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Joseph F. Haag

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## Comment

### ***Hilton Davis Chemical Co. v. Warner-Jenkinson Co.:* An Equitable Solution to the Uncertainty Behind the Doctrine of Equivalents**

*Joseph F. Haag\**

In a 1995 decision, *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*,<sup>1</sup> the Court of Appeals for the Federal Circuit affirmed a jury's finding of patent infringement under the doctrine of equivalents.<sup>2</sup> The court constructed its opinion to conform with the current law of patent infringement and to settle recent disparities in infringement analysis. The Federal Circuit, however, missed an opportunity to establish a coherent and predictable approach for determining infringement when an accused infringer's device does not fall under the literal language of a patent claim.

Courts historically have struggled to balance the problem of providing adequate patent protection for patentees with the need to provide proper notice to the public of what the patent protects.<sup>3</sup> If the law limits a patentee to protection for only the literal language in the patent claims, a competitor need only make slight changes to the patented product to sidestep the language while still copying the substance of the invention. The doctrine of equivalents protects a patentee from a competitor who makes merely "insubstantial" changes to a patented device

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\* J.D. Candidate 1997, University of Minnesota Law School; B.S.M.E. 1994, Northwestern University.

1. 62 F.3d 1512 (Fed. Cir. 1995) (per curiam) (en banc), *cert. granted*, 116 S. Ct. 1014 (1996). The Federal Circuit decided the *Hilton Davis* case on August 8, 1995. *Id.*

2. The common law doctrine of equivalents allows a patent holder to recover for infringement of its patent when an accused product or process does not fall within the literal words of the patent claim, but instead substitutes insubstantial changes to the claimed device or process. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 606 (1950); *see also infra* Part I.B. (describing the standard for infringement doctrine of equivalents).

3. *See infra* notes 30-35 and accompanying text (discussing the trade-off between justice for the patentee and notice to the public).

to avoid literal infringement.<sup>4</sup> On the other hand, although it protects patentees beyond the literal language of the claims in patents, the doctrine creates uncertainty for competitors as to what will or will not infringe a patent. *Hilton Davis* addressed the test for infringement under the doctrine of equivalents and discussed whether the judge should have the discretion to decide whether to apply the doctrine.<sup>5</sup> In *Hilton Davis*, the Federal Circuit<sup>6</sup> provided an overly broad test for infringement under the doctrine of equivalents leaving its application more unreliable and unpredictable than ever.

This Comment examines the test for infringement under the doctrine of equivalents and concludes that additional restraints are necessary to protect accused infringers from improper broadening of patent claims beyond the literal claim language. Part I outlines general principles of patent law and summarizes the current law for infringement under the doctrine of equivalents. Part II describes the reasoning and holding of the Federal Circuit in *Hilton Davis*. Part III critiques the court's reasoning on the standard for infringement under the doctrine of equivalents and exposes the aspects that lead to unrestrained use of the doctrine. Finally, Part III proposes an alternative to *Hilton Davis* that excludes any evidence relating to the mental state of

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4. See *infra* part I.B.1. (describing the protections provided by the doctrine of equivalents).

5. The Federal Circuit in *Hilton Davis* addressed three issues: whether a finding of infringement under the doctrine of equivalents involves any additional proof beyond a finding that the accused process or device performs substantially the same function, in the same way, to achieve the same result as the process or device claimed by the patent; whether infringement under the doctrine of equivalents is a factual question to be given to the jury or an equitable remedy to be applied by the court; and whether the trial court can use discretion in deciding whether to apply the doctrine of equivalents in a given patent infringement suit. *Hilton Davis*, 62 F.3d at 1516.

6. The Court of Appeals for the Federal Circuit exercises exclusive jurisdiction over patent and trademark appeals from the U.S. district courts and from the Patent Office Board of Patent Appeals and Interferences. 28 U.S.C. § 1295(a)(1) (1994). Congress created the Federal Circuit in 1982 to replace the dual system of appellate jurisdiction previously provided for patent cases. Federal Courts Improvement Act of 1982, Pub.L. No. 97-164, 96 Stat. 25 (1982) (codified as amended in scattered sections of 28 U.S.C.). Appeals for patent infringement cases were previously dealt with by the individual circuit courts while appeals from the Patent and Trademark Office on patent applications were heard by the Court of Customs and Patent Appeals. See 28 U.S.C. § 1291 (1994) (stating that "[t]he courts of appeals . . . shall have jurisdiction of appeals from all final decisions of the district courts of the United States"); 35 U.S.C. § 141 (1986) (governing appeals to the Court of Customs and Patent Appeals).

the accused infringer, considers the policy situations when an infringement finding under the doctrine is appropriate, and rigidly applies prosecution history estoppel to limit application of the doctrine.

## I. PATENT LAW AND THE DOCTRINE OF EQUIVALENTS

### A. FUNDAMENTALS OF PATENT LAW

A patent grants a patentee the right to exclude others from making, using, or selling an invention within the United States for up to twenty years from the date the patent application is filed with the Patent and Trademark Office (PTO).<sup>7</sup> In exchange for this legal “monopoly,”<sup>8</sup> the patent holder must fully disclose the invention to the public,<sup>9</sup> adding to the pool of public

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7. The U.S. Constitution grants Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” U.S. CONST. art. I, § 8, cl. 8; *see also* 35 U.S.C. § 154(a)(1) (1994) (granting the patent owner the “right to exclude others from making, using, offering for sale, or selling the invention throughout the United States”). Until recently, the period of a patent was seventeen years from the date of its issuance. The period of a patent is now twenty years from the date that the patent application is filed with the PTO. *See* 35 U.S.C. § 154(a)(2) (1994) (stating the “grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed”). This change was made to help conform United States patent law to that in other countries, and to prevent delay in the prosecution of a patent so as to extend the patent term.

8. Technically, the right is not the grant of a legal “monopoly,” but rather an exclusionary right for the patented invention. The patent does not necessarily allow the patent holder to practice her invention. *See* 4 DONALD S. CHISUM, PATENTS: A TREATISE ON THE LAW OF PATENTABILITY, VALIDITY AND INFRINGEMENT § 16.02(1) (1995) (describing the exclusive right patents grant and the limits that other patents or the law may impose on the patent right). “Monopoly” has a negative connotation because it implies that something has been taken from the public domain. *See United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 186 (1933) (discussing the term “monopoly”). A patent, on the other hand, does not deprive the public of what was already in the public domain, but instead rewards the inventor for disclosing valuable knowledge to the public. *See* 1 PETER D. ROSENBERG, PATENT LAW FUNDAMENTALS § 1.03 (2d ed. 1995) (comparing patents and monopolies).

9. The statutory measures provide:

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

scientific knowledge. A patent consists of a specification with one or more claims that set forth the elements of the invention that the patentee seeks to protect.<sup>10</sup> The specification describes the invention in detail and teaches the best mode of practicing the invention.<sup>11</sup> The claims constitute the essence of the legal right granted by a patent and define the boundaries of the property right.<sup>12</sup>

The United States uses the "peripheral" claiming system, whereby applicants negotiate with the PTO to describe the outer limits of the invention in the claims.<sup>13</sup> During a process known as patent prosecution, an applicant files a patent application with the PTO, which reviews the application and rejects claims that are not patentable.<sup>14</sup> Under this system, the claims of an

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by the inventor of carrying out his invention.  
35 U.S.C. § 112 (1994).

10. A patent application includes a specification and an oath, and may also include one or more drawings. 35 U.S.C. § 111 (1994); *see also id.* § 112 (requiring that patents include specifications that "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention"); *id.* § 113 (requiring a drawing where necessary to understand the subject matter of the patent); *id.* § 115 (requiring the applicant to make an oath that "he believes himself to be the original and first inventor of the process [or] machine").

11. 35 U.S.C. § 112 (1994); *see also supra* note 9 (quoting the language of the patent statute describing the specification). The specification must allow one skilled in the art to construct the product. It names all of the parts of the invention, describes how it works, and illustrates how the components work to perform the function.

12. DONALD S. CHISUM & MICHAEL A. JACOBS, UNDERSTANDING INTELLECTUAL PROPERTY LAW § 2D[3][d] (1992). Each new element written into a claim further narrows the subject matter protected by the claim, such that with fewer elements the patentee would claim more subject matter. *Id.* A patent claim usually consists of a preamble, a transition, and a body. The preamble is an introductory phrase that summarizes the invention or its intended uses. 2 CHISUM, *supra* note 8, § 8.06[1][b]. The transition is a phrase that serves to connect the preamble to the body. *Id.* The body is a recitation of the elements that define the product or process. *Id.* For a thorough discussion of the mechanics of drafting patent claims, *see generally* ROBERT C. FABER, LANDIS ON MECHANICS OF PATENT CLAIM DRAFTING (3d ed. 1990).

13. The outer limits of the invention are often referred to as the "metes and bounds" of the invention. *See* ROSENBERG, *supra* note 8, § 19.01[3] (describing the "peripheral" claiming system). The Patent Act of 1870 specified that the claimant must "particularly point out and distinctly claim" the invention; this language inspired the United States to move to a peripheral definition system in which the claim determines the scope of protection. C. Leon Kim, *Transition from Central to Peripheral Definition Patent Claim Interpretation System in Korea*, 77 J. PAT. & TRADEMARK OFF. SOC'Y 401, 403-04 (1995).

14. There are four requirements for patentability: patentable subject matter, utility, novelty, and nonobvious subject matter. Section 101 of the

issued patent<sup>15</sup> describe to the public the outer limits of what the patent protects and allow inventors to identify whether their device<sup>16</sup> infringes the patent.<sup>17</sup>

Some European countries employ, as an alternative to the peripheral claiming system, the "central" claiming system.<sup>18</sup> In central claiming, courts do not hold the patentee to a rigid definition of the invention derived in patent prosecution.<sup>19</sup> Instead, courts must define the scope of patent protection by examining the novelty of the invention described in the patent

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patent code encompasses the utility and subject matter requirements, stating, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101 (1994). Some subject matter, such as mathematical equations and scientific principles, is not considered patentable because it is considered a thing of nature. See 1 CHISUM, *supra* note 8, § 1 (detailing the subject matter limits for patent protection); John A. Burtis, Comment, *Toward a Rational Jurisprudence of Computer-Related Patentability in Light of In re Alappat*, 79 MINN. L. REV. 1129 (1995) (same). Novelty requires that the inventor be the first to invent the device and bars an inventor from waiting more than one year after using or selling an invention before applying for a patent. 35 U.S.C. § 102 (1994). The nonobviousness requirement bars an inventor from patenting a device that "would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *Id.* § 103 (1994). See generally *Graham v. John Deere Co.*, 383 U.S. 1 (1966) (discussing the test and considerations for determining obviousness).

