rubber Co.*, 749 F.2d 707 (1984) (suggesting the use of special verdicts and interrogatories).

212. *Malta v. Schulmerich Carillons, Inc.*, 952 F.2d 1320 (Fed. Cir. 1991) (the district court correctly granted a noninfringement judgment notwithstanding a contrary jury verdict; the patentee's testimony failed to provide "a sufficient explanation of both *why* the overall function, way, and result of the accused device are substantially the same as those of the claimed device and *why* the [accused devices' element that did not literally conform to a specific claim limitation] is the equivalent of [that limitation]." (emphasis in original)); *Lear Siegler, Inc. v. Sealy Mattress Co. of Mich., Inc.*, 873 F.2d 1422 (Fed. Cir. 1989). See also *Genentech, Inc. v. The Wellcome Found. Ltd.*, 29 F.3d 1555 (Fed. Cir. 1994).

213. Compare *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1566-67 (Fed. Cir. 1996) (in *Hilton Davis*):

[W]e did not eliminate the need to prove equivalency on a limitation-by-limitation basis. . . . Nor did we overrule precedent requiring equivalency to be proven with "particularized testimony and linking argument." See *Lear Siegler, Inc. v. Sealy Mattress Co.*, . . . *Malta v. Schulmerich Carillons, Inc.* . . . a patentee must still provide particularized testimony and linking argument as to the "insubstantiality of the differences" between the claimed invention and the accused device or process, or with respect to the function, way, result test when such evidence is presented to support a finding of infringement under the doctrine of equivalents. Such evidence must be presented on a limitation-by-limitation basis.

*Id.* with *National Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185 (Fed. Cir. 1996) which held that the infringer's argument that the patentee:

[D]id not provide sufficiently explicit witness testimony and "linking attorney argument" on each of four factual questions of function, way, result, and "why," citing *Lear Siegler, Inc. v. Sealy Mattress Co.* . . . and the concurring opinion in *Malta v. Schulmerich Carillons, Inc.* . . . as requiring this formulaic exposition by witnesses and lawyers . . . lacks merit.

*Id.* at 1191. "The court's *en banc* decision in *Hilton Davis* made clear that no specific formulation of evidence and argument is required. Thus this argument is without substance, and indeed neither *Lear-Siegler* nor *Malta* requires any particular formulation." *Id.*

quirement.

*F. Amendments Driven by "Non-Prior Art" Reasons Such as Lack of Enablement*

Whether and when an estoppel should apply to claim elements added for reasons not related to the prior art is a critical issue which the Supreme Court failed to resolve clearly in *Warner-Jenkinson*.

The Court rejected a rigid rule, proposed by the petitioner, that would have barred recapturing "any surrender of subject matter during patent prosecution, regardless of the reason for such surrender."<sup>214</sup> In contrast, the Court recognized a presumption that "the PTO had a substantial reason related to patentability for including the limiting element added by amendment" and that estoppel "would bar the application of the doctrine [of] equivalents as to that element."<sup>215</sup> The patentee can rebut the presumption by showing that the amendment was for a reason not related to patentability.<sup>216</sup> This presumption helps preserve "the primacy of the PTO in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered patent applications."<sup>217</sup>

In *Warner-Jenkinson*, the Court noted that in prior Supreme Court cases finding an estoppel, the estoppel was tied to "amendments made to avoid the prior art, or otherwise to address a specific concern — such as obviousness — that arguably would have rendered the claimed subject matter unpatentable."<sup>218</sup> The Court also noted that the United States amicus curiae, for which counsel for the PTO appeared, indicated that "there are a variety of other reasons why the PTO may request a change in claim language."<sup>219</sup> The Supreme Court did not specifically cite such reasons, and its opinion oscillates between referring to changes to avoid "the prior art" and, more broadly, to reasons relating to "patentability," the latter potentially including non-prior art grounds for rejecting claims and requiring amendments. Thus, *Warner-Jenkinson* does not unequivocally resolve the issue whether non-prior art grounds that do concern patentability can create an estoppel.

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214. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. at 1049.

215. *Id.* at 1051.

216. *Id.*

217. *Id.*

218. *Id.* at 1049.

219. *Id.* at 1050.

The United States amicus brief, in the portion cited by the Supreme Court in *Warner-Jenkinson*, refers to two non-art grounds: indefiniteness, which court decisions have long treated as not creating an estoppel,<sup>220</sup> and non-enablement, about which the decisions are less clear.<sup>221</sup> The brief cites and then discusses the Federal Circuit's 1995 decision in *Pall Corp.*,<sup>222</sup> in which a Federal Circuit panel found no estoppel even though the applicant had voluntarily narrowed the scope of his claims because his experiments showed that the invention was not operable to the full extent of the original claims and had represented to the PTO examiner that the claims were "rather narrow."<sup>223</sup> The amicus brief also states that "[t]he purpose of the enablement requirement is not to limit the scope of the patent right, but to ensure that the invention has been fully disclosed."<sup>224</sup> This statement is inconsistent with the many decisions indicating that the scope of enablement must be commensurate with the scope of a claim and the decisions rejecting or invalidating applicant (or patentee) claims because of undue breadth.<sup>225</sup>

### 1. Pre-Warner-Jenkinson Federal Circuit Decisions

Federal Circuit decisions before *Warner-Jenkinson* did not strictly confine estoppel to amendments based on the prior art. For example, in *Texas Instruments* (1993),<sup>226</sup> a Federal Circuit panel found an estoppel when the inventors asserted during prosecution that their invention, which concerned semiconductor device plastic encapsulation, was limited to an "opposite-side" gating arrangement because "same-side" gating would not work. The court noted:

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220. See, e.g., *Bishman Mfg. Co. v. Stewart-Warner Corp.*, 380 F.2d 336, 340 (7th Cir. 1967).

