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Law Center

IDEA: The Journal of Law and Technology

1998

*39 J.L. & TECH. 81*

## **Limitation to the Doctrine of Equivalents and Recent Cases since Warner- Jenkinson**

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### I. Introduction

In an infringement action, when there is no literal infringement by a defendant of a plaintiff's patent, infringement may still be proved under the doctrine of equivalents ("DOE"), if the plaintiff shows that every limitation or its equivalent is found in the defendant's device. n1 Recently, in an effort to rein in any unbridled discretion stemming from misapplication of a doctrine which seemed to have "taken on a life of its own," n2 the Supreme Court, in Warner-Jenkinson Co. v. Hilton Davis Chemical Co., explicitly restated the doctrine according to Graver Tank & Manufacturing. Co. v. Linde Air Products Co. n3 and made it clear that the test for equivalence is generally a question of fact for the jury to be applied on an element-by-element basis. n4

This article considers how recent cases have since applied the DOE and how the subtle substantive and procedural changes incorporated into DOE jurisprudence by the Supreme Court have had a major impact on infringement cases. Of special interest are cases where claim interpretation by a court under the Markman n5 decision is boldly applied to dispose of those controversies which, as a matter of law, do not

[\*82] present a question of fact for the jury and where prosecution history estoppel acts to limit the range of equivalents that may be asserted.

## II. The DOE and the Warner-Jenkinson Decision

The DOE developed as an equitable doctrine for interpreting the scope of claims n6 to protect patent owners from infringers who would incorporate "mere colorable differences" n7 into their products to avoid literal infringement. In 1950, the Supreme Court, in *Graver Tank*, defined the modern doctrine of equivalents to be a generalized three-part, "function-way-result" test. n8 The Court also broadened the inquiry to consider other relevant factors n9 in order "to prevent fraud on a patent." n10 The Court noted that "equivalence in patent law, is not the prisoner of formula and is not an absolute to be considered in a vacuum." n11 Since *Graver Tank*, courts have tended to expand the reach of the DOE. The expansion of the DOE culminated in *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.* in which the Court of Appeals for the Federal Circuit ("CAFC") set out an "insubstantial differences" test for equivalence. n12

**[\*83]**

In its effort to rein in unbridled applications of the DOE, the Supreme Court, in Warner-Jenkinson, reversed and remanded the CAFC decision, restating the doctrine substantially as it was set out in Graver Tank. n13 However, the Supreme Court avoided formulating any specific framework for the test of equivalence. Instead the Court instructed the CAFC to apply a probative test on an element-by-element basis to determine whether there are "insubstantial differences." n14

To ensure that the application of the doctrine of equivalents did not expand the reach of the claims granted by the patent laws, the Warner-Jenkinson court made explicit the intersection of the DOE with the doctrine of prosecution history estoppel ("PHE") n15 to prevent a patentee from invoking the DOE where the patentee had limited claims during prosecution. n16

Interestingly, the Supreme Court discussed the application of the DOE for claims drafted in "means-plus-function" format. n17 The Court stated that when the DOE is applied to claims drafted according to 35 U.S.C.

112, P 6, the DOE "is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad literal claim elements . . . ." n18

The following cases illustrate: 1) how courts have applied the DOE since Warner-Jenkinson and 2) the impact of the Markman decision on the application of the DOE.

**[\*84]** III. Refining the Framework for Finding Equivalency: *Industrias Metalicas Marva, Inc. v. Lausell*

When the Supreme Court remanded the Warner-Jenkinson case to the CAFC, it directed the CAFC to "refine the formulation of the test for equivalents." n19 An early attempt by a district court at such refinement may be seen in *Industrias Metalicas Marva, Inc. v. Lausell*. n20

A. The Facts of Marva

In Marva, Marva Inc. brought an action alleging that the "Super Guard 2000" ("SG 2000") jalousie window manufactured and sold by Lausell infringed Marva's patent pertaining to jalousie windows n21 (the "Marva patent"). Defendant Lausell sought summary judgment. n22

The broadest claim of the Marva patent, claim 1, pertained to a louver assembly for enabling a jalousie-type window. n23 At issue in the case, however, were dependent claims 3 and 4 of the patent: claim 3 for a trough improvement for directing away any fluid that may have

[\*85] penetrated the louver assembly, and claim 4 for a reinforcing means for a pivot cited in the broadest claim. n24

In ruling on the defendant's motions for summary judgment, n25 the trial court first construed the scope of the patent before testing for infringement. n26 The defendant had asserted that there was no literal infringement of the Marva patent because the lower longitudinal edge of the SG 2000 was not supported by the pivot axis as required by the claims. As defendant Lausell saw it, the structural "breakthrough" of the Marva patent was that the louvers overlap the pivot axes of adjacent louvers n27 and the range of equivalents asserted by Marva would encompass the prior art. n28 Marva countered this by arguing that this structure was equivalent to the element claimed by the Marva patent. n29

**[\*86]**

B. The Marva Court's Analysis

According to the Marva court, the patent clearly contemplated the use of the "pivot axis" as the means for supporting the longitudinal edges of the louver members. n30 Based upon the specification and the patent's reference to prior art, the court concluded that the phrase "pivot axis" was only entitled to a limited definition, n31 narrowing the advancement to a particular use of the pivot axis. n32

Having granted the phrase "pivot axis" a meaning as "close to its technical definition as the intrinsic evidence [would] allow," n33 the Marva court held that that no reasonable jury could find that the defendant's product literally infringed the Marva patent. n34

The Marva court also considered whether infringement could be found under the doctrine of equivalents. After explaining the merits of the doctrine, and the purpose for which it is invoked, n35 the district court

[\*87] considered the proper test to use when applying the DOE in light of the Supreme Court's recent decision in Warner-Jenkinson. n36

Initially, the Marva court phrased the question according to the CAFC's test in Hilton Davis allowing equivalence to be broadly determined under a finding of insubstantial differences between the claimed patent and the accused product. n37 However, in interpreting the Supreme Court's mandate in Warner- Jenkinson that an absolute linguistic framework was unnecessary so long as a probative test was applied focusing on the claim elements, n38 the district court in Marva sought to refine the framework for a probative test on the basis of the circumstances presented by the case before it. n39

The Marva court stated that to determine the insubstantiality of the differences, "the analysis begins with the 'triple identity' or 'function-way-result' test, under which the Court applies the principle that 'where the claimed and accused machines are substantially the same, and operate in the same manner, to produce the same results, they must in principle be the same.'" n40 It seems that the Marva court may have adopted this analysis as a first step because "the function-way- result test often suffices to assess equivalency because similarity of function, way, and result leaves little room for doubt that only insubstantial differences distinguish the accused product or process from the claims." n41

According to the court in Marva, the CAFC had, prior to the Supreme Court's decision in Warner-Jenkinson, laid the groundwork for

[\*88] applying the triple identity test according to the technology at issue. n42

Where the technology of the element under investigation is relatively simple, such as in mechanical devices like the pivot mechanism in the jalousie window, the function-way-result test is likely to be sufficient to end the inquiry. n43 However, in other circumstances where the technology of the element is more complex, such as in chemical compositions, biotechnology or computer software, "evaluation of function, way and result does not necessarily end the analysis." n44

Following the Supreme Court's decision in Warner-Jenkinson, the Marva court commenced an inquiry based upon an element-by-element analysis. n45 Although the existence of infringement under the DOE is usually a question for the jury, n46 because the question was before the Marva court upon a motion for summary judgment, the court limited its inquiry to determining whether "the evidence is such that no reasonable jury could determine two elements to be equivalent." n47

