STILL BEATING THE DEAD HORSE: ELIMINATING REDUNDANT ANALYSES AND INCONSISTENT JUDGMENTS FOR MEANS-PLUS-FUNCTION CLAIMS

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The patent system fosters invention, disclosure, and innovation by temporarily protecting the fruits of a patentee's labor. As an expansion of patent rights, the doctrine of equivalents provides a patentee with the ability to recover for patent infringement by a device that is equivalent, but not identical, to a patent claim. Means-plus-function patent claims under 35 U.S.C. § 112, ¶ 6 permit a patentee to describe, in her claim, the function of an element of her invention, without specifying the structure of the element. However, the application of the doctrine of equivalents to means-plus-function claims has resulted in inconsistent and inefficient infringement analyses that may harm either the plaintiff or the defendant. This note explains the basics of patent law and the heart of the confusion about the doctrine of equivalents and means-plus-function claims. The author evaluates four approaches to the doctrine of equivalents and means-plus-function claims, concluding that the Temporal Predetermination Approach best preserves the goals of each theory of patent infringement while promoting consistency and efficiency. Ultimately, the author proposes changes in jury instructions, the use of a specified set of special jury verdicts, and changes in § 112, ¶ 6 to clear the confusion and provide consistent, efficient infringement judgments.

I. INTRODUCTION

"The style of claims is not the sine qua non of the patent right . . . ."[1] And yet, one style of patent claims has continued to escape application of correct and consistent infringement analyses. Means-plus-function claims, as codified in 35 U.S.C. § 112, ¶ 6, allow a patentee to use purely functional language in a claim and protect against infringement from those devices performing this function with the same structure as that disclosed in the patent specification or the equivalent thereof. This

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1. Dawn Equip. Co. v. Ky. Farms, Inc., 140 F.3d 1009, 1022 (Fed. Cir. 1998) (Newman, J., additional views).

claiming technique loses its clarity when a device fails to literally infringe the claim, and resort is taken to the doctrine of equivalents.

The doctrine of equivalents equitably expands a patentee's protection by allowing recovery against devices that are equivalent to the elements in the claim, without literally falling within the terms. When applying the doctrine of equivalents to a means-plus-function claim, the question inevitably arises: what is an equivalent of an equivalent?[2] The Federal Circuit in *Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc.*,[3] attempted to resolve this issue, though unsuccessfully. Substantial overlap between the literal infringement analysis for a § 112, ¶ 6 claim, and that under the doctrine of equivalents, has led to inconsistent judgments. Jurors lack a clear statement of the law and a useful framework in which to properly conduct the infringement analysis, resulting in legally inconsistent judgments that harm defendants and plaintiffs alike.

This note will examine various approaches to applying the doctrine of equivalents to means-plus-function claims in light of the theoretical policies and origins of each theory, and the practical consequences of the various legal formulations. Part II provides a basic understanding of patent claims and infringement and discusses the sordid history of the doctrine of equivalents and its application to means-plus-function claims. Part III describes four approaches to applying the doctrine to means-plus-function claims: the Dual Application Approach, the Absolute Bar Approach, the Partial Convergence Approach, and the Temporal Predetermination Approach. Part IV concludes that the Temporal Predetermination Approach with the use of special jury verdicts and congressional clarification of § 112, ¶ 6 is the best solution to the confusing state of the law.

II. BACKGROUND

An understanding of the basic requirements for patentability, patent applications, and patent infringement is necessary to understand the confusion that results when the doctrine of equivalents is applied to means-plus-function claims. A patentee will typically argue literal infringement or, in the alternative, doctrine of equivalents infringement.

2. *See* Michael T. Hopkins, *When a Lack of Equivalence Can Still Be Equivalent—Litigating Infringement of Means-Plus-Function Claims*, 40 IDEA 581 (2000); Cyrill P. Rigamonti, *Conflicting Theories of Equivalence: 35 U.S.C. § 112, ¶ 6 in the Supreme Court and the Federal Circuit*, 40 IDEA 163, 183 (2000) ("Under the standard infringement test, the means-plus-function claim, as interpreted in light of 35 U.S.C. § 112, ¶ 6, is subject to the doctrine of equivalents, which ultimately leads to a meaningless 'equivalents of equivalents' test.").

3. 145 F.3d 1303 (Fed. Cir. 1998).

A. Patent Law Fundamentals

Patent law protects useful inventions that are both novel[4] and nonobvious.[5] The U.S. Constitution grants Congress the power to enact patent legislation "[t]o promote the Progress of Science and useful Arts."[6] The goal of the patent system is to encourage invention, disclosure, and innovation.[7]

Every patent has a specification. Amongst other things, the specification includes the detailed description of the drawings and the claims. Because the detailed description constitutes a large portion of the specification, the term "specification" is often used to refer to the detailed description of the drawings. This section lays out the invention in great detail, putting other inventors on notice of what technology is known in the art.[8] The claims set forth the scope of the legal protection afforded to the inventor, i.e., the claims lay out exactly what subject matter is protected.[9] The claims do not give the inventor any right to make or use the invention as set forth in the claims, but only give the inventor the right to prevent others from doing so.[10]

A device literally infringes a patent claim when that device literally contains every element of the patent claim.[11] An infringement analysis requires two separate steps. First, the court interprets the claims as a matter of law. Second, the trier of fact determines whether the properly construed claims read on the allegedly infringing product.[12]

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4. 1 DONALD S. CHISUM, CHISUM ON PATENTS § 3.01 (2004).