221. See, e.g., *Borg-Warner Corp. v. Paragon Gear Works, Inc.*, 355 F.2d 400 (1st Cir. 1965).

222. *Pall Corp. v. Micron Separations*, 66 F.3d 1211 (Fed. Cir. 1995), cert. denied 117 S. Ct. 1243 (1997).

223. *Id.* at 1219.

224. Brief for the United States as Amicus Curiae, *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040 (1997) (No. 95-728), available in 1996 WL 172221, \*23.

225. E.g., *In re Wright*, 999 F.2d 1557 (Fed. Cir. 1993); *Amgen, Inc. v. Chugai Pharm. Co., Ltd.*, 927 F.2d 1200 (Fed. Cir. 1991).

The idea that a patent claim is invalid if its scope exceeds what the patent specification disclosure justifies dates back to *O'Reilly v. Morse*, 56 U.S. (15 How.) 61 (1853), which upheld Samuel Morse's claims to the telegraph but invalidated a claim in the patent to any means for electronically telecommunicating.

226. *Texas Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165 (Fed. Cir. 1993).

As a general proposition, prosecution history estoppel is based upon a showing that an applicant amended a claim to avoid a cited prior art reference. . . . Amendment of a claim in light of a prior art reference, however, is not the *sine qua non* to establish prosecution history estoppel. Unmistakable assertions made by the applicant to the Patent and Trademark Office (PTO) in support of patentability, whether or not required to secure allowance of the claim, also may operate to preclude the patentee from asserting equivalency between a limitation of the claim and a substituted structure or process step. . . . Application of this test requires, in each case, examination of the prosecution history taken as a whole. . . .

Having represented that same-side gating does not work, and having distinguished cited prior art as not teaching the functional opposite-side gated process, [the patentee] cannot foreclose reliance upon its unambiguous surrender of subject matter. . . . Such foreclosure is impermissible because "other players in the marketplace are entitled to rely on the record made in the Patent office in determining the meaning and scope of the patent."<sup>227</sup>

## 2. The Federal Circuit's Remand Order

*Warner-Jenkinson* does not speak clearly enough with regard to estoppel to resolve the evident tension between Federal Circuit decisions such as *Pall* and *Texas Instruments*. The Supreme Court's remand to the Federal Circuit gave the court, sitting en banc, an opportunity to develop criteria, perhaps after asking for additional briefing, for what estoppel effect, if any, should be given to amendments not driven by prior art objections. Unfortunately, the Federal Circuit abdicated, at least temporarily, the general responsibility imposed on it by the Supreme Court to develop clarifying standards on patent claim scope.

The Federal Circuit remanded the case:

[T]o the district court to conduct an inquiry to ascertain whether Hilton Davis can rebut the presumption by showing the reason for the amendment of the claim to place a lower pH limit of approximately 6.0 on the ultrafiltration process and whether that reason is sufficient to overcome the estoppel bar to the application of the doctrine of equivalents.<sup>228</sup>

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227. *Id.* at 1174-75.

228. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1163 (Fed. Cir. 1997).

In the Remand Order, the Federal Circuit did not discuss in detail what reasons are “sufficient.” The Federal Circuit noted only that (1) “what reason is sufficient depends on the particular facts of the case,”<sup>229</sup> citing the *Pall* case and (2) “in conducting the inquiry, the Supreme Court has cautioned the courts to consider carefully the importance of public notice and reliance on the prosecution history, as well as the need for fairness to the patentee.”<sup>230</sup>

The Remand Order stated “[I]f the district court determines that a reason *not* related to patentability prompted an amendment, the court must then decide if that reason is sufficient to overcome estoppel.”<sup>231</sup> This statement suggests that some amendments for reasons unrelated to “patentability” will nevertheless create estoppels. This is consistent with *Pall*, which the Remand Order cites, and the other pre-*Warner-Jenkinson* decisions discussed above, which indicate that amendments driven by disclosure sufficiency and other non-prior art reasons may or may not create an estoppel, depending on the circumstances.

The view that some amendments driven by a *reason* or *purpose* not related to patentability will create estoppels represents a correct interpretation of the Supreme Court’s *Warner-Jenkinson* decision is problematic. One can read the *Warner-Jenkinson* opinion as indicating that a showing by a patentee that a claim amendment was for a reason not “related to patentability” fully rebuts the presumption and eliminates any estoppel. Consider the following passage:

Mindful that claims do indeed serve both a definitional and a notice function, we think [A] the better rule is to place the burden on the patent-holder to *establish the reason for an amendment* required during patent prosecution. [B] The court then would *decide whether that reason is sufficient* to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment. [C] *Where no explanation is established*, however, the court should presume that the PTO had a *substantial reason related to patentability* for including the limiting element added by amendment.<sup>232</sup>

First, [A] indicates that the initial determination is simply what

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229. *Id.* at 1163.

230. *Id.*

231. *Id.*

232. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1051 (1997) (brackets inserted, emphasis added).

was the reason for the amendment. Then, [B] indicates that second determination is "whether the reason is sufficient." Finally, [C] is confusing and arguably illogical, because it reintroduces a presumption after a presumption is not rebutted. However, taken in context, it could mean simply that a "sufficient" "reason" or "explanation" is the opposite of "a substantial reason related to patentability," that is, a reason *not* related to patentability.

Other portions of the *Warner-Jenkinson* opinion could support a "depending on the circumstances" approach to amendments "not related to patentability." At the end of the opinion, the Supreme Court restates its holding:

[I]f the patent-holder demonstrates that an amendment required during prosecution had a purpose unrelated to patentability, a court must consider that purpose in order to decide whether an estoppel is precluded. Where the patent holder is unable to establish such a purpose, a court should presume that the purpose behind the required amendment is such that prosecution history estoppel would apply.<sup>233</sup>

This statement is as confusing as the earlier discussion in suggesting that failure to establish a fact leads to a presumption, but it suggests that a court still has a determination to make even after it has concluded that an amendment was for a purpose unrelated to patentability. The Court's restatement can be read another way; in referring to "must consider," the Court may have meant that an amendment's "purpose" (i.e. related to patentability or unrelated to patentability) must be considered and will be preclusive of an estoppel when the purpose is "unrelated to patentability."