The Marva court then applied the triple identity test and held that, as a matter of law, a reasonable jury could conclude that the SG 2000 performed substantially the same function as the pivot axis element of the Marva patent. n48 In addition, the court stated that a reasonable jury

[\*89] could also conclude that the SG 2000 produced substantially the same result as the pivot axis element and thereby satisfy the second prong of the tri-partite test. n49 However, the court also found that the SG 2000 could not perform in substantially the same manner, the same function with the same result as the pivot axis element of the Marva patent. Consequently, applying the "not insubstantial difference" standard, the Marva court held as a matter of law that a reasonable jury could not find that the SG 2000 had infringed the Marva patent because only two of the three prongs of the tripartite test had been satisfied. n50

Marva provides an example of how a court must balance two competing interests when faced with a motion for summary judgment: fairly interpreting the scope of the claims on one hand while preventing infringers from "stealing the benefit of the invention" on the other. n51

In its interpretation of the facts, the Marva court considered the inherent limitations of the doctrine of equivalents. n52 One such consideration is that the doctrine must be tempered by a respect for competition. n53 To protect this interest, the Marva court stated that "courts must be careful to limit application of the Doctrine so that the public feels secure in relying on the claim language as the limit of the patent's protection." n54 From this, the court reasoned that the ability of competitors to design around the claims of the patent was an important aspect of the notice requirement. n55

**[\*90]**

Sensitive to the potential for uncertainty created by the doctrine of equivalents, the court in *Marva* stated that

application of the doctrine is the exception . . . 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 claims will cease to serve their intended purpose. Competitors will never know whether their actions infringe a granted patent. n56

Uncertainty in the law disserves the larger public interest. n57 When applied to a particular patented invention, it should be reasonably predictable whether a specific device will be found equivalent.

While recognizing the notice function and the importance of certainty, the *Marva* court also considered the patentee's interest in a fair scope of protection, which is particularly implicated when the patentee faces a crowded field of competitors. This offsetting interest recognizes that it is the very uncertainty of some claim language that provides the patentee some room to enjoy the protection of his patent without having to constantly litigate the bounds of the patent against those unscrupulous competitors who would design around the essence of the invention and encroach upon the grant to which the patentee is deserving. Thus, it is the court's role to consider relevant facts such as the insubstantiality of the differences as well as the level of competition in the field. To this extent the DOE remains an "equitable" doctrine. n58

Accordingly, the *Marva* court granted summary judgment, finding no infringement. This decision reflects the Supreme Court's direction in *Warner-Jenkinson* that "[w]here the evidence is such that no reasonable jury could determine two elements to be equivalent, district courts are

[\*91] obliged to grant partial or complete summary judgment." n59 While some commentators fear that the Supreme Court's statement "presents another avenue for activist Federal Circuit judges . . . to clamp down upon or narrow the applicability of this alternative infringement test," n60 it seems that the Marva court considered the competing interests at stake. n61

#### IV. DOE Limited by Prosecution History Estoppel

To further limit the application of the DOE, the Supreme Court in Warner- Jenkinson modified the intersection of the DOE with the doctrine of prosecution history estoppel n62 by creating a presumption of estoppel where an amendment has been made during prosecution limiting the scope of the claim. n63 Where no reason is evident for the change in claim language, the Supreme Court required that the patent holder would bear the burden to "establish [that] the reason for [the] amendment" was not tied to overcoming the prior art. n64 Thus, should a patentee fail to establish such a reason, a court should presume that the Patent Office had a substantial reason related to patentability for the amendment and then decide whether prosecution history would apply to bar application of the doctrine of equivalents. n65

[\*92]

A. Eastman Kodak Co. v. Goodyear Tire & Rubber Co.

In Kodak, n66 Eastman Kodak Co., as owner of a patent (the "'112 patent") for a process for making granules of container-grade polyethylene terephthalate ("PET"), appealed from a judgment holding that certain of the '112 claims were not infringed by Goodyear's process. n67 This case provides an example of the role of the bench in interpreting the scope of claims as well as an opportunity to compare a second court's application of the DOE with that of the Marva court.

The invention related to preventing the PET granules from sticking together and blocking reactor vessels, one of the problems encountered during PET production. The '112 invention solved this problem by restricting the range of polymerization to temperatures at or above the polycondensation temperatures. n68

In the district court, the judge sustained a jury finding that Goodyear's continuous state ("CSS") production lines 1 and 2 literally infringed the '112 patent. n69 However, before giving the case to the jury, the trial court granted Goodyear's motion for JMOL, holding that CSS lines 3 - 8, 10 and 11 did not infringe Kodak's process either literally or under the doctrine of equivalents. n70

One issue under consideration was whether the claim language containing the limitation "inert gas atmosphere" was infringed by Goodyear's processes of CSS lines 3 - 8, 10 and 11. n71 Kodak contended

[\*93] that the term included the use of heated air present in the alleged infringing product. n72 The trial court held as a matter of law that the term "inert gas" did not include heated air, and therefore granted defendant's JMOL for non-infringement by the defendant's processes. n73

On appeal, the CAFC reviewed de novo the trial court's granting of the JMOL. n74 In so doing, the CAFC addressed the claim interpretation question to determine whether the term "inert gas atmosphere" included heated air. n75 Reviewing the clear meaning of the specification, as well as extrinsic evidence, the court of appeals found that the district court was correct in its determination that heated air did not fall within the meaning of the claims of "inert gas." n76

Next, the CAFC considered whether "inert gas" may encompass heated air under the doctrine of equivalents. n77 Under the doctrine of equivalents as set forth by the Supreme Court in Warner-Jenkinson, an accused device falling outside the literal meaning of the claims may still infringe so long as each claimed element or its substantial equivalent is found in the accused device or process. n78 However, "[i]t is important to ensure that application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety." n79

With this limitation in mind, the district court in Kodak had found that the clear import of the specification was to exclude "reactive gases," such as "heated air" from the scope of the claims. n80 Accordingly, the Federal Circuit upheld the finding that the DOE could not be applied and affirmed the judgment of non-infringement. n81

The Kodak court's interpretation of the term "inert gas" provides an example of the bench's role in defining the legal bounds of a patent. Analysis of patent infringement involves two steps: claim construction to determine the scope of the claims, followed by determi-

[\*94] nation of whether properly construed claims encompass the accused device. n82 Claim construction is a question of law to be determined first by the court. n83 Once this has been done, the question of whether the properly construed claims encompass the accused device is a question of fact for the jury. n84

The disputed term in Kodak had a technical definition, the meaning of which was to be first construed using intrinsic evidence, such as the specification of the patent and by the prosecution history. n85

Where a term remains ambiguous after reference to intrinsic evidence, a court may turn to extrinsic sources, such as expert testimony, to clarify the meaning of the term. n86

According to the Supreme Court in Warner-Jenkinson, a patentee is estopped, as a matter of law, from broadening a claim outside the clear import of the language when the prosecution history contains evidence that the claim was so limited to overcome a patent office rejection concerning patentability. n87 Where no such reason is apparent, the patentee bears the burden to prove otherwise before the bench, n88 as Kodak had failed to do here.

This limitation on the doctrine of equivalents plays a large role in patent infringement cases as the court's definition of claim language is

[\*95] often dispositive and has the effect of limiting the range of equivalents available to the patent holder.