5. 2 *id.* § 5.01.

6. U.S. CONST. art. I, § 8, cl. 8 ("The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . . .").

7. MARTIN J. ADELMAN ET AL., CASES AND MATERIALS ON PATENT LAW 26–34 (2d ed. 2003). "Although the courts have relied primarily on the incentive to invent and incentive to disclose arguments in support of the patent system, commentators have offered the additional argument that a patent monopoly is necessary to induce firms to invest in 'innovation'—i.e., putting existing inventions to practical use." *Id.* at 33.

8. 35 U.S.C. § 112 reads in pertinent part:

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

35 U.S.C. § 112, ¶¶ 1–2 (2000).

9. 3 CHISUM, *supra* note 4, § 8.01 (2004).

10. 5 *id.* § 16.02.

11. *E.g.*, Kraft Foods, Inc. v. Int'l Trading Co., 203 F.3d 1362, 1370 (Fed. Cir. 2000); Southwall Tech., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1575 (Fed. Cir. 1995) ("To establish literal infringement, every limitation set forth in a claim must be found in an accused product, exactly.").

12. Cybor Corp. v. FAS Tech., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) ("An infringement analysis involves two steps. First, the court determines the scope and meaning of the patent claims asserted, and then the properly construed claims are compared to the allegedly infringing device." (citations omitted)); Markman v. Westview Instruments, Inc., 52 F.3d 967, 970–71, 976 (Fed. Cir. 1995)

An example of literal infringement is illustrative here. Suppose the patent is for a roller skate, and the claim reads as follows: "An apparatus comprising: a shoe; four wheels; and a rubber stopper." In order to literally infringe this claim, a device would need to include each of the three elements recited in the claim. Thus, if the device included a shoe, *three* wheels, and a rubber stopper, it would not literally infringe the claim and the patentee would not be able to prevent the production or use of such a device.

B. The Doctrine of Equivalents

The doctrine of equivalents is a theory of patent infringement that has been the subject of controversy in years past. Many patent attorneys and scholars once thought the doctrine was near an end, but the Supreme Court has continued to uphold its application.[13] Doctrine of equivalents infringement allows a patentee to recover on accused products that do not literally infringe a patent claim, but are nevertheless equivalent to the claimed device.[14]

When considering claims in the context of the doctrine of equivalents, especially claims utilizing means-plus-function language, it is useful to characterize language as either structural or functional. For example, structural claim language would include claiming a "nail"; functional claim language would include claiming a "fastening device." Patent claims may contain varying degrees of both structural and functional language regardless of whether or not they include means-plus-function claims.[15]

The traditional test applied under the doctrine of equivalents is the tripartite function-way-result test. Under this test, an accused product infringes if it (1) performs substantially the same function, (2) in substantially the same way, (3) to achieve substantially the same result as the claimed invention.[16] An alternative test is the test of insubstantial differences, wherein a device infringes a patent claim if it bears only insubstantial differences to the claimed invention.[17] The doctrine of equivalents is

("[T]he interpretation and construction of patent claims, which define the scope of the patentee's rights under the patent, is a matter of law exclusively for the court.").

13. Jason Schultz, Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc. & Dawn Equipment Co. v. Kentucky Farms, Inc., 14 BERKELEY TECH. L.J. 173, 173 (1999); *see* Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 21 (1997).

14. *Warner-Jenkinson Co.*, 520 U.S. at 21 ("Under this doctrine, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention.").

15. *See* Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1318 (Fed. Cir. 1999); Greenberg v. Ethicon Endo-Surgery, Inc., 91 F.3d 1580, 1582–83 (Fed. Cir. 1996).

16. *Al-Site Corp.*, 174 F.3d at 1320–21.

17. Toro Co. v. White Consol. Indus., Inc., 266 F.3d 1367, 1370 (Fed. Cir. 2001). *But see Warner-Jenkinson Co.*, 520 U.S. at 39–40 ("Both the parties and the Federal Circuit spend considerable time arguing whether the so-called 'triple identity' test—focusing on the *function* served by a particular

usually argued if a patentee fails to prove literal infringement of the patent claims, and can be applied to any technology regardless of when the technology in the accused device arose.[18]

Doctrine of equivalents infringement may be demonstrated by returning to the example of the patent for a roller skate. Once again, the claim reads: "An apparatus comprising: a shoe; *four* wheels; and a rubber stopper." If a competitor makes a roller skate that includes a shoe, *three* wheels, and a rubber stopper, then the device does not literally infringe the patent claim, but it may still do so under the doctrine of equivalents. The "shoe" and "rubber stopper" elements are literally present, so the focus is on the "four wheels" element. Three wheels perform the same function as four wheels; they support the shoe and allow the skate to roll. Three wheels achieve the same result because a user is able to skate with only three wheels. Here, as is often the case, deciding whether the accused device performs in substantially the same way is more difficult. However, if the trier of fact determines that three wheels perform in substantially the same way as four wheels, then the accused device infringes the patent claim under the doctrine of equivalents. The focus of the "way" inquiry is the structure used in the device; here, the wheels.