### 3. Undue Breadth Nonenablement Rejections — Distinguishing Nonenablement and Lack of Written Description: A Hypothetical Example

Some may argue that it is fundamentally unfair that a patentee should be able to show infringement under the doctrine of equivalents by accused products or processes that could not have been literally claimed because the patent specification failed to provide an enabling disclosure. Others may respond that these concerns do not take sufficient account of (1) the interplay between the distinct disclosure requirements of an enabling disclosure and a written descrip-

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233. *Id.* at 1054.

tion of the invention and (2) the different time frameworks for determining enablement (filing date) and equivalency (time of infringement).

A hypothetical example may illustrate this debate and the interplay between equivalents, enablement and the written description requirement. Assume that an inventor files an application concerning a new integrated micro-video semiconductor chip. The applicant's specification discloses as the single working example or embodiment a chip that includes, inter alia, a connector made of the precious metal platinum. The applicant claims "an integrated micro-video semiconductor chip comprising . . . precious metal connector means." The examiner rejects the claim as not enabled for all precious metals, because such metals have varying electrical qualities and applicant failed to show that one of skill in the art could make an operable chip using all precious metals, such as silver, which have electrical qualities differing significantly from platinum. The applicant then amends the original claim as follows: "an integrated micro-video semiconductor chip comprising . . . [precious metal] *platinum* connector means." The applicant also adds a second claim to a video chip comprising "connector means of a metal selected from the group consisting of platinum, palladium, and gold." The examiner allows the first claim but rejects the second for lack of written description, because the specification contains no support for the platinum-palladium-gold group limitation. The applicant cancels the second claim and obtains the patent. Later, the applicant asserts the platinum claim against video chips that use a palladium chip, offering evidence that, in the context of this video chip, palladium is the substantial equivalent to platinum.

Those urging an estoppel would contend, with some plausibility, that it would be ironic to find that a palladium chip infringes through equivalence when the PTO rejected claims that would have literally covered that chip. Those opposing an estoppel would respond that a PTO determination that an inventor-applicant is not entitled to claims to a specific subset of potential embodiments is not a determination that those embodiments do not fall within the applicant's invention claimed in different or broader terms, either a generic claim or a more specific claim, which includes a range of objective equiva-



lents.<sup>234</sup> Rejection of the original claim (all precious metals) did not necessarily mean that a functional equivalent (palladium) of the disclosed embodiment (platinum) was not enabled even at the time the application was filed, much less at the time of infringement.<sup>235</sup> One skilled in the art may have known that palladium was interchangeable with platinum in its microelectronic properties and that both were distinctly different from other precious metals such as silver.

#### 4. A Step Back: What Is the Basis for Prosecution History Estoppel?

Many of the ambiguities concerning file wrapper estoppel can be traced to the lack of clarity regarding the doctrine's nature and purpose. The doctrine's label — "estoppel" — and case law suggest three distinct possible rationales for prosecution history estoppel: (1) a true estoppel (i.e. preclusion through representation and reliance), which would make the estoppel an affirmative defense rather than a tool of claim interpretation and application, (2) an abandonment or a disclaimer, and (3) exhaustion of administrative remedies.<sup>236</sup>

A satisfactory rationale for prosecution history estoppel, consistently used, could not only provide guidance in applying the doctrine but also provide a satisfactory explanation for what appears, at first blush, to be an illogical result: two potential claims, one issuing as originally-filed, the other issuing after broader claims are canceled or amended, will have different effective scopes even though the two are (1) identically-worded, (2) based on identical specifications, and (3) issued on the basis of the same state of the prior art.

True, estoppel is not as satisfactory a rationale as it may first appear. For one thing, actual reliance by an accused infringer has never been required. Federal Circuit decisions have postulated that the reliance is constructive, or in other words, fictitious: "The legal standard for determining what subject matter was relinquished is an

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234. *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1582 n.7, (Fed. Cir. 1996).

235. *Cf. Coulter Elecs., Inc. v. J. T. Baker Chem. Co.*, 487 F.Supp. 1172 (N.D. Ill. 1980) (examiner rejected original claim for lack of enablement since element "metallic phosphates" included over 70 specific compounds; applicant substituted two specific metallic phosphates: sodium di-hydrogen phosphate and di-sodium phosphate. After issuance, patentee is not estopped from extending claim by doctrine or equivalents to cover defendant's compound containing potassium di-hydrogen phosphate, a well-known equivalent to sodium di-hydrogen phosphate).

236. *See* 5 CHISUM, *supra* note 3, § 18.05[1].

objective one, measured from the vantage point of what a competitor was reasonably entitled to conclude, from the prosecution history, that the applicant gave up to procure issuance of the patent."<sup>237</sup> This standard suffers from a logical flaw of circularity: in defining estoppel, the courts cannot expect to find objective factual support in the views of reasonable competitors, because a well-advised competitor would base an assessment of what has been surrendered on a prediction of what the courts will hold if presented with the issue in an infringement suit.

Abandonment or disclaimer is also not fully satisfactory as a rationale for prosecution history estoppel. Generally, the courts are reluctant to find an abandonment or forfeiture of legal rights. Thus, they require a showing of intent to abandon. Yet it is clear that file wrapper estoppel applies regardless of the patentee's subjective intent when the patentee amends claims or makes arguments about patentability.

Perhaps the most satisfactory rationale for file wrapper estoppel is the exhaustion of administrative remedies. If an inventor adopts a narrow definition in the Patent and Trademark Office in order to obtain a patent and then relies upon a broader definition in an infringement suit, they pro tanto circumvent the administrative procedures and expertise of the PTO.