#### B. Other Recent Cases

Other recent cases illustrate that the claim interpretation is often dispositive of infringement. For example, in *Strattec Security Corp. v. General Automotive Specialty Co.*,<sup>n89</sup> the court construed the terms "sheet" and "sheet-like" to exclude round wires and therefore ruled that there could be no equivalency where the accused device used round wires.<sup>n90</sup> In *CVI/Beta Ventures, Inc. v. Tura LP Co.*,<sup>n91</sup> the court defined the term "elasticity" to refer the ability of eyeglass frames to return to their original shape after stress and therefore ruled that there could be no infringement by equivalents as a matter of law where the accused sunglasses did not return to their original shape.<sup>n92</sup>

Finally, in *Regents of the University of California v. Eli Lilly & Co.*,<sup>n93</sup> the court held that the patent holder could not argue as equivalent the use of semi-synthetic DNA in the manufacture of insulin where the range of equivalents became narrowed when the patent holder limited the claim to human proinsulin during prosecution to avoid prior art.<sup>n94</sup>

#### V. Extent of the Bar Created by the Presumption of Narrowing Scope by Amendment: *Litton Systems, Inc. v. Honeywell, Inc.*

When the Supreme Court decided *Warner-Jenkinson*, it sought to rein in what it saw as the increasingly unbridled use of the DOE.<sup>n95</sup> The Supreme Court explicitly stated that where reasons for an amendment were not made during prosecution, a court must presume that the changes were made for patentability purposes and that the DOE should not be used

[\*96] capture that which was given up, without a sufficient showing by the patentee establishing a reason for the change. n96 .

When first seen by the CAFC, *Litton Systems, Inc. v. Honeywell, Inc.* n97 exemplified the danger of an overexpansive use of the doctrine of equivalents. n98 When the Supreme Court vacated and remanded the first CAFC decision in *Litton*, it directed the CAFC to reconsider its decision in light of the Court's recent decision in *Warner-Jenkinson*. n99 When the case was brought before the CAFC a second time, the narrowing presumption stated in *Warner-Jenkinson* seemed in question, n100 and some confusion resulted when an en banc hearing of its appeal entreated the CAFC to broaden the presumption. n101

A key question before the trial court was whether Honeywell infringed, by equivalents, Litton's re-issue patent of a method of manufacturing high performance optical gyroscopes for aircraft. n102 At the time of the original application, Litton's claims recited a "Kaufman-type" ion-beam source to distinguish Litton's ion-beam source from the prior art, a duoplasmatron. n103

Although the jury found infringement under equivalency, n104 the trial court granted a motion for judgment as a matter of law for the defendant, n105 precluding a finding of infringement by equivalents on the

[\*97] basis that the prosecution history had limited the available scope of the DOE.  
n106

On appeal, the CAFC reversed the trial court's decision and reinstated the jury's finding that Honeywell's RF ion-beam source was equivalent to Litton's "Kaufman-type ion-beam source." n107 At trial, experts had testified that after the issue of the '849 patent, technology advanced and commercial beam sources had begun using hollow cathode ionization means to substitute for the earlier Kaufman-type guns, and had advanced even further, to permit radio-frequency ionization sources to substitute for these earlier Kaufman-type guns. n108 Therefore, despite Judge Bryson's well reasoned dissent, n109 the CAFC held the application of the doctrine of equivalents to be proper. n110 As noted above, this holding was vacated by the Supreme Court and remanded for further consideration consistent with its decision in Warner-Jenkinson. n111

On remand, the CAFC held that in light of Warner-Jenkinson, Litton was estopped from raising the DOE to broaden the scope of the claim given up during prosecution. n112 Based on the prosecution history, the CAFC found that the element "Kaufman-type ion-beam source" could only be interpreted to include Kaufman-type guns that were comprised of a hot-wire cathode, anode, grids, and magnets. n113 Since the jury of the

[\*98] trial court was offered an erroneous claim construction, the CAFC remanded to the jury for consideration of infringement by equivalents within the narrow legal scope of the claim. n114

The Litton case is significant because it raises the question of how far the Warner-Jenkinson court intended to cut back the application of the DOE. n115 It is apparent, from the opinions dissenting from the order refusing to rehear the case en banc, that the CAFC is divided over this seemingly fundamental issue. n116 Indeed, Circuit Judge Gajarsa dissented and asserted that the "plain meaning" of the Warner-Jenkinson decision required a broader restriction, and should be interpreted to preclude the application of the DOE to the claim element in its entirety. n117

However, the CAFC stated that such a broad reading was not what the Supreme Court intended. n118 To focus on an isolated statement in the Warner- Jenkinson decision, taking the Supreme Court's words out of context "would both bar after-arising equivalents expressly approved by

[\*99] the Supreme Court and bar any equivalents whatsoever to the vast majority of claim limitations amended during patent prosecution." n119 Instead, the Litton court interpreted the Warner-Jenkinson decision in view of long-standing practice n120 as providing procedural guidelines for when prosecution history created a presumption, but did not change the scope or effect of the doctrine n121 that "estoppel only bars recapture of that subject matter actually surrendered during prosecution." n122 Further, according to the court's reasoning, should "an amendment related to patentability automatically preclude . . . all equivalents to the amended language, the Court's inquiry would . . . be . . . irrelevant." n123

Given the prior substance of the law and the change in the application of the doctrine of equivalents and prosecution history estoppel that would result from such a literal interpretation, it is hard to believe that the Supreme Court would go so far without greater explanation for such a momentous revision. Indeed, language in Warner-Jenkinson militates against such an expansive interpretation where the Court concluded that "[o]ur prior cases have consistently applied prosecution history estoppel only where claims have been amended for a limited set of reasons, and we see no substantive cause for requiring a more rigid rule invoking an estoppel regardless of the reasons for the change." n124 Thus, it is more likely that the Litton majority was accurate

[\*100] when it stated that it was the Court's intent "to change as little as possible." n125

## VI. Claims Drafted According to 35 U.S.C.

112, P 6

The Supreme Court has stated that

112, P 6, which permits a claim to be drafted in "means-plus-function" format, "is an application of the doctrine of equivalents in a restrictive role, narrowing the application of broad literal claim elements." n126 By describing the use of equivalents in

112, P 6, as a subset of the DOE, the Supreme Court departed from prior CAFC holdings that distinguish the use of "equivalent" in

112, from the DOE applied to non-means-plus-function claims. n127

As one court noted, although "the underlying principles of equivalents in *Graver Tank* could be used in a

112 literal infringement analysis[,] . . . the doctrine of equivalents . . . is distinct and can be different from the idea of 'equivalents' under

112." n128 There are a number of major differences between a structural equivalents analysis under

112, P 6 and the DOE. n129 The CAFC has held that the failure to establish the existence of a "literal equivalent" does not also constitute

[\*101] failure to establish infringement under the DOE. n130 Thus, it seems that "a second bite of the apple under the equivalents standard is both proper and allowed." n131

Given the Supreme Court's direction to the CAFC to devise the appropriate test for the DOE, n132 the distinction between the application of "equivalents" in

112, P 6 and under the DOE may be further defined.