15. Any patent that the PTO allows becomes an issued patent and maintains a presumption of validity during a subsequent trial. See 35 U.S.C. § 151 (1994) (describing the issuance of patents); *id.* § 282 (providing that a patent is presumed valid).

16. As used throughout this article, "device" refers to any machine, product, or process set forth in a patent. Therefore, the term refers to both apparatus and process claims.

17. See *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938) (stating that the inventor must inform the public of the limits of patent protection in claims so that others may know the features that may be used without a license); 1 CHISUM, *supra* note 8, § 8.04 (noting that patent claims must distinctly set forth protected subject matter).

18. Central claiming is also known as "inventive concept claiming." Peripheral claiming gets its name from the theory that the claims are broad and then the courts limit from the periphery inward. John A. Dienner, *Claims of Patents*, 18 J. PAT. & TRADEMARK OFF. SOC'Y 389, 391-92 (1936). In central claiming, an inventor claims the central thought of the invention and then courts extend the invention outwardly to include equivalents. *Id.* For a comparative overview of foreign patent systems see 3 ROSENBERG, *supra* note 8, §§ 19.00-19.04.

19. In some countries with a central claiming system the patent may issue with no claims at all. See 3 ROSENBERG, *supra* note 8, § 19.01[3] (discussing such claiming systems).

during the course of litigation.<sup>20</sup>

The distinctions between claiming systems become important during litigation for patent infringement. In countries with a central claiming system, the court defines the scope of the patent during litigation, essentially constructing the elements of the invention.<sup>21</sup> Peripheral claiming, on the other hand, puts responsibility on the inventor to adequately describe the invention during patent prosecution,<sup>22</sup> rather than defining the invention through the judiciary during litigation.

In the United States, the patent statute defines patent infringement when one "without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor."<sup>23</sup> Courts follow a two-step process in patent infringement analysis.<sup>24</sup> The court first must ascertain the meaning of the language setting forth the patented device in the claims.<sup>25</sup> This process, known as claim interpretation, presents a legal issue for the court.<sup>26</sup> The court next must compare the accused and claimed devices to determine whether the accused device constitutes the same invention as that

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20. See Brief for Amicus Curiae Federal Circuit Bar Association at 7 n.1, *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995) (per curiam) (en banc), cert. granted, 116 S. Ct. 1014 (1996) [hereinafter Amicus Curiae Brief] (describing the use of central claiming in Germany prior to 1980 where courts determined the breadth of patent protection during litigation).

21. *Id.* at 7 n.1; see also 3 ROSENBERG, *supra* note 8, § 19.01[3] (discussing the central claiming system).

22. See *supra* notes 13-14 (describing patent prosecution and requirements for patentability). Although a court may still hold a patent invalid during trial, the patent claims already set forth the elements and scope of the invention and only require interpretation by the court.

23. 35 U.S.C. § 271(a) (1994).

24. *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1578 (Fed. Cir. 1996); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 821 (Fed. Cir. 1992).

25. *Charles Greiner & Co. v. Mari-Med Mfg.*, 962 F.2d 1031, 1034 (Fed. Cir. 1992); *Snellman v. Ricoh Co.*, 862 F.2d 283, 286 (Fed. Cir. 1988).

26. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71 (Fed. Cir. 1995) (en banc), cert. granted, 116 S. Ct. 40 (1995). The Federal Circuit in *Markman* gave three reasons why claim interpretation should be for the court: first, construction of written evidence has long been left to the court to decide in American law; second, competitor's should be able to ascertain to a reasonable degree the scope of the patent rights; and third, the competitors should be assured that a judge, trained in the law, will apply rules of construction in a way to arrive at a consistent scope of the patent. *Id.* at 978-79. The Federal Circuit also discussed the role of the Seventh Amendment in patent cases in *Markman*, holding that a court's construction of patent claims does not deprive parties of the right to a jury trial. *Id.* at 984.

described in the claims.<sup>27</sup>

Courts compare the accused and claimed devices under two standards: literal infringement and infringement under the doctrine of equivalents. Literal infringement occurs when the accused device embodies each and every element of one or more claims in the patent.<sup>28</sup> The patentee will seek to invoke the doctrine of equivalents if the accused device does not literally infringe the claimed invention. A device infringes a claimed invention under the doctrine of equivalents when the accused device is substantially equivalent to the claims of the patent, yet remains outside the literal language of the claims.<sup>29</sup>

## B. THE DOCTRINE OF EQUIVALENTS

### 1. Purpose and Development of the Doctrine

Two competing interests shape the doctrine of equivalents: the patentee's exclusive right to the claimed invention<sup>30</sup> and the public's right to know the limits of the patent's protection.<sup>31</sup> The doctrine offers a means for providing justice<sup>32</sup> to a patentee to

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27. *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1574 (Fed. Cir. 1991); *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 452 (Fed. Cir. 1985).

28. *Jurgens v. McKasy*, 927 F.2d 1552, 1560 (Fed. Cir. 1991), *cert. denied*, 502 U.S. 902 (1991); *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1258 (Fed. Cir. 1989). One way to refer to literal infringement is to say the claims "read on" the accused device.

29. *Environmental Instruments, Inc. v. Sutron Corp.*, 877 F.2d 1561, 1565 (Fed. Cir. 1989); *see also infra* part I.B. (discussing the doctrine of equivalents). Literal infringement or infringement under the doctrine of equivalents is not determined by comparing the accused device to the patented device, but rather by comparing the accused device to the claims of the patented device. *Martin v. Barber*, 755 F.2d 1564, 1567 (Fed. Cir. 1985).

30. *See supra* note 7 (discussing the exclusive right granted to patentees by the Constitution).

31. Judge Nies of the Federal Circuit wrote: "As a matter of due process under the fifth amendment, reasonable notice must be given to the public of what conduct must be avoided. Whether in civil or criminal proceedings, it is unequivocally established that that basic right to notice applies." *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 954 (Fed. Cir. 1987) (en banc) (Nies, J., dissenting), *cert. denied*, 485 U.S. 961 (1988); *see also International Visual Corp. v. Crown Metal Mfg. Co.*, 991 F.2d 768, 774 (Fed. Cir. 1993) (Lourie, J., concurring) (stating that it is important for the public to be able to rely on the claims of a patent to define the "metes and bounds" of the invention).

32. In some situations the law should protect the patentee because "the law is to benefit the inventor's genius and not the scrivener's talents." *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 399 (Ct. Cl. 1967). The doctrine also



ameliorate the harsh requirements of the peripheral claiming system.<sup>33</sup> At the same time, those who practice in the same field deserve notice of the patented invention in order to avoid infringement.<sup>34</sup> Application of the doctrine of equivalents involves a trade-off between justice to the patentee and notice to the public.<sup>35</sup>

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serves a commercial purpose by rewarding the originator of new technology over the infringer who bore neither the cost of creation nor the burden of failure. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1531 (Fed. Cir. 1995) (per curiam) (en banc) (Newman, J., concurring), *cert. granted*, 116 S. Ct. 1014 (1996).

33. See *supra* notes 13-17 and accompanying text (describing the requirements for claims in the peripheral claiming system). The peripheral claiming system, by its nature, values notice to the public over justice to the patentee. The doctrine of equivalents evens this balance by enlarging the protection given to the patentee. One rationale for the doctrine of equivalents follows:

If patents were interpreted only by the literal scope of their claims, however, minor deviations in the structure of almost any invention could be devised to elude the reach of the patent's protection. Thus, experience with patent cases demonstrates that seldom may the question of infringement be determined on the literal words of the claim. In recognition of the fact that a patent would be virtually worthless if it did not protect against devices which incorporate unimportant variations of the patented device . . . .

*Ziegler v. Phillips Petroleum Co.*, 483 F.2d 858, 868 (5th Cir.), *cert. denied*, 414 U.S. 1079 (1973).

The doctrine of equivalents is used in two situations. The most common use is to allow the patentee to cover subject matter that was mistakenly not claimed during prosecution. Martin J. Adelman & Gary L. Francione, *The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673, 715 (1989). The second use is to allow protection for technological innovation that developed after the patent issued that an accused infringer substitutes for a limitation in the claim. *Id.* at 712. The prevailing view today is that new technology can be equivalent to the older technology. ROBERT P. MERGES, *PATENT LAW AND POLICY: CASES AND MATERIALS* 702 (1992). Compare *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950) (stating that equivalency is determined by looking at whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was) with *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1563 (Fed. Cir. 1986) ("It is not required that those skilled in the art knew, at the time the patent application was filed, of the asserted equivalence means of performing the claimed functions; that equivalent is determined as of the time infringement takes place."). Courts may also apply the doctrine of equivalents against the patentee. The "reverse doctrine of equivalents" protects an accused infringer by preventing infringement when the accused device falls within the literal words of the claims, but functions in a substantially different way. *Graver Tank*, 339 U.S. at 608-09.

34. *Amicus Curiae Brief*, *supra* note 20, at 4. Competitors also need to be able to rely on the claim language to determine the scope of protection.

35. *Id.* at 7. Providing better notice for the public imposes injustice on the patentee while awarding protection for the patentee causes improper notice to

In 1853, the Supreme Court first recognized the doctrine of equivalents in *Winans v. Denmead*.<sup>36</sup> In *Winans*, the patentee claimed a cylindrical railroad car, but the accused's railroad car was pyramidal in structure.<sup>37</sup> The Court held that the accused car infringed, stating, "to copy the principle or mode of operation described is an infringement, although such copy should be totally unlike the original in form or proportions."<sup>38</sup>

The Supreme Court shaped the modern structure of the doctrine of equivalents in its 1950 *Graver Tank* decision.<sup>39</sup> In *Graver Tank*, Linde, the patentee, sued Graver Tank for infringing a patent on a welding flux.<sup>40</sup> Graver Tank's flux used manganese, which is not an alkaline earth metal silicate as the patent for Linde's flux specified.<sup>41</sup> The Court held the patent infringed because the manganese in Graver Tank's flux and the alkaline earth metals in Linde's patent had the same function and operated in the same way to achieve the same result.<sup>42</sup> Although the Court stated that the doctrine of equiva-

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the public.