The exhaustion of remedies rationale does not provide an immediately obvious reason for excluding amendments made in response to insufficient disclosure rejections. The answer may lie in the differing time frameworks for determining enablement and equivalence. The former is clearly assessed at the filing date of the inventor's patent application. In *Warner-Jenkinson*, the Supreme Court held that equivalency was assessed at the time of the alleged infringement. This necessarily means that an inventor may obtain coverage through equivalency over some subject matter that could not have been literally claimed due to enablement constraints. On the other hand, an inventor may never establish equivalency infringement by subject matter that could not be literally claimed because of prior art constraints.

Scholars have addressed these difficult issues concerning estop-

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237. *Haynes Int'l, Inc. v. Jessop Steel Co.*, 8 F.3d 1537 (Fed. Cir. 1993), *reh'g*, 15 F.3d 1076 (Fed. Cir. 1994). *See also* *Mark I. Mktg. Corp. v. R.R. Donnelley & Sons Co.*, 66 F.3d 285 (Fed. Cir. 1995).

pel and equivalency with regard to enablement in terms of policy and economic analysis.<sup>238</sup> Unfortunately, to date, the Supreme Court and the Federal Circuit have attempted to resolve the issues without explicit reference to policy analysis, relying instead primarily on case precedent and judicial doctrine.

### G. Scope of Estoppel Created by Prior-Art Driven Amendments

In *Warner-Jenkinson*, the Court did not explicitly address the scope of an estoppel that arises in the situation when an amendment was made clearly for the purpose of distinguishing prior art, but the prior art distinguished by the amendment is actually distant from the claim element and its alleged equivalent.

#### 1. Pre-*Warner-Jenkinson* Lower Court Decisions: Rigid and Flexible Approaches

Lower court decisions before *Warner-Jenkinson* showed varying attitudes toward the scope of the estoppel and the extent to which the court can evaluate the prior art.

##### a. Pre-1983 Decisions

An instructive pre-1982 decision was handed down by the Fifth Circuit in *Nationwide*,<sup>239</sup> which, like *Warner-Jenkinson*, involved a numeric limitation added in order to distinguish prior art cited by the Patent Office. The patent at issue in the case involved a method that controlled mites on citrus groves and comprised of applying a composition with an active ingredient “at an effective dosage of *less than 4 ounces per acre*.”<sup>240</sup> The accused products “called for use in amounts *greater than 4 ounces per acre*.”<sup>241</sup> The patentee argued that the 4 ounce limitation was inserted “only to point out the difference from the high dosage, 48 ounces per acre of the prior art” and, therefore, the claim covers “all ‘low dosages’” of the active ingredient for estoppel purposes.<sup>242</sup> It cited prior decisions, *Hunt*<sup>243</sup> and

238. E.g., Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990). See also Mark A. Lemley, “*The Economics of Improvement in Intellectual Property Law*,” 75 TEX. L. REV. 989 (1997).

239. *Nationwide Chem. Corp. v. Wright*, 584 F.2d 714 (5th Cir. 1978).

240. *Id.* at 716, quoting U.S. Patent 3,420,935.

241. *Id.*

242. *Id.* at 718.

243. *Hunt Tool Co. v. Lawrence*, 242 F.2d 347 (5th Cir.).

Ziegler,<sup>244</sup> for the proposition that “an applicant should not be presumed to have made a disclaimer broader than necessary to yield to the actual challenge to his claim.”<sup>245</sup> The court disagreed. First, it was mere speculation whether a more restricted limitation, such as “low dosage,” would have been accepted by the examiner.

If the [sic] Nationwide had amended its claim to say that it claimed the use of hexachlorophene in “low dosages,” perhaps its claim would have been allowed by the Examiner; but by the same token, perhaps it would not have been allowed. If that was not allowed, perhaps the Examiner would have allowed a limit of less than 8 ounces per acre, or perhaps less than 5 ounces per acre. We do not know. That is the problem with Nationwide’s argument. It has a certain surface appeal, because of the large gap between the prior art reference of 48 ounces per acre and Nationwide’s limitation of 4 ounces per acre, and the closeness of Wright’s dosages to Nationwide’s. The difficulty, however, is that it would cause us to place ourselves in the Examiner’s place, and either guess what he would have allowed if faced with the question, or substitute our judgment for that of the Examiner, who is the expert in this field.

The simpler solution is to look at the question of whether the patentee had to insert a limitation in the broader sense. It is clear beyond dispute that Nationwide had to put *some* limit on its dosages of hexachlorophene. In that sense, its amendment was required by the Examiner’s rejection of Nationwide’s earlier claims based on the prior art. Since *some* dosage limitation was required, we do not ask if the *specific* 4-ounce limitation itself was required. For whatever reason, that is the embodiment of its claim which Nationwide chose. Having chosen that limitation, Nationwide is estopped from asking the Court to give it a broader coverage than it chose for itself.<sup>246</sup>

The court relied on an earlier Seventh Circuit decision involving a range limitation, *Ekco Products*:<sup>247</sup>

That case involved a product patent for a tin plate baking pan. Ekco originally “had claimed its product broadly as a baking pan having a steel base, an overlying layer of iron-tin alloy, a further layer of metallic tin, and a surface layer of olive-green tin oxide.

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244. Ziegler v. Phillips Petroleum Co., 483 F.2d 858 (5th Cir.).

245. Nationwide Chem. Corp. v. Wright, 584 F.2d at 718.

246. *Id.* at 718.