#### A. LRC Electronics, Inc. v. John Mezzalingua Associates, Inc.

In LRC Electronics, Inc. v. John Mezzalingua Associates, Inc., n133 the plaintiff, LRC Electronics, brought an action for infringement and an injunction against Mezzalingua for selling coaxial cable connectors ("CMP" connectors) which allegedly infringed LRC's patent for coaxial connectors (the "246 patent"). n134 Defendant Mezzalingua moved for a Markman hearing prior to trial to interpret the claims of the patent. n135

The plaintiff, LRC Electronics, argued that defining the term "compression sleeve means" n136 in a claim of its invention would be improper during a Markman hearing n137 because the claim was phrased in "means-plus-function" format which required findings of fact by the

[\*102] jury. n138 Further, the plaintiff argued that construing the terms before trial would not serve the purposes of judicial economy. n139

The LRC Electronics court acknowledged that "interpretation of both ordinary and technical terms is a matter of law reserved exclusively for the court rather than the jury." n140 However, the legal scope of claims would be defined differently for means-plus-function claims. While the language of

112, P 6 permits claims to be drafted in means-plus-function format, the scope of the claim is limited to structures expressly disclosed in the specification and their corresponding equivalents. n141 Thus, interpretation of terms in means-plus-function claims must be limited to structure in the specification and their equivalents. n142

To obtain an interpretation of the terms, Mezzalingua sought for the court to define a list of structures equivalent to "compression sleeve means" in a pre-trial Markman hearing. n143 However, plaintiff LRC Electronics had argued that the scope of the claims in means-plus-function format could not be defined by the court in a Markman hearing because pre-trial construction of means-plus-function claims by the bench

**[\*103]** would require definition of what structures are equivalent to those in the specification. n144

The LRC Electronics court agreed with the defendant that such a determination would require findings of fact concerning equivalent structures and to define those equivalent structures "would be to completely usurp the function of the jury." n145 Consequently, the court denied the defendant's motion for a Markman hearing to the extent of defining the means-plus-function language of the claim. n146

Although LRC Electronics did not raise the issue of prosecution history estoppel, it seems that a Markman hearing defining the applicability of the DOE in means-plus-function claims may be appropriate n147 where the prosecution history evidences estoppel to limit the range of equivalents applicable to the structures in the specification. n148 At the time that LRC Electronics was decided, the question of whether means-plus-function claims should be interpreted by the judge or jury was an open question. n149 One commentator has stated that because the CAFC's decision in Hilton Davis reinforces the DOE as a question of fact, the jury is given a broad role in interpreting means-plus-function claims. n150

**[\*104]**

B. Sage Products, Inc. v. Devon Industries, Inc.

Subsequently however, in a decision by the CAFC in Sage Products, Inc. v. Devon Industries, Inc., n151 the court announced that the interpretation of means- plus-function claims under the DOE would be the same as for other claims. n152 Thus, means-plus-function claims will be interpreted by the court as any other claim would be interpreted, but with the relevant element restricted to corresponding structures in the specification.

In Sage Products, the court restricted equivalents of the function of "closure means" specified in the claim to those which "control access" as expressly provided in the specification. n153 Therefore, the court held as a matter of law that there could be no infringement by equivalents where the accused device employed a lid which locked closed and thereafter did not reopen. n154 Thus, the CAFC has evidently designed its own rules for

112, P 6, claims as allowed by the Supreme Court in Warner-Jenkinson. n155

C. Braun Medical, Inc. v. Abbott Laboratories

Another recent case illustrates the ability of the court to construe the proper scope of equivalents in means-plus-function claims. In B. Braun Medical, Inc. v. Abbott Laboratories, n156 the court held that the range of equivalents for "means . . . restrain[ing] . . . sideways movement" was limited to the "corresponding" structure in the specification in compliance with section

112, P 6. n157 Consequently, having narrowly construed the "means" term of the claim to correspond to a "traverse bar," the court limited the scope of equivalents to this structure and affirmed the trial court's finding of no infringement under the DOE. n158 Thus, practitioners drafting means-plus-function claims should take care to provide ample enabling examples in the specification to avoid being unduly restricted by narrow legal scope of the claim afforded to an application of the DOE.

[\*105]

## VII. Conclusion

As the Supreme Court in Warner-Jenkinson stated, the DOE according to Graver Tank is alive and well. Equivalence remains a question of fact to be determined by the jury, which is to compare an accused device to the court-construed claims of a patent on an element-by-element basis. The cases mentioned in this article span the many important and evolving aspects of the DOE, to which practitioners must pay close attention, in order to properly advise their clients.

n1 See Ronald Hildreth, *Patent Law: A Practitioner's Guide* 127 (2d ed. 1993). See also *Pennwalt Corp. v. Durand- Wayland, Inc.*, 833 F.2d 931, 935, 4 U.S.P.Q.2d (BNA) 1737, 1739 (Fed. Cir. 1987) (en banc).

n2 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28-29, 41 U.S.P.Q.2d (BNA) 1865, 1871 (1997), rev'g and remanding 62 F.3d 1512, 35 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1995) (en banc).

n3 339 U.S. 605, 85 U.S.P.Q. (BNA) 328 (1950).

n4 *Warner-Jenkinson*, 520 U.S. at 29, 41 U.S.P.Q.2d at 1871.

n5 *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 38 U.S.P.Q.2d (BNA) 1461 (1996).

n6 See 5 Donald S. Chisum, *Chisum on Patents* 18.01, at 18-2.1 (rel. no. 48, Nov. 1993).

n7 *Odiorne v. Winkley*, 18 F. Cas., 581, 582 (C.C.D.Mass. 1814).

n8 *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. at 607-09, 85 U.S.P.Q. at 330-31 ("What constitutes equivalency must be determined against the context of the patent. . . . Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with other ingredients, and the function which it is intended to perform."). However, the language from which "function-way-result" was derived pre-dates Graver Tank. See, e.g., *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929) ("If two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape").

n9 Graver Tank set forth some considerations pertinent to the determination of equivalents, such as: the context of the patent, the prior art, the particular circumstances of the case, including a comparison of similarities and differences in the purpose, qualities and function of an "ingredient" used in the claimed invention, as well as a consideration of 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. See *Graver Tank*, 339 U.S. at 607-09, 85 U.S.P.Q. at 330-31.

n10 *Id.* at 608, 85 U.S.P.Q. at 330.

n11 Id.

n12 *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520, 35 U.S.P.Q.2d (BNA) 1641, 1647 (Fed Cir. 1995) (en banc), rev'd, 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997).

n13 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28, 41 U.S.P.Q.2d (BNA) 1865, 1871 (1997).

n14 *Id.* at 29, 41 U.S.P.Q.2d at 1871.

n15 *Id.* at 30-34, 41 U.S.P.Q.2d at 1871-73. But see *Litton Sys., Inc. v. Honeywell Inc.*, 145 F.3d 1472, 47 U.S.P.Q.2d (BNA) 1106 (Fed. Cir. 1998), in which the Court of Appeals for the Federal Circuit was divided over the Supreme Court's intention to place restrictions on the doctrine of equivalents while retaining the existing body of law.

n16 The patentee may be able to overcome the estoppel by demonstrating to the court that the change in claim language was unrelated to patentability. *Warner-Jenkinson*, 520 U.S. at 34, 41 U.S.P.Q.2d at 1873.

n17 See 35 U.S.C. 112, P 6 (1994), which provides: An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover corresponding structure, material, or acts described in the specification and equivalents thereof.

n18 *Warner-Jenkinson*, 520 U.S. at 28, 41 U.S.P.Q.2d at 1870.

n19 *Id.* at 40, 41 U.S.P.Q.2d at 1876. The Supreme Court left that refinement to the Federal Circuit in "the orderly course of case-by-case determinations," according to the CAFC's "sound judgement in this area of its special expertise." *Id.*

n20 *No. 96-1697*, 1997 WL 557626 (D. Puerto Rico Aug. 28, 1997).

n21 "A jalousie window is one incorporating a system of louvers as a barrier between the exterior and interior of the edifice in which the window is placed." *Id.* at \*1.