C. Means-Plus-Function Claims

Patent claims may be drafted using means-plus-function language pursuant to 35 U.S.C. § 112, ¶ 6:

> 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 the corresponding structure, material, or acts described in the specification and equivalents thereof.[19]

Utilizing means-plus-function language in a claim allows a patentee to describe the function that a certain element is to perform without specifically laying out the exact structure of the element in the claims.[20]

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claim element, the *way* that element serves that function, and the *result* thus obtained by that element—is a suitable method for determining equivalence, or whether an 'insubstantial differences' approach is better. There seems to be substantial agreement that, while the triple identity test may be suitable for analyzing mechanical devices, it often provides a poor framework for analyzing other products or processes. On the other hand, the insubstantial differences test offers little additional guidance as to what might render any given difference 'insubstantial.'"); Dawn Equip. Co. v. Ky. Farms, Inc., 140 F.3d 1009, 1015 (Fed. Cir. 1998) ("To determine equivalence under the doctrine of equivalents, this court applies the 'insubstantial differences' test, recognizing the admitted shortcomings of that test.").

18. *Al-Site Corp.*, 174 F.3d at 1320.

19. 35 U.S.C. § 112, ¶ 6 (2000).

20. *See Al-Site Corp.*, 174 F.3d at 1318; Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 703–04 (Fed. Cir. 1998).

Means-plus-function language is used purely at the drafter's discretion.[21] Use of this tool is typified by including the word "means" in the claim in combination with a function and failing to include a description of the structure.[22] If such is the case, then the claim is presumed to invoke the protections of § 112, ¶ 6.[23] When construing a means-plus-function claim element, one must look to the patent specification. The literal scope of a means-plus-function element is the structure that is disclosed in the specification, and equivalents thereof.[24]

The test for literal infringement of a means-plus-function claim is very similar to the test for doctrine of equivalents infringement. To literally infringe a means-plus-function claim, an accused device must perform the function disclosed in the claim language and be equivalent to the structure disclosed in the patent specification.[25] Thus, an infringing device must perform the *identical* function, in substantially the same way, to achieve substantially the same result as the structure disclosed in the specification.[26] Notice that literal infringement of a means-plus-function claim requires functional identity, while the doctrine of equivalents requires only that the functions performed are equivalent.

This infringement analysis may be demonstrated by returning to the example of the patent for a roller skate. In the previous examples, the claim language was: "An apparatus comprising: a shoe; four wheels; and a rubber stopper." If the claim drafter so desired, he could use means-plus-function language in this claim. For example: "An apparatus comprising: a shoe; four wheels; and a means for stopping." This claim does not recite any structure for achieving the function of "stopping," and thus clearly falls under the purview of § 112, ¶ 6. The patent specification would need to set forth a structure for the "means for stopping." If the only structure set forth were a rubber stopper at the toe of the shoe that the user drags on the ground (rubber toe stopper), then a product would infringe the claim if it performed the identical function, "stopping," in substantially the same way as a rubber toe stopper, to achieve substantially the same result, assuming that the device also includes the "shoe" and "four wheels" elements. Or, under the alternative formulation, the infringing product must perform the same function of "stopping," and utilize a structure that is insubstantially different from that set forth in the patent specification. Note that a device performing the identical function in substantially the same way to achieve substantially the same

21. *See generally* 35 U.S.C. § 112 ("An element in a claim for combination *may* be expressed as a means or step for performing a specified function . . . .").

22. *See Al-Site Corp.*, 174 F.3d at 1318 (setting forth rules as to when § 112, ¶ 6 is invoked: "[I]f the word 'means' appears in a claim element in combination with a function, it is presumed to be a means-plus-function element . . . . [and the provision] governs only claim elements that do not recite sufficient structural limitations.").

23. *Id*.

24. *Id.* at 1320.

25. *Id.*

26. *Id.* at 1319–20.

result as that set forth in a means-plus-function claim *literally* infringes that claim.[27]

Claims drafted using means-plus-function language have one further limitation: only technologies that existed at the time the patent application was filed may literally infringe a means-plus-function claim.[28] Claims are approached from the view of a person of reasonable skill in the art at the time of filing.[29] At the time of filing, a person of reasonable skill in the art could not have meant a given claim element to include a technology that did not exist and therefore was not known to him.[30] Thus, an after-arising technology cannot literally infringe a means-plus-function claim, though it may infringe under the doctrine of equivalents.[31]

D. Application of the Doctrine of Equivalents to Means-Plus-Function Claims

The application of the doctrine of equivalents to means-plus-function claims has varied over time. Originally, the Federal Circuit applied the doctrine without question.[32] As the doctrine came into question, so did its application to means-plus-function claims.[33] Against this backdrop, the Federal Circuit heard *Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc.*

In *Chiuminatta*, the Federal Circuit declined to apply the doctrine of equivalents to an accused device that it already had found did not liter-

27. As opposed to infringement under the doctrine of equivalents.

28. *Al-Site Corp.*, 174 F.3d at 1320 ("An equivalent structure or act under § 112 cannot embrace technology developed after the issuance of the patent because the literal meaning of a claim is fixed upon its issuance. An 'after arising equivalent' infringes, if at all, under the doctrine of equivalents.").