247. Ekco Prods. Co. v. Chicago Metallic Mfg. Co., 347 F.2d 453 (7th Cir. 1965).

There had been no claim that called for any specific thickness of iron-tin alloy." . . . Ekco's claim was rejected, and it amended its claim so it "was limited to pans in which the thickness of the iron-tin alloy was 'approximately 10 to 15 micro-inches.'" . . . The court noted that the only difference between Ekco's patented pan and the prior art, which had a thicker alloy layer, was the "approximately 10 or 15 micro-inches" thickness limitation. . . . The purportedly infringing pan had an iron-tin alloy somewhat thicker than that in Ekco's patent, but otherwise the pan was identical to Ekco's. . . . The court held that because of the doctrine of file wrapper estoppel, Ekco's patented pan was not infringed. The court did not look at how close the thickness of the purportedly infringing pan's alloy was to Ekco's, or whether Ekco could have inserted a less restrictive thickness limitation when it had amended its claim. Rather, the court "look(ed) no further than to learn whether the patentee was forced to introduce such element to avoid rejection." . . . Where such is the case, the patentee "is held strictly to the letter of the limited claims granted to him . . ." . . . See also *Taylor-Reed Corp. v. Mennen Food Products, Inc.*, 324 F.2d 108, 111 (7th Cir. 1963); *Aluminum Co. of America v. Thompson Products, Inc.*, 122 F.2d 796, 800 (6th Cir. 1941) (chemical alloy patent employing 0.5% To 7% Nickel not infringed by defendant's use of a nickel range of 0.04% To 0.45%, where the field was crowded, and the minute percentages of nickel used by defendant had no substantial effect upon the alloy); *Saunders v. Air-Flo Co.*, 435 F.Supp. 298, 305-306 (N.D. Ind. 1977).

We agree with the Seventh Circuit. Since Nationwide was forced to introduce *some* dosage restriction, and chose the "less than 4 ounces per acre" restriction as the embodiment of its claim, we look no further, and hold Nationwide "strictly to the letter of the limited claims granted" to it. This case, as did *Ekco*, involves a situation where the purportedly infringing process employed a dosage that fell between the limitation in the patent in suit and the prior art. Rather than reexamine the application to decide what in that gap the Examiner might have allowed the patentee to claim, we strictly limit the patentee to what he claimed. The *Hunt-Ziegler* presumption . . . that the patentee did not make a disclaimer "broader than necessary to yield to the actual challenge to his claim," has no application in the present situation.<sup>248</sup>

The court noted that "[t]he *Hunt-Ziegler* presumption does ap-

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248. *Nationwide Chem. Corp. v. Wright*, 584 F.2d at 718-19.

ply in two different situations"<sup>249</sup>:

In situations where the purported infringer falls on the other side of the patent in suit from the prior art, the patent in suit may be entitled to some slight range of equivalents. Thus, if Nationwide had limited its claim to a dosage of 2 to 4 ounces, and Wright had used 1 ounce, the *Hunt-Ziegler* presumption *might* apply and entitle Nationwide to a limited range of equivalents below 2 ounces. Cf. *Kolene Corp. v. Motor City Metal Treating, Inc.*, 440 F.2d 77 (6th Cir.), *cert. denied*, 404 U.S. 886 (1971), *affirming* 307 F.Supp. 1251 (E.D. Mich. 1969) (where the prior art used a 15% Cyanate bath, Kolene's patent employed "between about 25 and 40% Cyanate," and defendant used a 50% Cyanate bath, defendant was held to have infringed for various reasons, including that the Examiner had not required the maximum level to be inserted in order to overcome the prior art).

The second situation where the *Hunt-Ziegler* presumption may apply is that exemplified by *Ziegler* itself, that is, situations where the limitation in the claim was not inserted to overcome any prior art. Thus, in *Ziegler*, Ziegler amended its patent claim for a catalyst by adding the language, "essentially consisting of" two components. This amendment was inserted to overcome the Examiner's objection that the original claim was too broad and did not disclose enough. . . . Phillips' catalyst was composed of three components, including the two in Ziegler's claim. This Court held that Phillips' catalyst infringed Ziegler's patent, using the doctrine of equivalents. Since the Court found that there was nothing in the file wrapper to indicate that third components were being excluded, nor any prior art references requiring such a disclaimer, . . . the Court held that Ziegler was not barred by the doctrine of file wrapper estoppel. It is in this context that Ziegler's language that "an applicant should not be presumed to have made a disclaimer broader than necessary to yield to the actual challenge to his claim," . . . must be understood.<sup>250</sup>

Interestingly, the first situation discussed in the above quotation is virtually on all fours with the fact pattern in *Warner-Jenkinson*, i.e. a numeric range limitation was added to distinguish a prior art reference on one side of the range and the accused product fell on the other side of the range.

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249. *Id.* at 719.

250. *Id.* at 719-20.

*b. Federal Circuit Decisions*

Beginning shortly after its creation in 1982, the Federal Circuit developed two lines of authority on the scope of an estoppel based on an amendment or argument based on prior art. One line of authority indicated that an amendment does not preclude all equivalence, and that the scope of an estoppel should be "determined in light of the prior art that occasioned the change, as well as representations made to the patent examiner as to the reason for the change."<sup>251</sup> The decision, *Hughes Aircraft Co. v. United States*,<sup>252</sup> rejected the approach of *Nationwide* and *Ekco*:

Some courts have expressed the view that virtually any amendment of the claims creates a "file wrapper estoppel" effective to bar all resort to the doctrine of equivalents, and to confine patentee "strictly to the letter of the limited claims granted," *Nationwide Chemical Corp. v. Wright* . . . We, as has the Supreme Court, reject that view as a wooden application of estoppel.<sup>253</sup>

*Insituform*<sup>254</sup> is a recent example of the line of cases calling for an analysis of cited prior art to determine what the patentee surrendered. The patent in suit concerned a process for repairing a cracked underground pipe without digging up the pipe.<sup>255</sup> To impregnate a felt layer in a tube inside the pipe with a resin, a resin slug is placed in the tube. The tube is drawn through squeezing rollers. A vacuum source is applied to assist in drawing the resin down the tube's length. A prior art reference<sup>256</sup> taught that a single vacuum source can be attached at the end opposite that containing the resin.<sup>257</sup> The patent claimed a method of applying a vacuum source at a window in a section of the tube near the resin. After the section was impregnated, the vacuum source was moved to another window along the tube. The applicant's original claims required only that a vacuum be applied "downstream of the resin mass."<sup>258</sup> After a rejection based

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251. *Sun Studs, Inc. v. ATA Equip. Leasing, Inc.*, 872 F.2d 978, 987 (Fed. Cir. 1989). See also *LaBounty Mfg., Inc. v. U.S. Int'l Trade Comm'n*, 867 F.2d 1572 (Fed. Cir. 1989).

252. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1362 (Fed. Cir. 1983), later appealed, 86 F.3d 1566 (Fed. Cir. 1996), vacated & remanded, 117 S. Ct. 1871 (1997).

253. *Id.* at 1362.

254. *Insituform Techs., Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098 (Fed. Cir. 1996).

255. *Id.* at 1102.

256. U.S. Patent 4,182,262.

257. *Id.*

258. *Id.* at 1103.

on the Everson reference, the applicant amended the claim to specify that the vacuum be applied "through a window by means of a cup . . . whereby the cup can move . . . to a position spaced downstream."<sup>259</sup> The inventor argued the following:

Everson's method is ineffective when dealing with long lengths of tube because that method requires an exceedingly large suction compressor. Applicant's method solves the problem of impregnating long lengths of tubing by forming a window in the tube's impermeable skin, drawing the resin to the region of the window by a vacuum while squeezing the tube to force the resin to flow toward the evacuated region, sealing the window, and repeating the process at another window farther downstream.<sup>260</sup>

The examiner allowed the claim. In an infringement suit, the accused process used a continuous vacuum drawn through multiple cups placed along the length of the tube. There was no literal infringement because, properly interpreted, the patent claim was limited to "a process using only one vacuum cup which inherently creates a discontinuous vacuum."<sup>261</sup> But the court held that estoppel did not preclude an assertion of infringement under the doctrine of equivalents because "in light of the equivocal nature of [the patentee's] statements, no reasonable competitor could conclude that [the patentee] gave up coverage of continuous vacuum created by one or more vacuum sources."<sup>262</sup>

The prosecution history makes clear that the problem to be solved was the need for a large compressor when the vacuum was created a significant distance from the resin source. Either the use of one vacuum source which is repeatedly moved down the tube as the resin advances, or the use of a number of vacuum sources spread along the tube so that one is always near the advancing resin, solve the problem presented by Everson by placing the vacuum source close to the resin, thereby allowing the use of a smaller vacuum source.

At no point did [the patentee] indicate that the Everson problem could be solved only in the manner used by [the patentee], i.e., [the patentee] never stated that the problem could not be solved by using more than one vacuum source or a continuous vacuum.

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259. *Id.* at 1103-4.

260. *Id.* at 1104.

261. *Id.* at 1106.

262. *Id.* at 1109.



Rather, the only express limitation put on the invention by [the patentee] was the use of a vacuum source close to the resin.<sup>263</sup>

A second line of cases followed a strict approach, refusing to speculate whether a narrower amendment would have been allowed.<sup>264</sup> A recent example of this line of reasoning is *Wang Laboratories*,<sup>265</sup> in which the court emphasized that an estoppel applied, even though the patentee could have chosen a different or narrower basis for distinguishing prior art cited by the PTO. The patent claimed a single in-line memory module in which there were nine chips "in a single row."<sup>266</sup> During prosecution, the PTO examiner had rejected the claims in view of a prior art reference which disclosed a memory chip with multiple rows of eight chips, the ninth "parity" chip being located on a separate module.<sup>267</sup> The applicant amended the claim to add the "single row" limitation.<sup>268</sup> In an infringement suit, the accused devices had chips arranged in more than a single row on a single module.<sup>269</sup> The patentee argued that the scope of any estoppel should not bar its equivalency theory because the prior art distinguished during prosecution did not show a two-row, single module structure.<sup>270</sup> The court disagreed:

While a two-row construction may not read on the prior art, [the patentee] limited the scope of its claims to memory chips mounted "only in a single row," and which argued before the PTO that [the prior art reference] did not have memory chips mounted in a single row. . . . Although [the reference] taught the advantage of locating a parity chip on a separate module, [the patentee] did not limit its claims to a single module. Instead, it chose a single row, which excludes the accused devices.

## 2. The Federal Circuit's Remand Order

In *Warner-Jenkinson*, the Supreme Court did not address directly whether a flexible or rigid approach should be applied to es-

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263. *Id.*

264. *Prodyne Enterprises, Inc. v. Julie Pomerantz, Inc.*, 743 F.2d 1581 (Fed. Cir. 1984); *Kinzenbaw v. Deere & Co.*, 741 F.2d 383 (Fed. Cir. 1984).

265. *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858 (Fed. Cir. 1993).

266. *Id.* at 862.

267. *Id.* at 861.

268. *Id.* at 862.

269. *Id.*

270. *Id.* at 867.

toppel based on amendments relating to patentability over the prior art. The opinion referred to estoppel as barring "application of the doctrine [of] equivalents to the element added by that amendment."<sup>271</sup> The Court cautioned that, in determining estoppel, a court should not "review the correctness" of the PTO examiner's rejection, but a court can "explore . . . the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection."<sup>272</sup> Reference to the "manner" of the amendment hints that a court may indeed consider whether an amendment leaves some room for equivalents of the limitation added, for example, because the absence of written descriptive support forced the patentee to withdraw from a generic claim to a highly specific claim.