n22 *Id.*

n23 Claim 1 reads as follows: 1. A louver assembly comprising: a frame including vertical side jambs, a head, a sill and a central opening; a plurality of vertically-spaced, substantially-straight horizontal louver members extending longitudinally across said central opening between said side jambs, each of said louver members including a closing section and an actuating section, and each of said closing sections including upper and lower longitudinal edges; means for pivotally mounting each of said louver members on said side jamb about respective pivot axes; actuating means attached to the actuating section of each of said louver members for pivoting said louver members between open and closed position, the lower longitudinal edge of an upper louver member overlaps the pivot axis of the adjacent lower louver member so that the upper and lower longitudinal edges of the closing section of said louver members are completely supported along their longitudinal lengths by said pivot axis at the upper longitudinal edge thereof and by the pivot axis of the adjacent lower louver member at the lower longitudinal edge thereof; in

said closed position, each of said actuated sections form a trough which receives any fluid which penetrates said louver assembly. *Id.*

n24 Claims 3 and 4 read as follows: 3. A louver assembly in accordance with claim 1 wherein each of said actuated sections are constructed to form a trough when in said closed position which causes any fluid which penetrates said louver members to flow away from said louver assembly, said trough formed between the actuating section of one louver member and closing section of an adjacent louver member. 4. A louver assembly in accordance with claim 1 wherein each of said pivot axes includes reinforcing means.

n25 *Id.* In two separate motions, the defendant moved for summary judgment on the issue of infringement. In the first, the defendant moved that claim 4 of the Marva patent, which dealt with the pivot, was not infringed by the defendant's SG 2000, and in the second, that claim 3, which dealt with the trough, was similarly not infringed. *Id.* at \*3-4.

n26 *Id.* at \*5 (citing *Winans v. Denmead*, 56 U.S. (15 How.) 330, 338 (1853)).

n27 See *id.* Thus the defendant concluded that the plaintiff "cannot now argue that incorporation of a feature that was present in the prior art renders the SG 2000 equivalent to the [Marva] patent." *Id.* at \*4.

n28 See *id.* ("All jalousie window assemblies are designed so that the louvers overlap, because 'otherwise horizontal openings would remain in the louver assembly in the closed position'") (citations omitted).

n29 See *id.* Marva had asserted that the SG 2000's incorporation of a structural element into the upper edge of each of the lower members to support the full longitudinal lower edge of adjacent upper louver members was equivalent to the Marva patent claim calling for the use of the pivot axis to support the lower longitudinal edge of adjacent upper louver members. *Id.*

n30 *Id.* at \*6-7.

n31 The court looked to various sources to give the term a technical definition supported by the specifications of the patent. *Id.* at \*7.

n32 The court saw the distinction of the patent over the prior art as follows: Whereas the typical louver assembly (i.e. the prior art) makes use of overlapping louvers, the Marva patent achieved an advantage in reducing deflection by extending the lower edges of its louver members over the pivot axes of adjacent lower louver members in order to make use of the structural properties of the pivot axis. *Id.* at \*7.

n33 See *id.* ("Therefore . . . the claim is limited to louver systems that utilize the louvers pivot axes - structural elements that describe the imaginary line about which the louvers turn and which serve as elements of the pivoting mechanism - as support for the longitudinal edges of the louvers.").

n34 See *id.* at \*9.

n35 "The doctrine of equivalents is . . . designed to prevent an infringer who does not literally infringe an invention from nonetheless 'stealing the benefit of an invention.'" *Id.* at \*9 (quoting *Nordberg, Inc. v. Telsmith, Inc.*, 881 F. Supp. 1252, 1299-1300, 36 U.S.P.Q.2d (BNA) 1577, 1616 (E.D.Wis. 1995) (citations omitted), *aff'd*, 82 F.3d 394, 38

*U.S.P.Q.2d (BNA) 1593 (Fed. Cir. 1996)*). The Marva court went on to observe that the idea behind the doctrine is that "a patentee should not be deprived of the benefits of his patent by competitors who appropriate the essence of an invention while barely avoiding the literal language of the claims." *Marva*, 1997 WL 557626, at \*9 (quoting *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538, 20 U.S.P.Q.2d (BNA) 1456, 1458 (Fed. Cir. 1991)).

n36 Central to the Court's reasoning was that a comparison based upon the entire patent unduly burdens competitors who designed products outside the claims and that comparison beyond the elements of the claim conflicts with the definitional and notice requirements of the patent statute. *Marva*, 1997 WL 557626, at \*11.

n37 See *id.* at \*10 ("[W]here there is 'proof of insubstantial differences between the claimed and the accused products or process,' infringement may be established." (citing *Insituform Techs., Inc. v. CAT Contracting, Inc.*, 99 F.3d 1098, 1107, 40 U.S.P.Q.2d (BNA) 1602, 1608 (Fed. Cir. 1996)).

n38 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40, 41 U.S.P.Q.2d (BNA) 1865, 1875 (1997).

n39 See *id.* ("Different linguistic frameworks may be more suitable to different cases, depending on their particular facts.").

n40 *Marva*, 1997 WL 557626, at \*10 (quoting *Gray v. James*, 10 F. Cas. 1015, 1016 (C.C.D.Pa. 1817)); see also *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 85 U.S.P.Q. (BNA) 328 (1950).

n41 *Marva*, 1997 WL 557626, at \*10 (quoting *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1518, 35 U.S.P.Q.2d (BNA) 1641, 1645 (Fed. Cir. 1995) (en banc), rev'd on other grounds, 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997)).

n42 See *Marva*, 1997 WL 557626, at \*10 n.11 ("The Federal Circuit has cleared up any misunderstanding as to whether the "insubstantial differences" analysis and the "function-way- result" analysis constitute separate tests - the test in all infringement by equivalency cases is one of insubstantial differences. In most instances, scrutiny of the function, manner, and result for insubstantial differences will suffice to determine whether the accused product or process is equivalent.").

n43 *Id.*

n44 *Id.* (quoting *Hilton Davis*, 62 F.3d at 1518, 35 U.S.P.Q.2d at 1645).

n45 *Id.* at \*10.

n46 The Warner-Jenkinson court did not determine whether analysis under the doctrine of equivalents is for the judge or the jury, *Warner-Jenkinson v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39, 41 U.S.P.Q.2d (BNA) 1865, 1875 (1997), but the Federal Circuit has allocated the task to the jury, *Insituform Techs., Inc. v. CAT Contracting, Inc.*, 99 F.3d 1098, 1107, 40 U.S.P.Q.2d (BNA) 1602, 1608 (Fed. Cir. 1996).

n47 *Marva*, 1997 WL 557626 at \*10 (quoting *Warner-Jenkinson*, 520 U.S. at 39 n.8, 41 U.S.P.Q.2d at 1875 n.8).

n48 Id at \*12: The [Marva] patent utilizes an existing element in each louver member to serve an additional function. It exploits the cylindrical shape and resultant structural properties of the pivot axis . . . which presents a high moment of inertia about the horizontal axis relative to the flat louver member itself to prevent flexion in the horizontal direction. This property of the pivot axis structure, which allows it to perform the additional function of supporting the member directly above the louver in which it sits, derives from its primary functions, which are to provide support and serve as a hinge mechanism for the louver member that incorporates it. Each louver member is supported at the upper edge by its own pivot axis and at the lower edge by the pivot axis of the louver member before, the pivot axis of the [Marva] patent serves a dual function: it must support two louver members (in addition to serving as a hinge mechanism).

n49 This would be the case in so far as this support would lessen the bowing of the window caused by wind pressure.

n50 *C.f. Marva*, 1997 WL 557626, at \*12 (finding no equivalency because the "way" prong of the triple identity test was not satisfied). The Marva court also held as a matter of law that the "trough" member of the SG 2000 did not infringe the claims of the Marva patent, either literally or under the doctrine of equivalents. *Id.* at \*14-15.