29. *See* Glaxo Group Ltd. v. Apotex, Inc., 376 F.3d 1339, 1346 (Fed. Cir. 2004) ("Claim terms should be construed consistently with their ordinary and customary meanings, as determined by those of ordinary skill in the art."); Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1360 (Fed. Cir. 2004).

30. *Al-Site Corp.*, 174 F.3d at 1320 n.2 ("Patent policy supports application of the doctrine of equivalents to a claim element expressed in means-plus-function form in the case of 'after-arising' technology because a patent draftsman has no way to anticipate and account for later developed substitutes for a claim element."). While the relevant time period is sometimes expressed as the time of patent issuance, the formulation focusing on the time of filing is more consistent with policies protecting the patentee from unforeseen but unsubstantial advances in technology.

31. *Id.* at 1320.

32. *E.g.*, Dawn Equip. Co. v. Ky. Farms, Inc., 140 F.3d 1009, 1018 (Fed. Cir. 1998) (Plager, J., additional views) ("The implicit assumption is that, as a matter of law, a patentee with a § 112, ¶ 6 claim has a choice of alleging infringement under either [§ 112, ¶ 6 or the doctrine of equivalents] or both, and the trier of fact is free to find that the accused product does not infringe under the one kind of equivalent, but does under the other."); Tex. Instruments, Inc. v. U.S. Int'l Trade Comm'n, 805 F.2d 1558, 1571 (Fed. Cir. 1998) ("When literal infringement under section 112, paragraph 6 is not present the doctrine of equivalents may nevertheless apply, and thereby secure to the patentee the fair scope of the patent.").

33. *Dawn Equip. Co.*, 140 F.3d at 1023 (Michel, J., additional views) ("I wonder if affording the patentee additional protection under the doctrine of equivalents conflicts with the very language and intent of 35 U.S.C. § 112(6) (1994), which covers only those 'equivalents' disclosed in the specification.").

ally infringe the means-plus-function claim at issue.[34] It reasoned that "[t]here is no policy-based reason why a patentee should get two bites at the apple."[35] The court held that where the accused device does not constitute after-arising technology, a finding of nonequivalence under § 112, ¶ 6 precludes a finding of equivalence under the doctrine of equivalents unless the reason that the accused device did not literally infringe was a lack of functional identity.[36] Thus, under the reasoning in *Chiuminatta*, if a jury finds that an accused device does not literally infringe a means-plus-function claim, the doctrine of equivalents may not be applied unless the technology is after-arising technology, i.e., technology that did not exist at the time the patent application was filed, or the reason the accused device did not literally infringe was a lack of functional identity.[37]

The ruling in *Chiuminatta* can be demonstrated by the example of the roller skate patent utilizing means-plus-function language. The claim reads: "An apparatus comprising: a shoe; four wheels; and a means for stopping." The patent specification discloses the structure for the "means for stopping" as a rubber toe stopper that the user drags on the ground. A competitor makes a roller skate that uses a rubber brake pad that applies pressure to one of the wheels when the user presses a button on a handheld remote control. The patentee would first argue literal infringement, which would require showing that the competitor's roller skate included a shoe, four wheels, and that the rubber brake pad performed the function of "stopping," in substantially the same way as a rubber toe stopper, and to achieve substantially the same result as a toe stopper. If the finder of fact determined that the rubber brake pad did not literally infringe, the patentee would then argue doctrine of equivalents infringement. Under the *Chiuminatta* rule, the doctrine of equivalents analysis may only be undertaken if (1) the technology used in the rubber brake pads did not exist when the roller skate patent was filed, or (2) the competitor's roller skate did not literally infringe because the rubber brake pad did not perform the identical function of "stopping."[38]

The *Chiuminatta* decision leads to inconsistent application of the doctrine of equivalents to means-plus-function claims. Specifically, under *Chiuminatta*, infringement analyses should generally not be con-

34. Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1310 (Fed. Cir. 1998).

35. *Id.* at 1311.

36. *Id.* ("[W]here the equivalence issue does not involve later-developed technologies . . . a finding of nonequivalence for § 112, ¶ 6, purposes should preclude a contrary finding under the doctrine of equivalents.").

37. *Id.* This rule does not apply where the accused device does not literally infringe because it does not have a function *identical* to that in the claim. *Id.* In this respect, literal infringement of means-plus-functions claims departs from the test under the doctrine of equivalents, which only requires equivalent function. However, this issue does not often arise because asserted equivalents nearly always have identical functions and the real point of difficulty is the way in which they perform.