36. 56 U.S. (15 How.) 330 (1853).

37. *Id.* at 331-32.

38. *Id.* at 342. In reaching its conclusion, the Court recognized that the whole substance and structure, mode of operation, and the results were the same for both the accused and claimed devices. *Id.* at 342.

39. *Graver Tank & Mfg. Co., Inc. v. Linde Air Prods. Co.*, 339 U.S. 605 (1950). The *Graver Tank* decision is the most recent Supreme Court discussion of the doctrine of equivalents.

40. *Id.* at 606. A welding flux is a blanket of molten metal compounds used to protect freshly deposited molten metal during the welding process.

41. *Id.* at 610. Linde's patent claimed "essentially a combination of alkaline earth metal silicate and calcium fluoride."

42. *Id.* at 611. The Court in *Graver Tank* stated: "Outright and forthright duplication is a dull and very rare type of infringement. To prohibit no other would place the inventor at the mercy of verbalism and would be subordinating substance to form. . . . The essence of the doctrine [of equivalents] is that one may not practice a fraud on a patent." *Id.* at 607-08. Justice Douglas's dissent pointed out that manganese was used similarly in prior expired patents and that this should have prevented the patentee from claiming it. *Id.* at 618 (Douglas, J., dissenting). The *Graver Tank* majority, however, apparently thought that the prior art did not teach the combination of the flux with the other elements of the claimed invention. MERGES, *supra* note 33, at 665. Justice Black, dissenting in *Graver Tank*, argued that the majority's holding would "make enlargement of patent claims the rule rather than the exception." *Id.* at 616 (Black, J., dissenting). Justice Black wrote:

The Court's ruling today sets the stage for more patent "fraud" and "piracy" against business than could be expected from faithful observance of the congressionally enacted plan to protect business against judicial expansion of precise patent claims. Hereafter a manufacturer cannot rely on what the language of a patent claims. He

lents encompasses "insubstantial" changes<sup>43</sup> between the accused and claimed devices, the test that lower courts drew from *Graver Tank* is the tripartite "function-way-result" test,<sup>44</sup> which states that a device infringes a patent if it performs substantially the same function in substantially the same way to obtain the same result.<sup>45</sup>

## 2. Limitations on the Application of the Doctrine

Although the function-way-result test may seem potentially boundless in application, a number of built-in limitations temper the application of the doctrine of equivalents. One limitation is the nature of the patented invention—an "improvement" patent in a crowded field of prior art is entitled to a narrower range of equivalents<sup>46</sup> than a "pioneering"<sup>47</sup> invention. The inventor who forges ahead in uncharted waters receives broader protection than the patentee who makes slight yet patentable changes over the prior art.<sup>48</sup> Courts reason that the doctrine of equivalents should provide broad protection for the pioneering inventor

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must be able, at the peril of heavy infringement damages, to forecast how far a court relatively unversed in a particular technological field will expand the claim's language after considering the testimony of technical experts in that field. To burden business enterprise on the assumption that men possess such a prescience bodes ill for the kind of competitive economy that is our professed goal.

*Id.* at 617.

43. *Id.* at 610. What constitutes an "insubstantial" change is difficult to define. One Federal Circuit decision defined "insubstantial" as a "minor modification" to the patented device. *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1532 (Fed. Cir. 1987).

44. Very similar tests existed prior to *Graver Tank*. See, e.g., *Machine Co. v. Murphy*, 97 U.S. 120, 125 (1878) (stating that infringement occurs where the "two devices do the same work in substantially the same way, and accomplish substantially the same result").

45. *Graver Tank*, 339 U.S. at 608.

46. See, e.g., *Laitram Corp. v. Cambridge Wire Cloth Co.*, 863 F.2d 855, 861 n.15 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1068 (1989) (stating that pioneer inventions are entitled to a broader range of equivalents than nonpioneering inventions); *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1563 (Fed. Cir. 1986) (stating that "the range of permissible equivalents depends upon the extent and nature of the invention, and may be more generously interpreted for a basic invention than for a less dramatic technological advance").

47. A pioneer patent is a patent covering a wholly novel device, a function never before performed, or one that marks a distinct step forward in the art, as opposed to a mere improvement or perfection of what was done before.

48. The term "prior art" refers to issued patents, printed publications, or known inventions.

because drafting the specification and claims for pioneer patents is difficult due to the new scientific ground broken by the unique invention.<sup>49</sup>

A second constraint on application of the doctrine of equivalents stems from a patentee's inability to expand the protection of a patent through the doctrine to encompass the prior art.<sup>50</sup> This prior art limitation prevents an attempt to broaden claims to encompass pre-existing innovation and further prevents the claiming of what the prior art anticipates or makes obvious.<sup>51</sup> This limitation constitutes a practical reason why courts allow a narrower range of equivalents to improvement patents in a crowded field than for pioneering inventions.

A patentee also may not receive protection through the doctrine of equivalents for subject matter that it conceded to the PTO in obtaining the patent.<sup>52</sup> This provides another restraint

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49. *Moore v. United States*, 211 U.S.P.Q. (BNA) 800, 806 (Ct. Cl. 1981).

50. See *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990) (setting forth an analysis to determine whether the expanded claim covers the prior art); *Senmed, Inc. v. Richard-Allan Medical Indus.*, 888 F.2d 815, 821 (Fed. Cir. 1989) (stating that a "claim cannot be given a range of equivalents so wide as to cause the claim to encompass anything in the prior art"). The *Wilson* court set forth a "hypothetical" claim approach to determine whether the prior art should limit the patentee. The court conceptualized a hypothetical claim broad enough to encompass the accused product. *Wilson*, 904 F.2d at 684. The court then determined whether the PTO would allow the hypothetical claim over the prior art. *Id.* If the PTO would allow the hypothetical claim, the prior art would not limit the patent protection. *Id.* If the PTO would not allow the hypothetical claim, the prior art would prevent the patentee from obtaining protection. *Id.* For an argument against the hypothetical claim approach, see Henrik D. Parker, *The Doctrine of Equivalents Analysis After Wilson Sporting Goods: The Hypothetical Claim Hydra*, 18 AM. INTEL. PROP. L. ASS'N Q.J. 262, 288 (1990) (arguing that presentation to jury of "hypothetical claim" will complicate matters and confuse the jury).

51. See 35 U.S.C. §§ 102-103 (1994) (setting forth that to be patentable, an invention must be novel and must not be obvious); see also *supra* note 14 (discussing the prerequisites for patentability).

52. *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 870 (Fed. Cir. 1985). "[W]hen a patentee, during the prosecution of his application, adds a limitation . . . in response to a rejection based on prior art references . . . in an effort to overcome that rejection, the patentee cannot later successfully argue that an accused device that lacks the . . . limitation infringes the patent." *Dixie USA, Inc. v. Infab Corp.*, 927 F.2d 584 (Fed. Cir. 1991); see also 4 CHISUM, *supra* note 8, § 18.05 (discussing prosecution history estoppel and its scope and effect). Prosecution history estoppel is used only for an infringement analysis under the doctrine of equivalents, and not for a literal infringement inquiry. *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1571 (Fed. Cir. 1983). The prosecution history, however, will be used as legislative history for claim

on the application of the doctrine. The accused infringer may use this constraint, known as prosecution history estoppel,<sup>53</sup> as a defense by holding the patentee to representations made to the PTO.<sup>54</sup> Because patentees make amendments to patent claims for a variety of reasons, courts usually inquire into the reason for these concessions in determining the effect of the prosecution history.<sup>55</sup>

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interpretation. *Graham v. John Deere Co.*, 383 U.S. 1, 33 (1966).

53. The history of a patent application is embodied in a "file wrapper." The file wrapper includes the prosecution history of a patent, containing such information as amendments, statements, and replies made to the PTO to obtain a patent. Prosecution history estoppel is sometimes referred to as file wrapper estoppel, although the Federal Circuit prefers the former term to the latter. *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1485 (Fed. Cir.), *cert. denied*, 469 U.S. 924 (1984).

54. *Carman Ind., Inc. v. Wahl*, 724 F.2d 932, 942 (Fed. Cir. 1983). The estoppel applies to claim amendments to overcome rejections based on prior art and to arguments submitted to obtain the patent. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1362 (Fed. Cir. 1983) (citing *Dwyer v. United States*, 357 F.2d 978, 984 (Ct. Cl. 1966) and *Coleco Indus., Inc. v. ITC*, 573 F.2d 1247, 1257 (C.C.P.A. 1978)).

55. *Loctite Corp.*, 781 F.2d at 871. The *Loctite* court stated:

Amendment of claims is a common practice in prosecution of patent applications. No reason or warrant exists for limiting application of the doctrine of equivalents to those comparatively few claims allowed exactly as originally filed and never amended. Amendments may be of different types and may serve different functions. Depending on the nature and purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero.

*Id.* (quoting *Hughes*, 717 F.2d at 1362). The court stated further that the fact the claims were narrowed "does not always mean that the doctrine of file history estoppel completely prohibits a patentee from recapturing some of what was originally claimed." *Id.* at 871 (quoting *Bayer Aktiengesellschaft v. Duphar Int'l Research*, 738 F.2d 1237, 1243 (Fed. Cir. 1984)); *see also LaBounty Mfg., Inc. v. ITC*, 867 F.2d 1572, 1576 (Fed. Cir. 1989) (*per curiam*) (ruling that an applicant's narrowing of a claim during prosecution does not automatically prohibit the patentee from recapturing some of the surrendered subject matter); Kurt F. James, Note, *Patent Claims and Prosecution History Estoppel in the Federal Circuit*, 53 MO. L. REV. 497, 500 (1988) (arguing that prosecution history estoppel should be narrowly applied because the doctrine does not require the critical element of reliance by the public or accused infringer).

Although the Federal Circuit has abandoned the view that any limitation added during prosecution should bar the patentee from asserting equivalents over the surrendered subject matter, older decisions have strictly limited patentees to limitations during prosecution. *See Nationwide Chem. Corp. v. Wright*, 584 F.2d 714, 718-19 (5th Cir. 1978) (confining the patentee "strictly to the letter of the limited claims granted"); *Ekco Prod. Co. v. Chicago Metallic Mfg. Co.*, 347 F.2d 453, 455 (7th Cir. 1965) (stating that "a patentee that has narrowed his claim after rejection to secure allowance, is held strictly to the letter of the limited claims granted").