n51 See, e.g., *Nordberg, Inc. v. Telsmith, Inc.*, 881 F. Supp. 1252, 1300, 36 U.S.P.Q.2d (BNA) 1577, 1616 (E.D. Wis. 1995) (citations omitted), *aff'd*, 82 F.3d 394, 38 U.S.P.Q.2d (BNA) 1593 (Fed. Cir. 1996).

n52 *Marva*, 1997 WL 557626, at \*11.

n53 As a general rule, the reach of the doctrine of equivalents must be tempered because the law, while discouraging piracy, encourages "designing or inventing around patents to make new inventions." *Id.* at \*11 (quoting *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538, 20 U.S.P.Q.2d (BNA) 1456, 1458 (Fed. Cir. 1991)).

n54 *Marva*, 1997 WL 557626, at \*11.

n55 *Id.* As the Federal Circuit has stated: The ability of the public successfully to design around - to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art - is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention. Designing around "is the stuff of which competition is made and is supposed to benefit the consumer." *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520, 35 U.S.P.Q.2d (BNA) 1641, 1646 (Fed. Cir. 1995) (en banc) (quoting *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236, 224 U.S.P.Q. (BNA) 418, 424 (Fed. Cir. 1985)), *rev'd on other grounds*, 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997).

n56 *Marva*, 1997 WL 557626, at \*11 (citing *London*, 946 F.2d at 1538, 20 U.S.P.Q. at 1458).

n57 Louis Kaplow, *Rules versus Standards: An Economic Analysis*, 42 *Duke L.J.* 557 (1992).

n58 *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 935, 4 U.S.P.Q.2d (BNA) 1737, 1739 (Fed. Cir. 1987) (en banc).

n59 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39 n.8, 41 U.S.P.Q.2d (BNA) 1865, 1875 n.8 (1997).

n60 Kenneth R. Adamo, *The Waiting at the (Patent) Bar is Over - The Supreme Court Decides Hilton Davis*, 79 J. Pat. & Trademark Off. Soc'y 431, 445 (1997).

n61 *Marva*, 1997 WL 557626, at \*11.

n62 *Warner-Jenkinson*, 520 U.S. at 30-31, 41 U.S.P.Q.2d at 1872 (stating that prosecution history estoppel continued to be a limitation on the doctrine of equivalents, particularly in the case of "amendments made to avoid the prior art, or otherwise to address a specific concern - such as obviousness - that arguably would have rendered the claimed subject matter unpatentable").

n63 *Id.* at 33, 41 U.S.P.Q.2d at 1873. However, in a separate opinion, Justice Ginsburg suggested that the rebuttable presumption should not be applied where prosecution had occurred prior to the Warner-Jenkinson decision, because in such a case, the Patent Office and patentee might have relied upon a more flexible application of estoppel. *Id.* at 41, 41 U.S.P.Q.2d at 1876 (Ginsburg, J., dissenting).

n64 *Id.* at 33, 41 U.S.P.Q.2d at 1873.

n65 Prior cases have applied prosecution history estoppel only where claims have been amended for a limited set of reasons. See, e.g., *Bayer Akteingesellschaft v. Duphar Int'l Research B.V.*, 738 F.2d 1237, 222 U.S.P.Q. (BNA) 649 (Fed. Cir. 1984).

n66 114 F.3d 1547, 42 U.S.P.Q.2d (BNA) 1737 (Fed. Cir. 1997), abrogated by *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 46 U.S.P.Q.2d (BNA) 1169 (Fed. Cir. 1998).

n67 *Id.* at 1551, 42 U.S.P.Q.2d at 1738.

n68 *Id.* Other methods for solving the sticking problem would be to add expensive anti-sticking agents or to make expensive modifications to the reactor. *Id.* at 1551, 42 U.S.P.Q.2d at 1739.

n69 *Id.* at 1556, 42 U.S.P.Q.2d at 1743. The Kodak court also interpreted an ambiguous term used in claiming the '112 invention: "crystallizing the granulate to a density of at least 1.390 g/cm under forced motion at a temperature of 200 C to 260 C. . ." *Id.* at 1553, 42 U.S.P.Q.2d at 1740. Kodak contended that this language imposed temperature limits upon the heating medium. *Id.* at 1552, 42 U.S.P.Q.2d at 1739. Goodyear argued that this limitation referred to the granulate or polymer itself and did not limit the temperature of the heating medium. *Id.* The district court in Kodak held a Markman hearing to interpret the meaning of the patent claims and instructed the jury that the temperature limitation in question referred to the temperature of the heating medium, not the temperature of the granulate itself. *Id.* The jury found infringement, and damages were awarded to the plaintiffs in the amount of \$ 12 million. *Id.*

n70 *Id.* at 1559, 42 U.S.P.Q.2d at 1746.

n71 *Id.*

n72 *Id.* at 1560, 42 U.S.P.Q.2d at 1746.

n73 *Id.* at 1559, 42 U.S.P.Q.2d at 1746.

n74 Id.

n75 Id. at 1560, 42 U.S.P.Q.2d at 1746.

n76 Id.

n77 Id.

n78 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29, 41 U.S.P.Q.2d (BNA) 1865, 1871 (1997) (requiring that the doctrine of equivalents be applied on an element-by-element basis).

n79 Id. at 29, 41 U.S.P.Q.2d at 1871.

n80 *Kodak*, 114 F.3d at 1561, 42 U.S.P.Q.2d at 1746.

n81 Id. at 1561, 42 U.S.P.Q.2d at 1747.

n82 *Strattec Sec. Corp. v. General Auto. Spec. Co.*, 126 F.3d 1411, 1416, 44 U.S.P.Q.2d (BNA) 1030, 1034 (Fed. Cir.1997).

n83 *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 387-88, 38 U.S.P.Q.2d (BNA) 1461, 1470 (1996).

n84 *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520, 35 U.S.P.Q.2d (BNA) 1641, 1647-48 (Fed. Cir. 1995) (en banc), rev'd on other grounds, 520 U.S. 17, 41 U.S.P.Q.2d (BNA) 1865 (1997).

n85 See *Kodak*, 114 F.3d at 1552, 42 U.S.P.Q.2d at 1739. A number of factors may be considered in construing or interpreting words that appear in a patent claim, including other words in the claim, other claims in the patent, the specification, the prosecution history, expert testimony as well as other evidence outside patent. See *SmithKline Diagnostics, Inc. v. Helena Lab. Corp.*, 859 F.2d 878, 882, 8 U.S.P.Q.2d (BNA) 1468, 1471 (Fed. Cir. 1988).

n86 *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1583, 39 U.S.P.Q.2d (BNA) 1573, 1576 (Fed. Cir. 1996) (explaining that when construing terms of a patent, a court must first look to "intrinsic" evidence, which includes the claim itself, the specification, and the prosecution history). If the meaning of a term remains ambiguous after considering the intrinsic evidence the court may consider extrinsic evidence such as prior art documents, dictionaries and expert testimony. *Id.* at 1584, 39 U.S.P.Q.2d at 1577.

n87 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 33, 41 U.S.P.Q.2d (BNA) 1865, 1873 (1997).

n88 Id.

n89 126 F.3d 1411, 44 U.S.P.Q.2d (BNA) 1030 (Fed. Cir. 1997).

n90 Id. at 1419, 44 U.S.P.Q.2d at 1037.

n91 112 F.3d 1146, 42 U.S.P.Q.2d (BNA) 1577 (Fed. Cir. 1997), cert. denied, 118 S. Ct. 1039 (1998).

n92 Id. at 1161-62, 42 U.S.P.Q.2d at 1588.