38. This option remains available because literal infringement of means-plus-function claims requires that the accused device perform the identical function that is claimed, while the doctrine of equivalents only requires that the accused device perform an equivalent function.

ducted under both literal infringement and doctrine of equivalents theories. Literal infringement would likely be considered first because a patentee usually would prefer a finding of literal infringement to that of doctrine of equivalents infringement. The doctrine of equivalents should only be applied to a § 112, ¶ 6 claim after the literal infringement analysis if: (1) the failure is due to a lack of functional identity, or (2) there is an explicit finding that the technology fails to literally infringe the claims because it is after-arising technology.[39] The second exception results from the requirement that the technology existed at the time of filing for literal infringement of a § 112, ¶ 6 claim. Note the contradiction inherent in this exception. In essence, application of the doctrine of equivalents to a § 112, ¶ 6 claim after a literal infringement analysis has taken place is a concession that the literal infringement analysis should never have been conducted in the first place.

The substantial overlap between the tests for literal and doctrine of equivalents infringement of means-plus-function claims has led to inconsistent application of both theories.[40] Courts have failed to provide juries with clear statements of the law or a useful framework for infringement analysis. Part of this confusion stems from the fact that courts have ignored the temporal restraints on literal infringement of means-plus-function claims until after the analysis has been conducted and the doctrine of equivalents is under consideration.[41] Since *Chiuminatta*, the Federal Circuit has upheld this rule, but lower courts have struggled to apply the doctrine of equivalents to means-plus-function claims in a consistent fashion.

III. ANALYSIS

Four distinct approaches may be taken to apply the doctrine of equivalents to means-plus-function claims. First, the patentee may be afforded the option of asserting either or both doctrine of equivalents and literal infringement without restriction. This approach may be called the Dual-Application Approach. Second, application of the doctrine of equivalents to means-plus-function claims may be completely barred. This approach may be called the Absolute Bar Approach. Third, the patentee may be allowed to recover for doctrine of equivalents infringement after a finding of no literal infringement only after it is determined that the accused device contains after-arising technology or if the reason for noninfringement is nonidentical function. This approach may be called the Partial Convergence Approach. Fourth, the patentee may be allowed to recover for literal infringement of a means-plus-function claim

39. *Chiuminatta Concrete Concepts, Inc.*, 145 F.3d at 1310–11.

40. *See infra* Part III.C.3.

41. *See, e.g.*, BEI Techs., Inc. v. Matsushita Elec. Indus. Co., 268 F. Supp. 2d 782 (E.D. Mich. 2003).

only if the accused device contains technology in existence at the time the patent application was filed, and the patentee may be allowed to recover for doctrine of equivalents infringement if the accused device contains after-arising technology or fails to literally infringe only because of a lack of functional identity. This approach may be called the Temporal Predetermination Approach.

A. The Dual-Application Approach

Under the Dual-Application Approach, both literal and doctrine of equivalents infringement may be indiscriminately applied to means-plus-function claims. This approach assumes a real distinction between the two analyses in both theory and application. If this assumption is valid, then there is no reason to foreclose an entire theory of infringement solely based upon the style that the patentee used when drafting the claims. This approach, in its purest form, requires that no temporal restrictions be placed upon literal infringement of § 112, ¶ 6 claims.

The Dual-Application Approach was once the prevailing approach and the doctrine of equivalents was applied to means-plus-function claims without question.[42] A patentee would first argue literal infringement of the means-plus-function claim pursuant to § 112, ¶ 6. If the trier of fact determined that the accused device did not literally infringe, then the patentee would assert infringement under the doctrine of equivalents. In such a situation, the doctrine of equivalents was automatically available to the patentee as a matter of course.[43] Still, the Federal Circuit struggled to elucidate the differences between the two theories. Although the court acknowledged that the analyses were very similar, it continued to apply each theory of infringement separately.[44]

Under this approach, one main difference between the application of the two theories is the focus on structure when determining literal infringement under § 112, ¶ 6. While the doctrine of equivalents considers whether insubstantial differences exist between the accused device and the claim at issue, literal infringement of a § 112, ¶ 6 claim requires that the accused device exhibit an insubstantial change that adds nothing to the structure disclosed in the patent specification.[45] However, the tests

42. *See* Sofamor Danek Group, Inc., v. DePUY-MOTECH, Inc., 74 F.3d 1216, 1221 (Fed. Cir. 1996) (With reference to means-plus-function claims: "[a]bsent a finding of literal infringement, the trial court can find that an accused device infringes by applying the doctrine of equivalents."); Valmont Indus., Inc., v. Reinke Mfg. Co., 983 F.2d 1039, 1041 (Fed. Cir. 1993).

43. *See Sofamor Danek Group, Inc.*, 74 F.3d at 1221; *Valmont Indus., Inc.*, 983 F.2d at 1041.

44. *See Sofamor Danek Group, Inc.*, 74 F.3d at 1220–21; *Valmont Indus., Inc.*, 983 F.2d at 1042–43.

45. *Valmont Indus., Inc.*, 983 F.2d at 1043 ("Section 112 and the doctrine of equivalents have something in common. The word 'equivalent' in section 112 invokes the familiar concept of an insubstantial change which adds nothing of significance. In the context of section 112, however, an equivalent results from an insubstantial change which adds nothing of significance to the structure, material, or acts disclosed in the patent specification.").

for infringement under each theory have moved closer together over time and it is unclear whether this distinction still holds weight.