### 3. Uncertainty in the Doctrine of Equivalents

Although the purpose and definition of the doctrine of equivalents may appear simple, the application of the doctrine remains marred by uncertainty.<sup>56</sup> With respect to its application, the *Graver Tank* Court remarked that equivalence "is not the prisoner of a formula and is not an absolute to be considered

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56. See, e.g., Adelman & Francione, *supra* note 33, at 683 (stating that the uncertainty generated by the doctrine of equivalents "frustrates and chills the activities" of other inventors who are concerned about an infringement suit based on the doctrine); Rudolph P. Hofmann, Jr., *The Doctrine of Equivalents: Twelve Years of Federal Circuit Precedent Still Leaves Practitioners Wondering*, 20 WM. MITCHELL L. REV. 1033, 1048 (1994) (stating that uncertainty exists in every issue of the doctrine of equivalents); Paul C. Craane, Note, *At the Boundaries of Law and Equity: The Court of Appeals for the Federal Circuit and the Doctrine of Equivalents*, 13 N. ILL. U. L. REV. 105, 106 (1992) (discussing the lack of certainty the Federal Circuit has created for the doctrine of equivalents).

Despite its long recognition, courts have not constructed a precise test for equivalency under the doctrine of equivalents. Comparing devices for similarity in function, way, and result usually does not provide a simple test for a jury, and may leave the jury confused. Courts have provided some guidance to the fact finder by discussing the degree of similarity between the accused and the claimed device that is necessary under the doctrine of equivalents. Even this guidance, however, is not without uncertainty. The *Graver Tank* majority, for example, espoused the "as a whole" approach. Under this approach, the court compares the accused device to the patented invention as a whole, looking for "striking overall similarities." *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1364 (Fed. Cir. 1983). Other recent Federal Circuit cases using the "as a whole" approach include *Texas Instruments, Inc. v. ITC*, 805 F.2d 1558, 1568 (Fed. Cir. 1986) and *Martin v. Barber*, 755 F.2d 1564, 1568 (Fed. Cir. 1985). More recently, the Federal Circuit endorsed an element-by-element approach, which states that each limitation of the claimed device or process must appear in the accused device to establish infringement under the doctrine of equivalents. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935 (Fed. Cir. 1987) (en banc, *cert. denied*, 485 U.S. 961 (1988) (approving the use of an element-by-element approach, stating "the district court correctly relied on an element-by-element comparison to conclude there was no infringement under the doctrine of equivalents"); *Perkin-Elmer Corp. v. Westinghouse Elec. Corp.*, 822 F.2d 1528, 1533 (Fed. Cir. 1987) (using the element-by-element approach); *Lemelson v. United States*, 752 F.2d 1538, 1551 (Fed. Cir. 1985) (stating that "[i]t is . . . well settled that each element of a claim is material and essential, and that in order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device"). The court has diluted this strict "element-by-element" approach by modifying the definition of a limitation to potentially include more than one element of a patent claim. *Corning Glass Works v. Sumitomo Elec. USA, Inc.*, 868 F.2d 1251, 1259 (Fed. Cir. 1989). The Federal Circuit's shift in emphasis toward an element-by-element approach may show an awareness that the primary purpose of the patent claims to determine infringement is eroded by use of the doctrine of equivalents. Adelman & Francione, *supra* note 33, at 677.

in a vacuum.<sup>57</sup> Although the function-way-result test remains the dominant test for equivalency,<sup>58</sup> the Federal Circuit has stated that the function-way-result test does not serve as the only means for determining equivalence, but rather merely one acceptable method.<sup>59</sup>

Uncertainty remains as to whether a patentee should meet an "equitable threshold" before a court applies the doctrine of equivalents.<sup>60</sup> Although intent is not an element of infringement,<sup>61</sup> some scholars argue that the patentee must present evidence that the accused infringer acted in bad faith before the court should apply the doctrine.<sup>62</sup> The *Graver Tank* opinion

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57. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950). The *Graver Tank* Court did provide additional considerations that may help in equivalency determinations, stating, "[p]roof [of equivalency] can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by the disclosure of the prior art." *Id.*

58. See Cary W. Brooks, *Equitable Triggers for Invoking the Doctrine of Equivalents*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 220, 221 (1994) (stating that courts have recognized the function-way-result test as the sole equitable basis for invoking the doctrine of equivalents).

59. *Malta v. Schulmerich Carillons, Inc.*, 952 F.2d 1320, 1326 (Fed. Cir. 1991), *reh'g en banc denied*, 21 U.S.P.Q.2d (BNA) 2039 (Fed. Cir.), *cert. denied*, 504 U.S. 974 (1992). The *Malta* court stated, "while comparison of function-way/result is an acceptable way of showing that structure in an accused device is the 'substantial equivalent' of a claim limitation, it is not the only way to do so." *Id.*

60. See generally Cary W. Brooks, *More on Equivalents*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 620 (1994) (recognizing that many suggest that proof of copying, or intent to copy, is a necessary element to invoke the doctrine of equivalents); Andrei Iancu, *A Two-Track Approach to the Doctrine of Equivalents in Patent Law: Responding to Hilton Davis*, 35 JURIMETRICS J. 325, 339-45 (1995) (proposing a two-track approach for the doctrine of equivalents that takes copying and intent into consideration); see also Brooks, *supra* note 58, at 225 (stating that there are times when the function-way-result test may result in equivalency when it is not equitable to hold the claimed and accused devices as equivalents); Clarence J. Fleming, *The Doctrine of Equivalents—Should it Be Available in the Absence of Copying?*, 76 J. PAT. & TRADEMARK OFF. SOC'Y 233, 234 (1994) (arguing that copying should be a prerequisite to application of the doctrine of equivalents, and that many cases suggest the necessity for copying).

61. *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 478 (1974). The patent statute does not discuss intent of the accused infringer as a prerequisite for patent infringement. The Constitution provides an exclusive right to an invention to the patentee and does not suggest that the intent of the accused infringer affects this exclusive right. U.S. CONST. art. I, § 8, cl. 8; see also *supra* note 7 (quoting the Constitution and the patent statute's grant of an exclusive right).

62. See *supra* note 60 (citing arguments for the need for bad faith to invoke the doctrine of equivalents).

itself raises questions as to the role of intent-related evidence such as acts of copying, "designing around,"<sup>63</sup> and independent research in equivalence analysis. The *Graver Tank* Court twice noted that the defendant presented no evidence to show that it developed the accused process through independent research or experiments.<sup>64</sup> The *Graver Tank* Court also noted that the purpose of the doctrine of equivalents is to prevent the fraud on a patent and to prevent the copyist from making insubstantial changes to avoid the law.<sup>65</sup> These remarks of the *Graver Tank* Court fuel scholars' arguments that the patentee should meet an equitable threshold before the doctrine applies.

Some commentators fear that instead of using the doctrine sparingly to remedy injustice, the doctrine has become an automatic second prong in infringement cases.<sup>66</sup> Although courts typically allow parties to present evidence for the doctrine

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63. "Designing around" involves studying a patent and designing a new device to avoid the coverage of the patent's claims. Designing around is a positive result of our patent system. *Yarway Corp. v. Eur-Control USA, Inc.*, 775 F.2d 268, 277 (Fed. Cir. 1985). Designing around is not discouraged because it brings a "steady flow of innovations to the marketplace." *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed. Cir. 1985). Designing around also can create more healthy competition in the economy.

64. "[T]he record contains no evidence of any kind to show that Lincolnweld was developed as the result of independent research or experiments." *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 611 (1950). The Court went on to note that "[w]ithout some explanation or indication that Lincolnweld was developed by independent research, the trial court could properly infer that the accused flux is the result of imitation rather than experimentation or invention." *Id.* at 612.

65. *Id.* at 608. The *Graver Tank* Court stated that a copying limitation "would leave room for—indeed encourage—the unscrupulous copyist to make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law." *Id.* at 607.

66. These scholars believe that a liberal use of the doctrine of equivalents is harmful to the public. See Jean M. Barkley, *The Doctrine of Equivalents Analysis After Wilson Sporting Goods*, 35 ARIZ. L. REV. 765, 783 (1993) (suggesting that courts should restrict use of the doctrine of equivalents to prevent it from becoming an automatic second prong to every infringement case); Fleming, *supra* note 60, at 234 (stating that the doctrine of equivalents is "a second bite at the apple for the patent owner in attempting to prove infringement."); Iancu, *supra* note 60, at 334 (1995) (noting that infringement by equivalents has become an "automatic second prong to all infringement suits"); see also *International Visual Corp. v. Crown Metal Mfg. Co.*, 991 F.2d 768, 774 (Fed. Cir. 1993) (Lourie, J., concurring) ("[T]he doctrine has its limits, and I believe that a court must ensure that it achieves its intended purpose and does not simply become an automatic means for expanding the scope of a claim beyond that granted by examination.").



of equivalents, recent Federal Circuit cases suggest an equivalence analysis is not an automatic second prong after a literal infringement analysis in every patent infringement case.<sup>67</sup> Many scholars raise the concern that patentees improperly use the doctrine to broaden the claims beyond the words that serve adequate notice to the public.<sup>68</sup> Because the doctrine is an "equitable" remedy, others argue that patentees should liberally apply the doctrine to remedy injustice.<sup>69</sup> Controversy remains as to the necessity of an equitable trigger to invoke the doctrine of equivalents,<sup>70</sup> and as to whether an analysis under the

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67. The court in *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534 (Fed. Cir. 1991) stated:

Application of the doctrine of equivalents is the exception, however, not the rule, for if the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then the claims will cease to serve their intended purpose.

*Id.* at 1538; see also *Charles Greiner & Co., Inc. v. Mari-Med Mfg., Inc.*, 962 F.2d 1031, 1036 (Fed. Cir. 1992) (quoting the language from *London*, 946 F.2d at 1538, indicating that application of the doctrine is the exception and not the rule).

68. See *supra* notes 30-35, 66 and accompanying text (describing the trade-off between notice and justice and citing authors who believe that courts should restrict use of the doctrine of equivalents); see also *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 616 (1950) (Black, J., dissenting) (stating that it is unjust to the public to construe the meaning of claims differently than the plain meaning of the words and that the approach of the *Graver Tank* majority will make enlargement of patent claims the "rule" rather than the "exception").