n93 *119 F.3d 1559, 43 U.S.P.Q.2d (BNA) 1398 (Fed. Cir. 1997)*, cert. denied, *118 S. Ct. 1548 (1998)*.

n94 *Id. at 1572, 43 U.S.P.Q.2d at 1409*.

n95 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 28-29, 41 U.S.P.Q.2d (BNA) 1865, 1871 (1997)*.

n96 *Id. at 33, 41 U.S.P.Q.2d at 1871*. It has been argued that the Supreme Court intended for this estoppel to bar the application of the doctrine of equivalents as to the entire claim element. See *Litton Sys., Inc. v. Honeywell, Inc., 145 F.3d 1472, 1474, 47 U.S.P.Q.2d (BNA) 1106, 1108 (Fed. Cir. 1998)* (Gajarsa, J., dissenting).

n97 *145 F.3d 1472, 47 U.S.P.Q.2d (BNA) 1106 (Fed. Cir. 1998)*.

n98 *Id. at 1475-76, 47 U.S.P.Q.2d at 1109*.

n99 See *Honeywell, Inc. v. Litton Sys., Inc., 520 U.S. 1111 (1997)*, vacating and remanding *87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996)*.

n100 *Litton, 145 F.3d at 1472-3, 47 U.S.P.Q.2d at 1107*.

n101 See *id.*

n102 See *Litton Sys., Inc. v. Honeywell, Inc., 1995 WL 366468*, at \*43-45 (C.D. Cal. Jan. 6, 1995). See also *Hughes Aircraft Co. v. United States, 140 F.3d 1470, 46 U.S.P.Q.2d (BNA) 1285 (Fed. Cir. 1998)* (reaffirming the doctrine of after-acquired technology to expand scope of doctrine of equivalents at the time of filing).

n103 *Litton, 1995 WL 366468*, at \*45. Claim 1 of Litton's '849 re-issue patent covered a method "of fabricating multiple layer optical films . . . comprising: bombarding targets obliquely with an ion beam produced by or derived from a Kaufman- type ion- beam source. . . ." *Id.* at \*14.

n104 *Id.* at \*39.

n105 *Id.* at \*45-46.

n106 *Id.* at \*46.

n107 *Litton Sys., Inc. v. Honeywell, Inc., 87 F.3d 1559, 1572, 39 U.S.P.Q.2d (BNA) 1321, 1329 (Fed. Cir. 1996)*.

n108 *Id. at 1572, 39 U.S.P.Q.2d at 1329*.

n109 *Id. at 1578, 39 U.S.P.Q.2d at 1334* (Bryson, J., concurring in part, dissenting in part). According to Judge Bryson's dissent, although Litton was forced to give up its broad claim covering any "ion beam source" so as to obtain its reissued patent, Litton "ha[d] . . . managed, in effect, to regain the ceded ground through the doctrine of equivalents." *Id. at 1580, 39 U.S.P.Q.2d at 1336*.

n110 *Id. at 1572, 39 U.S.P.Q.2d at 1329*. (finding Honeywell's radio frequency ion-beam source to be equivalent to the "Kaufman-type" source of the claimed process because although "[the] RF ion beam . . . did not produce ions in the same way as the Kaufman-type ion-beam source[,] . . . the record showed that Honeywell's RF ion- beam

source produced a beam and a result substantially similar, if not identical, to the Kaufman-type ion beam.").

n111 See *Honeywell, Inc. v. Litton Sys., Inc.*, 520 U.S. 1111 (1997), vacating and remanding 87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996).

n112 *Litton Sys., Inc. v. Honeywell, Inc.*, 140 F.3d 1449, 1455, 46 U.S.P.Q.2d (BNA) 1321, 1324 (Fed. Cir. 1998).

n113 *Id.* at 1454, 46 U.S.P.Q.2d at 1324. The test applied by the court to determine the scope of surrender was "whether one of ordinary skill in the art would objectively conclude from the prosecution history that an applicant surrendered it." See *id.* at 1462, 46 U.S.P.Q.2d at 1330 (citing *Mark I Mktg. Corp. v. R.R. Donnelley & Sons Co.*, 66 F.3d 285, 291, 36 U.S.P.Q.2d (BNA) 1095, 1100 (Fed. Cir. 1995)). This raises another issue that is likely to attract the attention of the courts in the future, as some references may not be central to the course of the prosecution, and therefore may not be appropriate as limitations related to patentability. See *Litton*, 140 F.3d at 1466-68, 46 U.S.P.Q.2d at 1333-36. (Newman, J., concurring in part, dissenting in part).

n114 *Litton*, 140 F.3d at 1454, 46 U.S.P.Q.2d at 1324. The jury's special verdict form construed the term at issue as "any broad-beam, multiapertured, gridded ion-beam source, which includes any hollow cathode gun and any radio frequency gun." *Id.* Clearly this instruction was in error given the prosecution history of the Litton reissue patent. See *id.*

n115 The Supreme Court stated that, with regard to amendments made during prosecution that have the effect of narrowing the scope of the claimed invention for reasons of patentability, "[w]here no explanation is established, however, the court should presume that the PTO had a substantial reason related to patentability for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine [sic] equivalents as to that element." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 33, 41 U.S.P.Q.2d 1865, 1873 (1997). Taken literally, such a statement could be interpreted to mean that prosecution history estoppel bars all equivalents for that element, which is the proposition that Honeywell raised on appeal.

n116 See, e.g., *Litton Sys., Inc. v. Honeywell, Inc.*, 145 F.3d 1472, 47 U.S.P.Q.2d (BNA) 1106 (Fed. Cir. 1998) (Plager, Clevinger, & Gajarsa, JJ., dissenting on the basis that at the very least, the ambiguity created by the Warner-Jenkinson decision merited a rehearing en banc).

n117 *Id.* at 1474, 47 U.S.P.Q.2d at 1108. Arguing that there was no room for interpretation, Judge Gajarsa focused on this one isolated sentence in the Warner-Jenkinson decision and characterized the Supreme Court's "unmistakable intent" to curtail the doctrine of equivalents which was so stated with "force, clarity and precision." *Id.*

n118 *Litton*, 140 F.3d at 1455, 46 U.S.P.Q.2d at 1325.

n119 *Id.*

n120 The Litton court made note of footnotes 6 and 7 of the Warner-Jenkinson decision to bolster its position that the Supreme Court did not intend "[t]o change so substantially the rules of the game." *Id.* at 1457, 46 U.S.P.Q.2d at 1326 (citing *Warner-*

*Jenkinson*, 520 U.S. at 32 n.6, 41 U.S.P.Q.2d at 1872 n.6). Footnote 7 of the Warner-Jenkinson decision emphasized the procedural aspect of the Court's direction, stating "where a change is made to overcome an objection based on the prior art," *id.* at 33 n.7, 41 U.S.P.Q.2d at 1872 n.7, the appropriate inquiry is to explore "the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection," *id.*

n121 According to the Federal Circuit, it has been the custom that prosecution history estoppel does not necessarily limit the claimed invention to the literal language of the claims. See, e.g., *Dixie USA, Inc. v. Infab Corp.*, 927 F.2d 584, 588, 17 U.S.P.Q.2d (BNA) 1968, 1970-71 (Fed. Cir. 1991) (stating generally that "a total preclusion of equivalence should not apply"); *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1363, 219 U.S.P.Q. (BNA) 473, 481 (Fed. Cir. 1983) ("The effect may or may not be fatal to application of a range of equivalents broad enough to encompass a particular accused product. It is not fatal to application of the doctrine itself.").