The two theories of infringement may be further differentiated based upon their separate origins and purposes. "Section 112, ¶ 6 limits the broad language of means-plus-function limitations in combination claims to equivalents of the structures, materials, or acts in the specification. The doctrine of equivalents equitably expands exclusive patent rights."[46] In other words, § 112, ¶ 6 is intended to prevent inventors from enforcing overly broad claims through the use of purely functional language, while the doctrine of equivalents aims to protect inventors by affording them protection against products only insubstantially different from the literal scope of the patent claim.

Although the Federal Circuit has held that technologies must have existed at the time the patent was filed in order to literally infringe a means-plus-function claim, this is a change from previous case law. In *Texas Instruments, Inc., v. United States International Trade Commission*, the Federal Circuit provided that "[i]t is not required that those skilled in the art knew, at the time the patent application was filed, of the asserted equivalent means of performing the claimed functions; that equivalence is determined as of the time infringement takes place."[47] Because the court did not place any temporal restrictions on what technologies could literally infringe under § 112, ¶ 6, it could apply both theories of infringement without conflict. However, automatic application of both theories of infringement is inconsistent with the current rule that only technologies that existed at the time of filing may literally infringe a § 112, ¶ 6 claim.[48]

Those who recognize a clear difference in the origins and purposes of § 112, ¶ 6 and the doctrine of equivalents favor application of both theories despite these temporal restrictions. Proponents of the Dual-Application Approach have called for a reversal of the restriction of literal infringement of § 112, ¶ 6 claims to technologies in existence at the time of filing.[49] Fixing the meaning of a § 112, ¶ 6 claim upon the date of filing assumes that the literal meaning of a claim may not change over

46. *Id.* at 1043–44; *see also* Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 607 (1950) (noting that the doctrine of equivalents is necessary because, "[o]utright 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. It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system.").

47. 805 F.2d 1558, 1563 (Fed. Cir. 1986).

48. Al-Site Corp. v. VSI Int'l, Inc., 174 F.3d 1308, 1320 (Fed. Cir. 1999).

49. Mark D. Janis, *Who's Afraid of Functional Claims? Reforming the Patent Law's § 112, ¶ 6 Jurisprudence*, 15 SANTA CLARA COMPUTER & HIGH TECH. L.J. 231, 277 (1999) ("*Chiuminatta* seems to proceed from an important assumption about the temporal aspect of the infringement inquiry: specifically, that while the doctrine of equivalents is assessed as of the time of the infringement, literal infringement . . . must be measured as of the time of patent issuance, or perhaps even as early as the application filing date. The broad supposition operating here is that the *literal* scope of the claims, once those claims are issued, remains fixed . . . . This is a supposition worth questioning.").

time.[50] However, the Federal Circuit has recognized this possibility.[51] If the literal construction of a claim may change over time, then restricting literal infringement of § 112, ¶ 6 to those technologies that existed at the time of filing is meaningless and merely adds confusion to the law.[52] If this restriction were removed, then both literal and doctrine of equivalents infringement of § 112, ¶ 6 claims could be measured at the time of filing and the approaches could be applied without conflict.[53]

In *Dawn Equipment Co. v. Kentucky Farms Inc.*, the Federal Circuit followed precedent and applied the doctrine of equivalents to a means-plus-function claim, but recognized the redundancy in blindly applying both a literal infringement analysis and a doctrine of equivalents analysis to a means-plus-function claim.[54] The court reversed a denial of a judgment as a matter of law (JMOL) to the defendant where the accused device failed to literally infringe because it did not meet the way and result prongs of the function-way-result test.[55] The court went on to explain that granting JMOL is strongly encouraged in such circumstances, though it failed to provide a rule prohibiting such duplicative efforts.[56]

Dawn demonstrates the Dual Application Approach. The case involved a claim of infringement on a patent directed to a "Mechanism for Selectively Repositioning a Farm Implement."[57] At trial, the jury found that the accused device did not literally infringe the means-plus-function claims of the patent, but that it did infringe under the doctrine of equivalents.[58] The issues were submitted to the jury via special verdicts, asking the jury to answer "yes" or "no" to whether there was literal infringement or infringement under the doctrine of equivalents.[59] The jury an-

50. *Id.*

51. John M. Romary & Arie M. Michelsohn, *Patent Claim Interpretation after* Markman: *How the Federal Circuit Interprets Claims*, 46 AM. U. L. REV. 1887, 1908 (1997). Claim language may "embrace later embodiments not originally contemplated by the term at the time of an application's filing date, so long as at the time of filing, the claim was commensurate in scope with the disclosure, and the claim term, by virtue of its later-developed conventional meaning (i.e., at the time of infringement) embraces an accused product or process." *Id.* (citing *U.S. Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1252 (Fed. Cir. 1989), as an example of this phenomenon).

52. *See* Janis, *supra* note 49, at 277.

53. *See id.* at 278.

54. 140 F.3d 1009, 1014–15 (Fed. Cir. 1998).