69. See *Brooks*, *supra* note 58, at 228 (1994) (stating that with few exceptions, the function-way-result test suffices as a reliable method for determining equivalency without the need for equitable triggers); Sean T. Moorhead, Note, *The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement or the Second Prong of Patent Infringement Charges?*, 53 OHIO ST. L.J. 1421, 1448 (1992) (arguing that the doctrine of equivalents should remain the second prong of a patent infringement suit). Moorhead suggests that the real problem is the doctrine becoming the only prong in an infringement suit, because the inherent fuzziness of the doctrine will result in litigators having no bright lines to guide them in making decisions, and will foster an attitude of "when in doubt, bring suit." *Id.* at 1449. At the same time, Moorhead argues that the doctrine prevents the copying of patents and allows for the proper protection of patent rights, so that the doctrine should be available in every infringement suit. *Id.*

70. Commenting on *Graver Tank*, Judge Lourie of the Federal Circuit wrote:

Thus, the Court took account of the fact that there may be instances in which the function-way-result tests may be satisfied, but the facts may not justify the application of the doctrine of equivalents. This might occur if independent research resulted in an invention or product

doctrine should be an automatic part of an infringement case.

Supreme Court precedent remains unclear regarding whether a finding of infringement under the doctrine of equivalents is a factual question for the jury or for the judge.<sup>71</sup> The *Graver Tank* Court explicitly stated that “[a] finding of equivalence is a determination of fact.”<sup>72</sup> Because it is an equitable remedy, many scholars consider this determination to be a factual question for the judge and not a question for the jury.<sup>73</sup> Recently, however, the Federal Circuit has allowed infringement under the doctrine of equivalents to be a factual inquiry for the jury.<sup>74</sup> The controversy over whether a judge or jury should be

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significantly different from what is claimed, albeit one that might perform substantially the same function in the same way to obtain the same result.

*International Visual Corp. v. Crown Metal Mfg. Co., Inc.*, 991 F.2d 768, 774 (Fed. Cir. 1993) (Lourie, J., concurring).

One recent federal district court decision noted that:

[T]here is some evidence in recent decisional law that the Federal Circuit is moving toward a new conception of the doctrine of equivalents, requiring not only a showing of equivalence under the tri-partite function/way/result test articulated in *Graver Tank* . . . but also a showing of inequitable conduct on the part of the alleged infringer.

*Alpex Computer Corp. v. Nintendo Co. Ltd.*, 34 U.S.P.Q.2d (BNA) 1167, 1180 (S.D.N.Y. 1994).

71. The *Graver Tank* opinion did not state whether the factual question of equivalency was a question for the judge or for the jury. The problem stems from the Seventh Amendment and the equitable nature of the doctrine of equivalents, with many considering the patentee's rights to be those that a court of equity would have determined. See Stanley L. Amberg, *Equivalents and Claim Construction: Critical Issues En Banc in the Federal Circuit*, in 1 PATENT LITIGATION 713, 720-46 (PLI Litig. & Admin. Practice Course Handbook Series No. G-396, 1994) (concluding that there is a Seventh Amendment right to trial by jury of all disputed factual questions necessary for an ultimate determination of equivalency); Richard E. Backus, *En Banc on Claim Construction and Equivalents*, in 1 PATENT LITIGATION 775, 793-96 (PLI Litig. & Admin. Practice Course Handbook Series No. G-396, 1994) (presenting the arguments in favor of the court deciding equivalency and for the right to a trial by jury to determine equivalency).

72. *Graver Tank*, 339 U.S. at 609.

73. See *supra* note 71 (discussing the equitable nature of the doctrine of equivalents).

74. See, e.g., *Malta v. Schulmerich Carillons, Inc.*, 952 F.2d 1320, 1345 (Fed. Cir. 1991), *reh'g en banc denied*, 21 U.S.P.Q.2d (BNA) 2039 (Fed. Cir. 1992), *cert. denied*, 112 S. Ct. 2942 (1993) (stating that the “jury has historically been charged with the factual inquiry of equivalency”); *Lear Siegler, Inc. v. Sealy Mattress Co.*, 873 F.2d 1422, 1430 (Fed. Cir. 1989) (overturning a jury finding of infringement and requiring that the party asserting infringement must present evidence and argument concerning the doctrine and each of its elements in order for the case to reach the jury).

the fact finder for equivalence analysis parallels the larger concern about the role of juries in many aspects of patent trials.<sup>75</sup> Many commentators feel that juries are dumbfounded by the plethora of technical evidence and that they award damage claims on a "gut-feeling."<sup>76</sup>

## II. THE HILTON DAVIS DECISION

Hilton Davis owned a patent that claimed a purification process for dyes using a set pore diameter for a filter, a pH between 6 and 9, and a pressure between 200 and 400 p.s.i.g.<sup>77</sup> Hilton Davis learned that Warner-Jenkinson used a similar process and sued Warner-Jenkinson in 1991.<sup>78</sup> Warner-Jenkinson's process used a pH of 5 and a pressure of 200 to 500

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75. See generally *Abolition of Jury Trials in Patent Cases*, 34 IDEA 77 (1994) [hereinafter *Abolition*] (discussing the positive and negative aspects of allowing juries to try patent cases); V. Bryan Medlock, Jr. & Garland P. Andrews, *Jury Trials in Patent Cases*, in 2 PATENT LITIGATION 775, 793-96 (PLI Litig. & Admin. Practice Course Handbook Series No. 321, 1991) (discussing the right to a trial by jury and stating that only some issues are properly triable by jury in patent cases).

76. See generally *Abolition*, *supra* note 75 (discussing the positive and negative aspects of allowing juries to try patent cases).

77. The relevant portion of claim 1 of Hilton Davis's 4,560,746 patent for an ultrafiltration process reads, "subjecting an aqueous solution . . . 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." *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1515 (Fed. Cir. 1995) (per curiam) (en banc), *cert. granted*, 116 S. Ct. 1014 (1996). Claim 1 was the only independent claim in issue. *Id.* A dependent claim specifies the product or process of another claim and then adds further limitations. An independent claim is a claim that does not rely on or claim the elements in another claim of the patent.

78. Hilton Davis and Warner-Jenkinson compete in the manufacturing of dyes. *Id.* at 1515. Both companies worked on a process to remove impurities from dyes so that the dyes conform to stringent governmental requirements for purity for food or drugs. *Id.* Warner-Jenkinson tested its purification process in 1982. *Id.* at 1516. The test was not successful, so Warner-Jenkinson ceased work on the process until 1986. *Id.* The Warner-Jenkinson test was not successful because it did not produce a sufficiently pure dye. *Id.* One week after Warner-Jenkinson's test in 1982, Hilton Davis hired a company to test its purification process. *Id.* Although the first test did not succeed, a second test in 1983 successfully purified a dye. *Id.* at 1515. Hilton Davis filed a patent application for the purifying process and the PTO issued the patent in 1985 for that process. *Id.* Warner-Jenkinson developed its accused process in 1986. *Id.* at 1516. Hilton Davis learned of Warner-Jenkinson's use of a purification process similar to its patented process in 1989 and sued Warner-Jenkinson in 1991. *Id.*

p.s.i.g.<sup>79</sup> The Warner-Jenkinson process thus eluded the literal language of the Hilton Davis patent, setting up a confrontation over application of the doctrine of equivalents. At trial, the jury found that Warner-Jenkinson infringed Hilton Davis's patent under the doctrine of equivalents, and Warner-Jenkinson appealed.<sup>80</sup>

The Federal Circuit decided to hear the *Hilton Davis* case en banc<sup>81</sup> to address three issues. First, the court questioned whether application of the doctrine of equivalents involves anything in addition to the traditional function-way-result test.<sup>82</sup> The court next considered whether infringement under the doctrine is a factual question for the jury or an equitable remedy for the court.<sup>83</sup> Finally, the court considered whether the trial court has the discretion to decide whether to apply the doctrine of equivalents in a patent infringement suit.<sup>84</sup>

In a per curiam decision joined by only six judges of twelve,<sup>85</sup> the Federal Circuit chose to "restate—not to re-

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79. *Id.* at 1516.

80. There was no literal infringement because the Warner-Jenkinson process purified the dye at a different pH and pressure than the Hilton Davis patent specified. Warner-Jenkinson appealed the jury findings, *id.*, arguing that the doctrine of equivalents is an equitable remedy available only upon a showing of suitable equities and that the issue is a legal question for the court and not for the jury. *Id.* at 1522. Consequently, Warner-Jenkinson argued, no equitable basis for application of the doctrine of equivalents existed because Hilton Davis presented no evidence of copying and Warner-Jenkinson developed its process independently. *Id.* at 1523.

81. After a three judge panel heard oral argument on the case, the Federal Circuit decided to rehear the appeal en banc to consider important issues involving the doctrine of equivalents. *Id.* at 1516.

82. *Id.* at 1516.

83. *Id.*

84. *Id.*

85. Along with the per curiam decision, one concurring opinion and three dissenting opinions were filed. Judge Newman filed a concurring opinion stating that she believed the law in the per curiam decision was in accordance with Supreme Court precedent, but questioning whether the doctrine of equivalents remains the best way to achieve the result of adequate patent protection. *Hilton Davis*, 62 F.3d at 1529 (Newman, J., concurring). Judge Plager filed a dissenting opinion arguing that it is against the public interest to allow both literal infringement and infringement under the doctrine of equivalents to go to the jury in patent trials. *Hilton Davis*, 62 F.3d at 1542 (Plager, J., dissenting). Judge Plager wrote that "[t]he authority to exercise the unique remedy which is the doctrine of equivalents lies exclusively in courts of equity." *Id.* at 1543. Judge Lourie filed a dissenting opinion contending that the substantiality of the differences is only one of the factors that a court should consider in a doctrine of equivalents analysis, rather than the overall standard

wise—the test for infringement under the doctrine of equivalents.<sup>86</sup> Although it acknowledged that courts frequently rely on the function-way-result test,<sup>87</sup> the Federal Circuit cited *Graver Tank* in concluding that “insubstantial” differences form the necessary predicate for infringement under the doctrine of equivalents.<sup>88</sup> The court noted that the function-way-result test may suffice to show the substantiality of the differences, but it is not “the test” for infringement under the doctrine.<sup>89</sup> The court noted that the fact finder may consider other evidence to determine the substantiality of the differences, such as whether a person of ordinary skill in the art of the invention would know of the substantiality of the differences between the claimed and accused devices.<sup>90</sup>

The Federal Circuit next determined the role of intent-related evidence in equivalence analysis. The *Hilton Davis* court held that evidence that an accused infringer copied a patented device is relevant, not because the subjective mental state of the

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under the doctrine, and that evidence of copying and independent development, the pioneering status of the invention, and the knowledge of those skilled in the art should be more important than the majority opinion considered them. *Hilton Davis*, 62 F.3d at 1547 (Lourie, J., dissenting). Judge Lourie also believed that the court improperly limited intent-related evidence, and that intent should be considered in the application of the doctrine of equivalents. *Id.* at 1548. Judge Nies, in dissent, argued that Supreme Court precedent presents a series of questions of law, fact, and mixed law and fact in a doctrine of equivalents analysis. *Hilton Davis*, 62 F.3d at 1150 (Nies, J., dissenting). Judge Nies concluded that, as a matter of law, no infringement under the doctrine of equivalents could be found in *Hilton Davis*. *Id.*

86. *Id.* at 1516.