n122 *Litton*, 140 F.3d at 1455, 46 U.S.P.Q.2d at 1326.

n123 *Id.* at 1457, 46 U.S.P.Q.2d at 1326.

n124 *Warner-Jenkinson*, 520 U.S. at 32, 41 U.S.P.Q.2d at 1872.

n125 *Litton*, 140 F.3d at 1457, 46 U.S.P.Q.2d at 1326. In addition, a broad interpretation could be seen as eliminating the doctrine of "after-arising equivalents." Rather, the Supreme Court rejected the notion that the DOE should be limited, explaining that equivalents arising after the time of the patent are permissible extensions where technology has changed, thereby broadening the permissible scope and range of equivalents. See *Warner-Jenkinson*, 520 U.S. at 37, 41 U.S.P.Q.2d at 1874.

n126 *Warner-Jenkinson*, 520 U.S. at 28, 41 U.S.P.Q.2d at 1870.

n127 Structural details put into the specification to satisfy 35 U.S.C. 112, P 2 may limit the extent to which the DOE may be applied to find equivalents for means-plus-function claims. See *Dawn Equip. Co. v. Kentucky Farms, Inc.*, 140 F.3d 1009, 1021-2, 46 U.S.P.Q.2d (BNA) 1109, 1118 (Fed. Cir. 1998). See also Wesley W. Whitmyer, Jr., Only Obvious Variations Infringe, 80 J. Pat. & Trademark Off. Soc'y, 645, 647-48 (1998) (discussing the implications of 35 U.S.C. 112 for the doctrine of equivalents). According to the CAFC, a patentee must adequately disclose structure to satisfy the distinctiveness requirement of 112, P 2 where the patentee has used means-plus-function language in the claims under 112, P 6. *In re Donaldson Co.*, 16 F.3d 1189, 1195, 29 U.S.P.Q.2d (BNA) 1845, 1850 (Fed. Cir. 1994).

n128 *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 975 n.4, 226 U.S.P.Q. (BNA) 5, 8 n.4 (Fed. Cir. 1985).

n129 See, e.g., *Intel Corp. v. U.S.I.T.C.*, 946 F.2d 821, 842, 20 U.S.P.Q.2d (BNA) 1161, 1179-80 (Fed. Cir. 1991).

n130 See *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1539, 19 U.S.P.Q.2d (BNA) 1367, 1372 (Fed. Cir. 1991).

n131 *Adamo*, supra note 60, at 433.

n132 *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40, 41 U.S.P.Q.2d (BNA) 1865, 1875-76 (1997).

n133 974 F. Supp. 171 (N.D.N.Y. 1997).

n134 *Id.* at 175.

n135 *Id.* at 175. See generally *Elf Atochem N. Am., Inc. v. Libbey-Owens-Ford Co.*, 894 F. Supp. 844, 857, 37 U.S.P.Q.2d (BNA) 1065, 1075 (D. Del. 1995) (discussing "serious practical problems" with waiting until the close of evidence at trial to construe patent terms).

n136 *LRC Elecs.*, 974 F. Supp. at 180. The LRC Electronics court did not provide the full text of the claim.

n137 *Id.* (citing *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 38 U.S.P.Q.2d (BNA) 1461 (1996)). However, the claim at issue in *Markman* did not involve a means-plus-function language.

n138 *LRC Elecs.*, 974 F. Supp. at 181. See also *Motorola, Inc. v. Interdigital Tech. Corp.*, 930 F. Supp. 952, 964 (D. Del. 1996) (construction of terms found in the claims or the specification is a legal inquiry, but evaluation of the function and structural equivalence of an allegedly infringing product is a factual inquiry).

n139 *LRC Elecs.*, 974 F. Supp. at 180.

n140 *Id.* (citing *Markman*, 517 U.S. 370, 38 U.S.P.Q.2d 1461). Previously in *Markman v. Westview Instruments, Inc.*, the Federal Circuit explained that competitors should be assured that a judge "trained in the law" will examine the patent and the prosecution history in a way to "arrive at the true and consistent scope of the patent owner's rights to be given legal effect." 52 F.3d 967, 976, 34 U.S.P.Q.2d (BNA) 1321, 1329 (1995). The court further indicated that it has "long been and continues to be a fundamental principle of American law that the construction of a written evidence is exclusively for the court." *Id.* at 978, 34 U.S.P.Q.2d at 1328. Thus, the court concluded that the meaning of disputed technical words in patent claims is "strictly a question of law for the court," *id.*, stating a clear policy preference to have disputes over technical words in a patent claim resolved by judges, *id.* at 977, 34 U.S.P.Q.2d at 1328.

n141 *LRC Elecs.*, 974 F. Supp. at 180 (citing *Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 19 U.S.P.Q.2d (BNA) 1241, 1245 (Fed. Cir. 1991)). See also *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28, 41 U.S.P.Q.2d (BNA) 1865, 1870 (1997). ("Application of the broad literal language of such claims must be limited to only those means that are 'equivalent' to the actual means shown in the patent specification.").

n142 See, e.g., *In re Donaldson Co.*, 16 F.3d 1189, 1195 n.8, 29 U.S.P.Q.2d (BNA) 1845, 1850 n.8 (Fed. Cir. 1994); *Valmont Indus., Inc. v. Reinke Mfg. Co., Inc.*, 983 F.2d 1039, 1043, 25 U.S.P.Q.2d (BNA) 1451, 1454 (Fed. Cir. 1993).

n143 *LRC Elecs.*, 974 F. Supp. at 181.

n144 *Id.* at 180.

n145 *Id.* at 181.

n146 Id.

n147 Defendant had raised the point that "various practical problems" are created by waiting until the close of evidence at trial to define the terms of a patent. *Id. at 180 n.16*. However, these conditions were not present in the instant case.

n148 A number of cases have applied prosecution history estoppel to means-plus-function claims to limit the applicability of the doctrine of equivalents See, e.g., *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 40 U.S.P.Q.2d (BNA) 1667 (Fed. Cir. 1996); *Biodex Corp. v. Loredan Biomedical, Inc.*, 946 F.2d 850, 20 U.S.P.Q.2d (BNA) 1252 (Fed. Cir. 1991); *Raleigh v. Tandy Corp.*, 45 U.S.P.Q.2d (BNA) 1715, 1997 WL 26299 (N.D. Cal. 1997); *WMS Gaming Inc. v. Int'l Game Tech.*, 1996 WL 539112 (N.D. Ill. Sep 20, 1996); *Messerschmidt v. United States*, 29 Fed. Cl. 1 (Fed. Cl. 1993). This author was unable to locate any case which addressed the particular issue of whether a Markman hearing may be called for this purpose.

n149 See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977 n.8, 34 U.S.P.Q.2d (BNA) 1321, 1327 n.8 (1995) (expressly declining to reach "the issue of whether a determination of equivalents under 112, para. 6 is a question of law or fact").

n150 See Adamo, supra note 60, at 434 ("As the doctrine of equivalents application is a fact question under Hilton Davis, it appears that a strong case may be made that 112, P 6 'literal' equivalents also present fact issues for jury, not judge, resolution.").

n151 126 F.3d 1420, 44 U.S.P.Q.2d (BNA) 1103 (Fed. Cir. 1997).

n152 *Id. at 1429*, 44 U.S.P.Q.2d at 1111.

n153 Id.

n154 Id.

n155 See id.

n156 124 F.3d 1419, 43 U.S.P.Q.2d (BNA) 1896 (Fed. Cir. 1997).

n157 *Id. at 1424*, 43 U.S.P.Q.2d at 1900.

N158 *Id. at 1425*, 43 U.S.P.Q.2d at 1900-01.