55. *Id.* at 1016 ("While the functions of the two mechanisms are the same (i.e., locking and releasing a connecting member), the way and result are not substantially the same. The mechanisms are structurally quite different, and operate quite differently.").

56. *Id.* at 1017 ("In *Warner-Jenkinson*, the Supreme Court urged district courts in appropriate circumstances to give serious consideration to directing judgment (e.g., in response to a motion for summary judgment or JMOL) on the issue of equivalence under the doctrine of equivalents, and in fact stated that district courts 'are obliged' to do so '[w]here the evidence is such that no reasonable jury could determine two elements to be equivalent.'") (quoting Warner-Jenkinson Co. v. Hilton Davis Chem. Co., 520 U.S. 17, 39 n.8 (1997)).

57. *Id.* at 1010.

58. *Id.*

59. *Id.*

swered no on the issue of literal infringement pursuant to § 112, ¶ 6, and yes to infringement under the doctrine of equivalents.[60]

The majority concluded that literal infringement was not present because the accused device did not include an equivalent structure.[61] The majority also found that the device did not infringe under the doctrine of equivalents because, although it performed the same function as the claimed function, it did not do so in substantially the same way or to achieve substantially the same result as the structure disclosed in the patent specification.[62] Although the reasons for finding a lack of infringement under both theories mirrored each other, the majority applied both without question, favoring recognition of the different origins and purposes of the two infringement theories over efficiency in the infringement analysis. Such an approach, however, does not protect against the inconsistency in allowing judgments that the accused device is both structurally equivalent and structurally nonequivalent.

B. The Absolute Bar Approach

The Absolute Bar Approach focuses on the redundancies inherent in the practical application of the doctrine of equivalents to means-plus-function claims. The theoretical differences in the policy and application of each theory of infringement are seen as unimportant, if not nonexistent. Furthermore, § 112, ¶ 6 is viewed as a restricted application of the doctrine of equivalents. Under such an approach, application of the doctrine of equivalents to § 112, ¶ 6 claims is not cognizable.

By applying both literal and doctrine of equivalents infringement to means-plus-function claims and trying to distinguish between them,

> [t]he implicit assumption is that, as a matter of law, a patentee with a § 112, ¶ 6 claim has a choice of alleging infringement under either or both, and the trier of fact is free to find that the accused product does not infringe under the one kind of equivalent, but does under the other.[63]

The approach further assumes that there is a real difference in the theories and that judges and juries actually can discern this difference.

Although it may be true that the origins and purposes of the two theories are different, the tests for equivalence under each are very similar, if not identical.[64] The Absolute Bar Approach requires that the doctrine of equivalents should not be applied to means-plus-function claims and the approach recognizes no discernable difference between a § 112, ¶ 6 equivalent and an equivalent under the doctrine of equivalents. The

60. *Id.*
61. *Id.* at 1015.
62. *Id.* at 1015–16.
63. *Id.* at 1018 (Plager, J., additional views).
64. *Id.*

"result is fully consistent with the legislative purpose of § 112, ¶ 6 and with its plain language which expressly provides for equivalents with regard to those parts of a means-plus-function claim for which Congress chose to permit equivalents."[65]

A strong focus on the notice function of claims also works in favor of the Absolute Bar Approach.[66] Competitors must be able to determine the scope of patent claims in order to avoid infringement. This need becomes even more important for means-plus-function claims, where the claim does not in and of itself define the scope of the protection.[67] Applying an equivalence analysis to an equivalence analysis only serves to blur the lines delineating the patentee's rights.

Proponents of the Absolute Bar Approach further argue that the doctrine of equivalents has no practical significance when applied to means-plus-function claims given the similarities in the analyses.[68] The similarity in the tests for infringement is compounded by the lack of a clearly articulated standard for determining whether a functional element is "identical" or "equivalent."[69] In essence, the Federal Circuit applies the same test twice on the issue of function.[70]

If there is no substantive difference between literal infringement and doctrine of equivalents infringement of a § 112, ¶ 6 claim as it pertains to function, then the only remaining difference between the two theories is the temporal restraint placed upon the literal infringement. However, if § 112, ¶ 6 was interpreted as a codification of a particular application of the doctrine of equivalents, then the reasoning for this distinction vanishes as well. Support for this approach is found in the Supreme Court's analysis in *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, in which the Court explained that § 112, ¶ 6 "is an application of

65. *Id.* at 1022.

66. *Id.* at 1023 (Michel, J., additional views) ("I wonder if affording the patentee additional protection under the doctrine of equivalents conflicts with the very language and intent of 35 U.S.C. § 112(6) (1994), which covers only those 'equivalents' disclosed in the specification."); *see also* Schultz, *supra* note 13, at 173.

67. *Dawn Equip. Co.*, 140 F.3d at 1023 (Michel, J., additional views) (stopping short of recommending that the doctrine of equivalents should not be applied to means-plus-function claims, reserving such a recommendation until such time that the issue is actually litigated before the court).