87. *Id.* at 1517.

88. The Federal Circuit quoted the following *Graver Tank* language: “The question which thus emerges is . . . whether under the circumstances the change was so insubstantial that the trial court’s invocation of the doctrine of equivalents was justified.” *Id.* at 1517 (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 610 (1950)). “With this case, this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard.” *Hilton Davis*, 62 F.3d at 1518.

89. *Hilton Davis*, 62 F.3d at 1518. The court noted that other evidence may be relevant and as technology becomes more sophisticated the function-way-result test may not always suffice to show the substantiality of the difference. *Id.*

90. *Id.* at 1518-19. The Federal Circuit noted the Supreme Court’s language: “An important factor . . . is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was.” *Id.* at 1519 (citing *Graver Tank*, 339 U.S. at 609).

accused infringer is important, but because such evidence suggests that the differences between the accused and patented devices are insubstantial.<sup>91</sup> The court held that evidence of copying weighs in favor of the patent owner.<sup>92</sup> The court reasoned that evidence of designing around<sup>93</sup> a patented device to attain a new device is relevant because it shows that the alleged infringer may have made substantial changes to the device to avoid infringement.<sup>94</sup> Because designing around a patent is not discouraged, the court concluded that this evidence weighs in favor of the alleged infringer.<sup>95</sup>

The court reasoned that because intent is not an element of infringement,<sup>96</sup> evidence of copying and designing around is not relevant to show the bad or good faith of the accused infringer, but only to show the substantiality of the differences between the accused and claimed devices.<sup>97</sup> Evidence of independent development, the court decided, is not relevant to infringement under the doctrine.<sup>98</sup> Because evidence of independent development, unlike copying or designing around, shows that the accused infringer had no knowledge of the patent, the court concluded that this evidence "provides no information about the substantiality of the differences."<sup>99</sup>

The Federal Circuit acknowledged references to the doctrine of equivalents as equitable, but stated that "allusions to equity invoke equity in its broadest sense—equity as general fairness."<sup>100</sup> Because the court believed equity does not refer to the equitable powers of a court to decide factual issues, the

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91. *Id.*

92. *Id.*

93. *See supra* note 63 (describing "designing around" and why it is not discouraged).

94. *Hilton Davis*, 62 F.3d at 1519.

95. *Id.* at 1520.

96. *Id.* at 1519. "By considering evidence of copying, however, the Supreme Court did not imply that infringement under the doctrine requires bad faith or some other subjective component. Intent is not an element of infringement." *Id.* Proof of bad faith by an infringer, which may include proof of copying, may entitle the patent owner to attorneys fees or enhanced damages for willful infringement. *See* 35 U.S.C. §§ 284-285 (1994).

97. *Hilton Davis*, 62 F.3d at 1519-20.

98. *Id.* at 1520. The *Hilton Davis* court did note, however, that evidence of independent development is relevant to refute a contention that the infringer intentionally copied the invention, which may entitle the patent owner to enhanced damages for willful infringement. *Id.*

99. *Id.*

100. *Id.* at 1521.

opinion explicitly stated that infringement under the doctrine of equivalents is a question of fact for the jury.<sup>101</sup> Finally, the Federal Circuit held that the trial judge does not have discretion to choose whether to apply the doctrine of equivalents because infringement is a factual question for the jury.<sup>102</sup>

The Federal Circuit next turned to the application of the law to the facts of the case. Hilton Davis and Warner-Jenkinson both offered evidence under the function-way-result test. In light of the evidence offered, and because the function-way-result test does provide one way to demonstrate insubstantial differences, the Federal Circuit affirmed the holding of the trial court of infringement under the doctrine of equivalents.<sup>103</sup> In finding that Hilton Davis surrendered only pHs above 9 in amending its claim during prosecution to specify a pH range from 6 to 9, the court noted that it was only necessary to surrender pHs above 9 to overcome prior art.<sup>104</sup> Prosecution history estoppel, therefore, did not bar Hilton Davis from asserting its patent against Warner-Jenkinson, whose process used a pH of 5.<sup>105</sup> In dissent, Judge Nies argued that Hilton Davis intentionally specified the pH range to overcome prior art.<sup>106</sup> In support of her argument, Judge Nies noted that an inventor testified that the Hilton Davis process foamed undesirably if the pH dropped below 6.<sup>107</sup>

### III. IMPLICATIONS OF THE FEDERAL CIRCUIT'S DECISION

The wide scope of the issues in *Hilton Davis* presented the Federal Circuit with an opportunity to restructure and simplify doctrine of equivalents analysis to make it more predictable,

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101. *Id.* at 1520-21. The court emphasized the Supreme Court's language that application of the doctrine of equivalents is a question of fact. *Id.* (citing *Winans v. Denmead*, 56 U.S. (15 How.) 330, 338 (1853) and *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609-10 (1950)).

102. *Hilton Davis*, 62 F.3d at 1522.

103. *Id.* at 1525.

104. *Id.* The court stated that Hilton Davis amended the claim to specify a pH from 6.0 to 9.0 to avoid the disclosure in another patent of an ultrafiltration process operating at a pH higher than 9.0. *Id.* The court therefore concluded that Hilton Davis was not barred from asserting equivalency to processes operating at a pH below 6.0. *Id.*

105. *Id.* at 1525.

106. *Id.* at 1582 (Nies, J., dissenting). Judge Nies argued that prosecution history estoppel barred application of the doctrine of equivalents. *Id.*

107. *Id.*

while still providing the necessary protection for patentees. Although the court did acknowledge that a test beyond the function-way-result test will allow the doctrine of equivalents to adapt to new technology, the court failed to structure a coherent approach for intent-related evidence and to provide appropriate limits to the successful inducement of the doctrine. Additionally, the precedential value of the decision is questionable because a majority of the court did not join any one opinion.<sup>108</sup>

#### A. A DIVIDED FEDERAL CIRCUIT CREATES NEW PROBLEMS AFTER SOLVING THE OLD

##### 1. The Federal Circuit Realizes the Need for a Broad Infringement Test

Realizing that developing a simple test for the doctrine of equivalents is impossible, the *Hilton Davis* court correctly specified that the standard for infringement under the doctrine rests on the substantiality of the differences between the claimed and accused devices.<sup>109</sup> The court noted that the function-way-result test often suffices in this inquiry, but that as technology becomes more sophisticated, the function-way-result test may not always suffice to show the substantiality of the differences.<sup>110</sup> More than a function-way-result test is essential to an equivalence analysis, and the failure to consider other evidence could lead to improper results.<sup>111</sup> This is particularly true in the chemical field, where compound structures differ substantially, but perform the same function, provide the same result, and

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108. Assuming that a per curiam opinion will receive due authority, the opinion still could lack precedential authority. Of the twelve judges that heard the case, six joined the per curiam opinion. Five justices dissented in the case, so the precedential authority rests in the sole concurring opinion of Judge Newman. Judge Newman's opinion suggests that further research and input from the scientific community may provide a better solution to the doctrine of equivalents. *Hilton Davis*, 62 F.3d at 1529 (Newman, J., concurring). The degree of common support in Judge Newman's concurrence for the propositions of the per curiam opinion is vague, because Judge Newman merely joined the holding of the per curiam opinion and stressed her agreement that *Graver Tank* controls the law of the doctrine of equivalents. *Id.*

109. *Id.* at 1518.

110. *Id.*

111. See *International Visual Corp. v. Crown Metal Mfg.*, 991 F.2d 768, 773-75 (Lourie, J., concurring) (discussing concerns that the function-way-result test examines only what a device does, not what it is, and that courts should consider other factors in addition to the function-way-result test).



operate in virtually the same way.<sup>112</sup> The Federal Circuit thus properly held that the function-way-result test is not "the test" for equivalency, and that other inquiries may help.

At a time when many scholars assert that trial courts should limit application of the doctrine of equivalents,<sup>113</sup> the *Hilton Davis* decision suggests that courts will allow application of the doctrine in virtually every infringement case.<sup>114</sup> Recent Federal Circuit cases, however, have expressed concern over the doctrine of equivalents becoming an automatic second prong in every patent infringement case.<sup>115</sup> The proper emphasis should rest on restraining the fact finder under the doctrine and not on limiting application of it. In spite of the predictability problems presented by the doctrine of equivalents becoming an automatic second prong in infringement analysis,<sup>116</sup> courts should allow the patent holder to present evidence for the doctrine in every case.

Because the patent statute does not specify intent as an element of infringement,<sup>117</sup> infringement should be a strict liability offense. Many commentators, however, argue that courts should employ the doctrine of equivalents only if they find an equitable trigger, such as evidence of copying.<sup>118</sup> Whether or not the accused infringer is aware of the patent, infringement should remain a technical inquiry because the exclusive right to practice an invention should not depend on another's state of mind.<sup>119</sup> Under such an analysis, any device falling under the scope of the patent claims should constitute an infringement, regardless of the intent of the alleged infringer.

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112. *Genentech, Inc. v. Wellcome Found., Ltd.*, 29 F.3d 1555, 1570 (Fed. Cir. 1994) (Lourie, J., concurring).

113. *See supra* note 66 (citing those who believe that application of the doctrine of equivalents should be limited).

114. *See supra* text accompanying note 102 (stating that the judge does not have discretion in choosing whether to apply the doctrine of equivalents).

115. *See supra* note 67 (discussing concern about the doctrine of equivalents becoming an automatic second prong in infringement cases).