After the Supreme Court remanded the *Warner-Jenkinson* case, the Federal Circuit in a per curiam order further remanded the case to the district court. The Remand Order did not discuss in detail the question of the scope and effect of an estoppel created by an amendment or an argument based on patentability, but it cited the Supreme Court's opinion for the proposition that, in the event that there is a "substantial reason related to patentability for including the limiting element added by amendment,"<sup>273</sup> "prosecution history estoppel would bar the application of the doctrine of equivalents as to that element (or claim limitation)."<sup>274</sup> Later, the Order noted that there were two issues for resolution: the reason for an amendment, and whether that reason is "sufficient to overcome estoppel."<sup>275</sup> The Order indicated that "[i]f the district court determines that a reason *not* related to patentability prompted an amendment, the court must then decide if that reason is sufficient to overcome estoppel."<sup>276</sup>

It can be argued strongly that the Federal Circuit's apparent reading of *Warner-Jenkinson* as precluding all equivalency for a claim element added by an amendment driven by the prior art is contrary to the Supreme Court's rejection of a "rigid" estoppel approach and the Court's refusal to "change so substantially the rules of the

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

272. *Id.* at 1051 n.7.

273. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1163 (Fed. Cir. 1997).

274. *Id.*

275. *Id.*

276. *Id.*

game”<sup>277</sup> as to “subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired.”<sup>278</sup> The flexible approach to estoppel is supported by a substantial body of case law,<sup>279</sup> none of which is mentioned in the Supreme Court’s opinion or the Remand Order.

#### *H. Estoppel Created by Arguments*

The Court in *Warner-Jenkinson* did address the related problem on the scope of an estoppel concerning arguments by a patent applicant to distinguish a cited prior art reference. Historically, many courts declined to give estoppel effect to mere arguments on the ground that to do so would be inconsistent with a patent’s status as an integrated legal document.<sup>280</sup> The Federal Circuit has now extended estoppel to arguments,<sup>281</sup> however, this estoppel is applied in limited situations. Some decisions stress that an estoppel based on argument, as opposed to a “classic” estoppel based on claim amendments, will arise only from an “unequivocal assertion” limiting claim scope in relation to the prior art.<sup>282</sup>

Illogical consequences may arise if a court treats arguments unlinked to specific claim language as an estoppel, but not as a disclaimer limiting the literal scope of a claim.<sup>283</sup> Particular difficulties arise when the patentee distinguishes cited prior art references on

277. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. 1040, 1050 n.6. (1997).

278. *Id.*

279. See discussion *infra* Part IV[G][1][b], Federal Circuit Decisions.

280. *Catalin Corp. of Am. v. Catalazuli Mfg. Co.*, 79 F.2d 593, 594 (2d Cir. 1935).

281. *Townsend Eng’g Co. v. Hitec Co., Ltd.*, 829 F.2d 1086, 1090 (Fed. Cir. 1987) (“Prosecution history estoppel applies both ‘to claim amendments to overcome rejections based on prior art, and to arguments submitted to obtain the patent.’”).

282. *Insituform Techs., Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098 (Fed. Cir. 1996); *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1582 (Fed. Cir. 1996).

283. See, e.g., *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948 (Fed. Cir. 1993), which held that a patent claim’s “straw-shaped” phrase, properly interpreted, imposed a shape limitation, requiring hollowness, but not a size limitation. The accused product, which used fine (capillary-sized) fibers, escaped literal infringement because the fibers were solid, not hollow. The court went on to conclude that the accused product escaped equivalency doctrine infringement because of its size, the patentee being estopped from arguing equivalency of capillary-sized elements. The court found “no inconsistency” between its conclusions on claim interpretation and estoppel because the latter pertains to equivalency, which “operates outside the literal language of claims.” *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d at 950 n.6.

Under the court’s analysis, fibers that were capillary-sized and hollow would infringe literally but would not infringe under the doctrine of equivalents if they escaped the claim’s literal terms for any reason, however unrelated to size.

multiple grounds. In *Read*, a Federal Circuit panel emphasized that “[e]very statement made by a patentee during prosecution to distinguish a prior art reference does not create a separate estoppel.”<sup>284</sup> Later panel decisions limit and distinguish *Read*,<sup>285</sup> leaving the law in a state of uncertainty.

### *I. Procedure and Evidence for Determining Reasons for Claim Amendments*

In *Warner-Jenkinson*, the Supreme Court indicated that there was a presumption that a claim amendment was made for a reason related to patentability but that a patentee could rebut the presumption.<sup>286</sup> The Supreme Court, however, did not discuss in detail what procedures were to be used in determining the reason for an amendment or what kinds of evidence could be admitted.

Two distinct approaches can be taken to resolve the procedure and evidence problem. The first, an “intrinsic” evidence approach, would limit the inquiry to the public record, which consists of the prosecution history on file at the Patent and Trademark Office. The second, an “extrinsic” evidence approach, would allow testimonial evidence from the inventor, the inventor’s patent attorney, and others, as to the reasons for any claim amendment. The first approach is supported by decisions holding that prosecution history estoppel is a question of law. This position was confirmed by the Supreme Court in *Warner-Jenkinson* in footnote 8 of the case, by decisions that restrict the use of “extrinsic” evidence including testimony by experts and the inventor, to support a construction of the meaning of a patent claim, and by the underlying public interest in clarity and certainty in patent rights.<sup>287</sup> The second approach is supported by the *Pall* decision, which credited an inventor’s testimony that claim limitations were added not to distinguish the prior art but rather to restrict the claims to that which had been established to be operable in experi-

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284. *Read Corp. v. Portec, Inc.*, 970 F.2d 816 (Fed. Cir. 1992).

285. *Southwall Techs., Inc. v. Cardinal IG Co.*, 54 F.3d 1570 (Fed. Cir. 1995); *Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948 (Fed. Cir. 1993) (“The rule of *Read v. Portec* . . . ‘any estoppel created by an applicant’s argument encompasses all of [the] combined distinctions’ over the cited references” does not apply when (1) the applicant distinguished a prior art reference on two grounds (size and percentage), (2) the first distinction (percentage) was “of questionable validity in terms of distinguishing [the reference],” and (c) the accused product does not meet the second distinction (size).).

286. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. at 1051.

287. *Vitronics Corp. v. Conception, Inc.*, 90 F.3d 1576, 1584 (Fed. Cir. 1996).

ments, and by the public interest in providing a fair scope of protection to inventors.<sup>288</sup>

In a concurring opinion in *Warner-Jenkinson*, Justice Ginsburg expressed sympathy with the difficulties that owners of existing patents may face in establishing the reasons for amendments:

The new presumption, if applied woodenly, might in some instances unfairly discount the expectations of a patentee who had no notice at the time of patent prosecution that such a presumption would apply. Such a patentee would have had little incentive to insist that the reasons for all modifications be memorialized in the file wrapper as they were made. Years after the fact, the patentee may find it difficult to establish an evidentiary basis that would overcome the new presumption. The Court's opinion is sensitive to this problem, noting that "the PTO may have relied upon a flexible rule of estoppel when deciding whether to ask for a change" during patent prosecution.

Because respondent has not presented to this Court any explanation for the addition of the lower pH limit, I concur in the decision to remand the matter to the Federal Circuit. On remand, that court can determine — bearing in mind the prior absence of clear rules of the game — whether suitable reasons for including the lower pH limit were earlier offered or, if not, whether they can now be established.<sup>289</sup>

In its Remand Order, the Federal Circuit distinguished between existing patents and those prosecuted after *Warner-Jenkinson's* recognition of a presumption.

[W]e expect that the PTO and applicants will henceforth usually include in the prosecution history express statements of their reasons for requiring or making claim changes or interpretive assertions. Express recitations may not exist, however, in applications prosecuted prior to the Supreme Court's decision. See *Warner-Jenkinson*, 117 S.Ct. at 1055 (Ginsburg, J., concurring) ("Years after the fact, the patentee may find it difficult to establish an evidentiary basis that would overcome the new presumption."). Thus, we conclude that where the prosecution history is silent or unclear the district court should give a patentee the opportunity to establish the reason, if any, for a claim change. See *id.* (urging the

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288. *Pall Corp. v. Micron Separations*, 66 F.3d 1211 (Fed. Cir. 1995), cert. denied 117 S. Ct. 1243 (1997).

289. *Warner-Jenkinson Co. v. Hilton Davis Chem.*, 117 S. Ct. at 1055 (citations omitted).

Federal Circuit to “bear in mind the prior absence of clear rules of the game”). We hesitate to specify the procedures that the district court can employ to answer the question posed by the newly created presumption of prosecution history estoppel. The better course is to allow the district court to use its discretion to decide whether hearings are necessary or whether the issue can adequately be determined on a written record.<sup>290</sup>

This solution to the procedure and evidence questions, when coupled with the Federal Circuit’s apparent position on the substantive standards for estoppel, may well be the worst of all possible worlds insofar as the Fair Protection - Certainty Conundrum is concerned. As to substance, a rigid estoppel may be applied when an amendment’s reason is related to patentability, which seriously threatens the fair protection interest. However, whether an estoppel will apply when the reason is not so related depends on “the facts of the case.” This creates maximum incentive for the parties to a patent dispute to assert and establish one reason or the other. With the Federal Circuit approving a patentee’s right to establish a reason when the written record is “silent or unclear,” but declining to provide guidance on procedures and evidence, the likely effect is obvious: there will be an increase in uncertainty. Hence, there will be an increase in the costs of studying and opining on patents, negotiating licenses, and litigating infringement charges, which seriously threatens the certainty interest.

## V. CONCLUSION

Some may criticize the Supreme Court’s decision in *Warner-Jenkinson* for its conservative response to what the Court acknowledged to be legitimate concerns that the doctrine of equivalents had acquired a life of its own, especially when coupled with patentee demands for a trial of patent infringement charges by a lay jury. Without controls, the doctrine can undermine the careful limitations on the scope of patent rights that result from the requirements of clear claiming and examination by the Patent and Trademark Office. But, a careful analysis of the Court’s opinion reveals that it imposes important new limitations on the doctrine while at the same time preserving the fundamental economic value of patents, which would be

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290. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1163 (Fed. Cir. 1997).

undermined by complete abolition of the doctrine. The overall theme of the opinion is one of balance and accommodation of important and not fully reconcilable interests.

So long as the patent system continues to require (1) compliance with strict time limits and formalities for the filing of patent disclosures of new technology, (2) formulation of verbal "claims" describing the technology, and (3) examination of such claims by the patent office, all of which are conducted by fallible human beings working with limited resources at a time when the commercial value of the technology may be uncertain, the doctrine of equivalents will remain an important safeguard to protect the substance of patent rights. The public and competitors should be given clear notice of how to design around the technology that a patent is intended to protect, not a license to design around the words that often only imperfectly describe the technology.

On the other hand, the courts can take reasonable measures to reduce unnecessary uncertainty concerning patent claim scope that may deter legitimate investment and business activities. The limitations announced by the Supreme Court in *Warner-Jenkinson* are positive contributions to greater clarity, especially the threshold legal requirement that a patentee's theory of equivalency shall not vitiate a claim limitation or element by making it applicable to any substitution that achieves the same result. But, as the Court recognized, primary responsibility for achieving improvements in patent litigation rests with the Court of Appeals for the Federal Circuit. Nonetheless, the Federal Circuit's June 12, 1997, Remand Order was not a promising start in its quest to implement the Supreme Court's directives.

However, the public interest in the patent system demands that the judges of that court put to rest their past sharp differences on the nature of the doctrine and on prosecution history estoppel in order to focus their attention on refining the test for equivalence in the orderly manner of case-by-case determinations.