116. *See supra* note 31 and accompanying text (discussing the problems the public may have in determining the boundaries of patent protection).

117. *See supra* note 61 and accompanying text (asserting that intent is not an element of infringement).

118. *See supra* note 60 and accompanying text (citing articles that discuss the need for evidence of copying to trigger the doctrine of equivalents).

119. *See supra* note 61 (implying that infringement is a strict liability offense).

## 2. The Federal Circuit Fails to Limit Equivalence Analysis and Confuses the Use of Intent-Related Evidence

The *Hilton Davis* court failed to provide adequate limits to the application of the doctrine of equivalents and confused the use of evidence relating to the intent of the accused infringer. In addition to the automatic application of the doctrine and a loosely defined test for infringement, the Federal Circuit did not rigidly apply prosecution history estoppel.<sup>120</sup> The combination of these factors leads to an overly broad infringement test that does not appropriately limit successful inducement of the doctrine.

The current approach of the Federal Circuit remains flawed because it could result in frequent broadening of claims beyond the literal claim language. This approach seems close to a “central claiming” system under the guise of a “peripheral system.”<sup>121</sup> The purpose of the claims to provide adequate notice to the public is defeated if the judiciary frequently uses an expansive doctrine of equivalents analysis to broaden the protected subject matter beyond the literal claim language.<sup>122</sup> The Federal Circuit’s broad infringement test also defeats the PTO’s purpose in selectively reviewing and issuing patents. Under an expansive doctrine of equivalents analysis, the PTO scrutinizes the patent prior to issuance, and the courts “broaden” the claims during litigation. The Federal Circuit’s current approach borders on the philosophy of “central claiming,” and the doctrine needs limits to prevent frequent rewriting of patent claims.

The Federal Circuit also failed to provide a coherent approach to intent-related evidence, such as evidence of copying,

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120. See *supra* notes 104-107 and accompanying text (discussing the prosecution history estoppel issue in *Hilton Davis*).

121. See *supra* notes 13-22 and accompanying text (describing central and peripheral claiming systems).

122. See *supra* notes 30-35 and accompanying text (discussing the tension between notice to the public and justice for the patentee). If the doctrine of equivalents is liberally applied in every case to expand the words of a patent beyond the literal language in the claims, the public will never know with certainty whether an improvement in existing patented technology will infringe the patented device. See *supra* note 42 (discussing Justice Black’s dissent in *Graver Tank*).

designing around, and independent development.<sup>123</sup> Evidence of copying, designing around, and independent development relates to the intent of the accused infringer. The court, however, stated that intent is not an element of infringement<sup>124</sup> and held that intent-related evidence is relevant only to illustrate the objective differences between the accused and claimed devices. Admission of intent-related evidence allows patentees to argue bad faith of the accused in every infringement case, which could increase the successful inducement of the doctrine by confusing the fact finder with intent-related evidence that is irrelevant to the objective technical aspects of the case.<sup>125</sup>

In addition to the expansive test endorsed by *Hilton Davis*, the Federal Circuit erred in failing to rigidly apply built-in limitations of the doctrine when applying the law to the facts of the case. Specifically, the Federal Circuit allowed *Hilton Davis* to recover matter arguably surrendered during prosecution of the patent through the doctrine of equivalents.<sup>126</sup> Such a double-edged sword of liberalism, a broad infringement test and loose application of the law, favors the patentee and leaves the accused infringer virtually defenseless in a close infringement case.

## B. AN EQUITABLE PROPOSAL FOR THE DOCTRINE OF EQUIVALENTS

Commentators have suggested several alternative approaches for the doctrine of equivalents, ranging from complete abolition of the doctrine<sup>127</sup> to use of the doctrine only when evidence of

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123. See *supra* notes 91-99 and accompanying text (discussing the Federal Circuit's approach to intent-related evidence).

124. See *supra* note 96 (quoting the *Hilton Davis* decision).

125. See *supra* notes 75-76 and accompanying text (noting the problems juries experience in patent cases).

126. See *supra* notes 104-107 and accompanying text (discussing the prosecution history estoppel issue in *Hilton Davis*).

127. Adelman and Francione propose elimination of the doctrine of equivalents in most cases as a viable option when looking at the primary uses of the doctrine: to recover unclaimed ground that was mistakenly excluded from the patent and to cover new technical innovations that were not known at the time the patent issued. Adelman & Francione, *supra* note 33, at 711-12. The reissue process already is in place to recover mistakes in patent claiming. 35 U.S.C. § 251 (1994). After a patent issues, a patentee who thinks that its claims are either too broad or too narrow can seek a reissue of the patent in which the subject matter is amended, as long as no new matter is introduced

copying exists.<sup>128</sup> At a time when many commentators are calling for abolition of the doctrine, the Federal Circuit should provide adequate limits to successful inducement of the doctrine. In forging a revised test for the doctrine of equivalents, the two competing interests of protecting the patentee's exclusive right to the invention and providing adequate notice to the public remain preeminently important.<sup>129</sup>

A more equitable approach to the doctrine of equivalents would use the general test stated in *Hilton Davis*, but would instruct jurors about the policy situations when use of the doctrine is appropriate and would rigidly apply prosecution history estoppel to limit the scope of the invention. This approach would exclude any evidence relating to copying, independent development, or designing around as irrelevant to the technical merits of the inquiry and also as prejudicial toward the accused infringer. This approach admittedly lacks the predictability of using solely a literal infringement analysis, but it would balance the need of providing notice to the public of what infringes with achieving justice for the patentee.

#### 1. Exclude All Evidence Relating to Intent of the Accused Infringer

The right to exclude that a patent grants to a patentee should not depend upon the infringer's state of mind,<sup>130</sup> and although intent-related evidence may provide an equitable element to the doctrine, it only confuses the issues by focusing on the intent of the accused rather than the technical considerations of the case. The Federal Circuit unnecessarily complicated

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in the reissue. *Id.* Some courts argue that new technical innovations should not be covered by older patents if the innovations do not fall under the literal language of the claims. See *Gould v. Rees*, 82 U.S. (15 Wall.) 187, 194 (1872) (stating that an accused does not infringe if she substitutes a new element not known at the date of the patentee's invention). But see *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1362 (Fed. Cir. 1983) (stressing that the inventor is not required to predict all future developments). Adelman and Francione assert that the law should accommodate public interest in alerting competitors to the bounds of patent protection as long as doing so does not create an injustice. Adelman & Francione, *supra* note 33, at 728-29.

128. This approach would seldom allow recovery, absent "smoking gun" evidence of copying, because it is difficult to prove slavish copying.

129. See *supra* notes 30-35 and accompanying text (discussing the need for balance between notice to the public and justice for the patentee).

130. See *supra* note 61 and accompanying text (indicating that infringement is a strict liability offense).

equivalence analysis by holding evidence of copying and designing around relevant only to illustrate the substantiality of the differences between the accused and claimed devices.

Evidence of copying and designing around establishes the subjective motivation of the accused infringer. This evidence, however, does not show the substantiality of the differences between the claimed and accused devices as the *Hilton Davis* per curiam opinion suggests.<sup>131</sup> Rather, evidence of designing around indicates the intent to develop a device that is substantially different from the claimed device. Similarly, evidence of copying indicates intent to make slight changes to avoid the language of the claims. Evidence of copying and designing around, therefore, logically illustrates the accused infringer's state of mind.<sup>132</sup>

The difference between copying and designing around is merely a matter of degree.<sup>133</sup> Until recently, courts invoked the doctrine of equivalents only if there was no literal infringe-

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131. See *supra* notes 91-99 and accompanying text (discussing intent-related evidence in *Hilton Davis*).

132. Evidence of independent development, like evidence of designing around, demonstrates good faith on behalf of the accused infringer. See *supra* note 63 (discussing the positive effects of designing-around). Although the *Graver Tank* decision is silent as to the role of intent in the doctrine of equivalents, it does suggest that evidence of independent research would have alleviated the accused of liability. See *supra* note 64 and accompanying text (quoting *Graver Tank's* references to independent development). The Federal Circuit, however, has reduced evidence of independent research to a secondary defense only to rebut evidence of copying. See *supra* note 98 (discussing the *Hilton Davis* court's view that independent development may only be used to rebut a charge of copying). The *Graver Tank* opinion does not explicitly state that the court would have alleviated the accused of liability if it presented evidence of independent research.

133. Both copying and designing around a patent involve examining a patent and ensuring that the accused device is not exactly the same. If an accused device is an exact copy, it should literally infringe the patent. Therefore, if the doctrine of equivalents is invoked in a case because the accused device is not exactly the same as that set out in the patent claims, the technical differences between copying and designing around become merely a matter of degree. Judge Lourie in his *Hilton Davis* dissent stated:

One may readily envision a spectrum consisting of copying on one extreme, independent development on the other, and designing around somewhere in between . . . The difference between copying and designing around is often a matter of degree, depending upon whether one succeeds or not in getting far enough away from the claims to avoid a finding of infringement.

*Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1547-48 (Fed. Cir. 1995) (per curiam) (en banc) (Lourie, J., dissenting), cert. granted, 116 S. Ct. 1014 (1996).

ment.<sup>134</sup> The accused device, therefore, could not have been an exact copy of the claimed device and must have been different in some respect to invoke the doctrine of equivalents. Under an equivalence analysis, the difference between evidence of copying and designing around is not apparent. Evidence of copying and designing around both show the same thing—that the accused infringer used the patented device in the designing of the product. Intent-related evidence demonstrates nothing further and, therefore, there is no logical reason to weigh evidence of copying against the accused and evidence of designing around in favor of the accused infringer. In spite of this, under the Federal Circuit's analysis, evidence of copying hinders the accused infringer, while evidence of designing around helps the accused infringer.<sup>135</sup>

Designing around is a positive consequence of the patent system,<sup>136</sup> but the *Hilton Davis* decision may discourage attempts of competitors to design around patents. A competitor may design around a patent, but claim expansion could make the design around look like copying. In such a case, the patentee could use the competitor's design around evidence as evidence of copying. The overall effect could reduce attempts to design around patents and may negatively impact scientific progress.

A further problem with the Federal Circuit's scheme for evidence of copying and designing around is its incongruence with the law of evidence. Evidence of copying may be used only to show the insubstantiality of the differences between the accused and claimed devices, yet this evidence is strongly prejudicial against the accused infringer. Federal Rule of Evidence 403 allows the exclusion of evidence if the danger of unfair prejudice or confusion of the issues outweighs the value of the evidence.<sup>137</sup> The danger of prejudice outweighs the benefit of allowing this intent-related evidence because despite

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134. See *supra* note 67 (citing cases stating that the doctrine of equivalents is the exception rather than the rule in patent infringement cases).

135. See *supra* notes 91-99 and accompanying text (discussing the *Hilton Davis* approach to intent-related evidence).

136. See *supra* note 63 (discussing the positive aspects of designing around).

137. FED. R. EVID. 403 (1995). This rule reads: "Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by consideration of undue delay, waste of time, or needless presentation of cumulative evidence." *Id.*

any limiting instructions, the jury may consider the mental state of the accused infringer in reaching a verdict. In addition, admitting intent-related evidence may confuse the issues by causing the jury to focus on subjective intent rather than on the substantiality of the differences.

One problem with excluding intent-related evidence is that it will force courts to bifurcate patent infringement cases. Proof of bad faith may entitle a patentee to enhanced damages.<sup>138</sup> Excluding evidence related to the subjective motivation of the accused infringer will require courts first to determine the infringement issue, and then, if necessary, to hold a separate trial for damages. Bifurcated trials will likely be more expensive and time consuming. Despite these faults, the benefit to the parties in excluding this prejudicial evidence outweighs the disadvantages of bifurcated trials.<sup>139</sup>

## 2. Proper Use of the *Hilton Davis* Court's "Substantiality of the Differences" Test

Although the *Hilton Davis* per curiam opinion clearly articulated the substantiality of the differences test, a fact finder requires more guidance in determining if the differences between the claimed and accused devices are substantial.<sup>140</sup> Fact finders are likely to be confused, for example, by an infringement finding hinging on insubstantial differences when the fact finder

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138. Evidence of bad faith may entitle the patent owner to enhanced damages for willful infringement. 35 U.S.C. § 284 (1994) (allowing courts to triple the damages assessed at trial upon a finding of willful infringement); see also *Read Corp. v. Protec, Inc.*, 970 F.2d 816, 826 (Fed. Cir. 1992) (describing the necessities for a willful infringement finding). In establishing infringement under the doctrine of equivalents, however, evidence of copying is applicable only to a showing of insubstantial changes between the accused and claimed devices and not toward intent. *Hilton Davis*, 62 F.3d 1519.

139. Bifurcated trials eliminate the danger that an accused infringer will be prejudiced by allowing a determination of liability before intent-related evidence reaches the fact finder. Cf. *Quantum Corp. v. Tandon Corp.*, 940 F.2d 642, 643-44 (Fed. Cir. 1991) (recommending that trial courts give serious consideration to separate trials for liability and willfulness to avoid prejudice in patent cases where certain attorney-client privilege issues are involved); see also John A. Dragseth, Note, *Coerced Waiver of the Attorney-Client Privilege for Opinions of Counsel in Patent Litigation*, 80 MINN. L. REV. 167 (1996) (arguing against the use of evidence of a patentee's withholding of an infringement opinion to draw an inference of willful infringement in a nonbifurcated trial).

140. A straight-forward test for infringement under the doctrine of equivalents is difficult to formulate because it must be applicable to a variety of technologies and malleable to fit many different fact scenarios.

has little prior knowledge of the technology. The law needs to provide constraints to help the fact finder determine when application of the doctrine of equivalents is proper.

One method of assisting fact finders to focus on the proper uses of the doctrine of equivalents includes utilizing policy considerations to restrain application of the doctrine. A patentee seeks protection under the doctrine in two situations: to correct "mistakes" in the claiming and drafting of the application and to protect against a technological innovation that occurs after the patent issues.<sup>141</sup> Because the patent system allows very broad claims, courts should expect patentees to seek protection for as much material as possible. If an accused device remains outside the broad scope of the literal patent claim language, protection under the doctrine is appropriate only if the patentee intended, but failed, to cover the accused device.

Use of the doctrine is inappropriate if the patentee seeks to protect subject matter that was intentionally excluded during the application process.<sup>142</sup> A patentee may intentionally decline to claim subject matter either because of patentability concerns<sup>143</sup> or because the subject matter does not fall under the scope of the invention. The patentee may also fail to claim subject matter because the patentee did not believe the product would operate correctly at specific parameters. In such cases, broadening of the claims to cover the subject matter is inappropriate. The doctrine of equivalents should protect subject matter only if the patentee intended to cover the subject matter but failed to claim it unintentionally.<sup>144</sup>

Courts should utilize this policy constraint by instructing the jury that patentees may only receive protection for subject matter that they did not claim unintentionally. If objective evidence is offered at trial that the patentee did not believe the

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141. Adelman & Francione, *supra* note 33, at 711. Correcting mistakes in claiming is the most frequent situation. *Id.* at 715.

142. This inquiry closely parallels the doctrine of prosecution history estoppel. Adelman & Francione, *supra* note 33, at 715-16 n.180; *see also* ERNEST B. LIPSCOMB III, LIPSCOMB'S WALKER ON PATENTS § 21:4 (3d ed. 1987) (stating that a patentee's appraisal of the nature of his invention is of great importance).

143. *See supra* note 14 (describing requirements for patentability).

144. An example of failing to claim subject matter unintentionally is when technological changes prevent the patentee from claiming it. *See supra* note 33 (describing equivalence when the patentee fails to claim later-developed technology).



product would work at specific parameters or that the extended matter was outside the realm of what the patentee considered the true scope of the invention, the patentee should not be able to cover this subject matter under the doctrine of equivalents. If the fact finder considers this restraint as a further limitation in applying the doctrine of equivalents, improper use of the doctrine will decrease.

### 3. Rigidly Apply Prosecution History Estoppel

Courts should rigidly apply prosecution history estoppel in infringement cases because rigid use of this well-established limitation will constrain inequitable application of the doctrine of equivalents. Courts currently inquire into the purpose for which a patentee made an amendment during prosecution for a patent and limit patentees only with respect to the purpose for which the patentee made the amendment.<sup>145</sup> The Federal Circuit endorsed this approach by allowing *Hilton Davis* to recover protection for pHs below 6, even though *Hilton Davis* surrendered pHs below 6 during prosecution.<sup>146</sup>

The law should strictly hold the patentee to claim limitations when the patentee alters claim language in the prosecution of the patent. It may seem inconsistent to allow the patentee extended protection for the original claim language of the invention, yet to strictly limit it to the changes made during amendments to the patent. Such limitation, nevertheless, is proper because the patentee intentionally surrendered the subject matter to obtain the patent.

The patentee has every opportunity to re-think the invention after a rejection from the PTO, and an amended claim will likely reflect the true nature of the invention. In amending the claims, an inventor is forced to figure out what sets her invention apart from the prior art, so the amendment is more likely to precisely relate to what the inventor thought encompassed the true scope of the invention. The law should therefore hold the inventor accountable for this intentional narrowing of the protected

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145. See *supra* note 55 and accompanying text (discussing the need to determine the reason why a patentee makes an amendment for prosecution history estoppel).

146. See *supra* notes 104-107 and accompanying text (explaining the *Hilton Davis* holding on the prosecution history estoppel issue).

subject matter regardless of the reason for the amendment.<sup>147</sup>

### C. *HILTON DAVIS* UNDER THE EQUITABLE APPROACH

*Hilton Davis* would become a simple case under this equitable approach. Though Warner-Jenkinson did present evidence of independent development,<sup>148</sup> this evidence would be inadmissible to bias the fact finder. The analysis would then focus solely on the technical merits of the case.

In considering the policy concerns for application of the doctrine of equivalents, the fact finder would need to consider whether *Hilton Davis* intentionally failed to claim pHs below the lower limit of 6,<sup>149</sup> or whether *Hilton Davis* set this limit only as a rough guide and mistakenly failed to claim pHs below this value. *Hilton Davis* intentionally set the lower limit of 6 in the claim.<sup>150</sup> In fact, an inventor found that the process foamed undesirably if the pH dropped below 6.<sup>151</sup> Because *Hilton Davis* intentionally failed to claim the process for pHs below 6, policy concerns would restrain the successful application of the doctrine to broaden *Hilton Davis*'s claims.

A rigid application of prosecution history estoppel would reinforce the decision to relieve Warner-Jenkinson of liability. *Hilton Davis* modified the patent during prosecution to specify "at a pH from approximately 6.0 to 9.0." Although the plurality opinion notes that *Hilton Davis* added this limitation only to limit the process to pHs below 9,<sup>152</sup> *Hilton Davis* intentionally set the level at "6.0 to 9.0."<sup>153</sup> Rigid application of prosecution history estoppel would hold *Hilton Davis* to pHs between 6 and 9. Under this equitable proposal for the doctrine of equivalents, a court would relieve Warner-Jenkinson of liability.

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147. Strictly limiting the patentee to amended claim language without regard to the reason for the amendment contradicts established precedent, which holds patentees to amended language only when the change was necessary to overcome prior art. See *supra* note 55 (discussing the current law of prosecution history estoppel).

148. See *supra* note 78, 80 (discussing the facts of *Hilton Davis*).

149. See *supra* notes 104-107 (describing *Hilton Davis*'s amendment to specify a lower pH of 6).

150. See *supra* notes 106-107 and accompanying text (discussing Judge Nies' opinion that *Hilton Davis* intentionally set the lower pH limit).

151. *Hilton Davis*, 62 F.3d at 1582 (Nies, J., dissenting).

152. See *supra* note 104 and accompanying text (describing the *Hilton Davis* per curiam decision).

153. See *supra* note 106-107 and accompanying text (discussing Judge Nies' opinion that *Hilton Davis* intentionally set the lower pH limit).

## CONCLUSION

The Federal Circuit's current doctrine of equivalents analysis not only fails to adequately limit the application of the doctrine, but also allows introduction of evidence that unfairly prejudices the accused infringer. Although a rigid test for infringement under the doctrine remains virtually impossible to define, other methods may prove more equitable toward the parties. The current analysis conceals an expansive approach of broadening the claims at trial under the guise of a peripheral claiming system designed to give notice to infringers prior to litigation. A better method would use policy concerns to limit the application of the doctrine, while rigidly applying prosecution history estoppel to further restrain the doctrine. Courts would also exclude evidence of copying, designing around, and independent development as irrelevant to infringement. This approach would put the word "equity" back into the equitable doctrine of equivalents.