68. R. CARL MOY, MOY'S WALKER ON PATENTS Part II, Ch. 4, II C, § 4:53 (4th ed. 2004).

69. *Id.* (A means-plus-function claim "is literally infringed by a structure that, while operating in substantially the same way and achieving substantially the same result as the corresponding structure, performs the exact function recited in the claim. Under the Doctrine of Equivalents, the scope of the right is expanded to include structures whose performed functions are 'substantially' the same, raising the issue of whether the resulting standard presents any real difference from the traditional rule of mechanical equivalents." (footnotes omitted)); *see also* Janis, *supra* note 49, at 275 ("Most cases involving means expressions would center around whether the accused device includes an equivalent to the disclosed corresponding structure, a component of the literal infringement analysis."); Laurence H. Pretty & Janene Bassett, *Reconciling Section 112, Paragraph 6 with the Doctrine of Equivalents in the Wake of* Warner-Jenkinson Co. v. Hilton Davis Chemical, *in* PLI'S THIRD ANNUAL INSTITUTE FOR INTELLECTUAL PROPERTY LAW at 359, 375 (PLI Patents, Copyrights, Trademarks, and Literary Prop. Course Handbook Series No. G4-4008, 1997).

70. Rigamonti, *supra* note 2, at 186 (citing Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206 (Fed. Cir. 1998), as an example of this failed analysis).

the doctrine of equivalents in a restrictive role."[71] Under this theory, § 112, ¶ 6 does not play a role in claim construction; rather, it applies only to the infringement analysis.[72] Thus, all inquiries are judged from the time of infringement and the requirement that the technology was known at the time of filing falls away.[73] Absent both the identity of function requirement and the temporal restriction, the doctrine of equivalents fully collapses into the literal infringement analysis and is rendered useless in application to claims drafted under § 112, ¶ 6.

Despite the Supreme Court's reasoning in *Warner-Jenkinson*, the Federal Circuit continues to approach § 112, ¶ 6 as governing claim construction and therefore requiring the temporal restriction on literal infringement of the means-plus-function claim.[74] Thus, the Absolute Bar Approach is inconsistent with the Federal Circuit's current approach.

C. The Partial Convergence Approach

The Partial Convergence Approach is the approach currently taken by the Federal Circuit.[75] Under this approach, there are only two situations in which a doctrine of equivalents infringement analysis may be applied to a means-plus-function claim after a finding that this means-plus-function claim is not literally infringed: (1) lack of functional identity, or (2) the accused device uses after-arising technology. This approach has been inconsistently applied by both the Federal Circuit and lower courts. Clear statements of the law have not been provided to jurors, resulting in confusion and judgments that are inconsistent with the law as it stands.

1. The Federal Circuit's Adoption of the Partial Convergence Approach in Chiuminatta

In *Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc.*, the Federal Circuit changed its approach to the doctrine of equivalents as applied to means-plus-function claims.[76] The court was faced with an infringement suit brought by Chiuminatta against Cardinal on a patent for an apparatus and method for cutting concrete before it had completely

71. 520 U.S. 17, 28 (1997).

72. Rigamonti, *supra* note 2, at 175.

73. *See id.* at 189.

74. *Id.* at 194 (postulating that the only way to return certainty to the law of means-plus-function claims is congressional repeal of § 112, ¶ 6); *see* Kegel Co. v. AMF Bowling, Inc., 127 F.3d 1420, 1427 (Fed. Cir. 1997) ("In construing means-plus-function language in a claim, a court 'must look to the specification and interpret that language in light of the corresponding structure, material, or acts described therein, and equivalents thereof . . . .'" (quoting *In re* Donaldson Co., 16 F.3d 1189, 1193 (Fed. Cir. 1994))).

75. *See* Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1310–11 (Fed. Cir. 1998).

76. *Id.*

hardened.[77] The U.S. District Court for the Central District of California had entered summary judgment of infringement against Cardinal.[78]

The apparatus claim at issue in the suit was claim 11 of U.S. Patent B1 5,056,499 ('499 patent).[79] This claim for the concrete cutting saw included a claim element drafted in the following means-plus-function language: "*[M]eans* connected to the saw for *supporting the surface of the concrete* adjacent the leading edge of the cutting blade to inhibit chipping, spalling, or cracking of the concrete surface during cutting . . . ."[80]

Thus, the claimed function was "for supporting the surface of the concrete," and the patent specification must be examined to determine which means were disclosed. The detailed description of the invention set forth the invention as follows:

> The soft concrete saw has a base plate on which are mounted two wheels and a skid plate, each of which contacts the concrete to provide three point support on the concrete. . . . The saw blade extends through a slot in the platform, and through a corresponding slot in the skid plate, in order to project into and cut the concrete below the skid plate.
>
> The dimensions of the slot in the skid plate are selected to support the concrete immediately adjacent the saw blade so as to prevent cracking of the concrete as it is cut.[81]

Thus, the means disclosed in the specification of the '499 patent to achieve the function of "supporting the surface of the concrete," was a skid plate. Pursuant to § 112, ¶ 6, an accused device would literally infringe this element of claim 11 if it used a skid plate or an equivalent to support the surface of the concrete while cutting it.

The accused device was a rotary saw produced by Cardinal that also was intended to cut concrete before it had completely hardened.[82] In order to support the concrete while cutting, Cardinal's saw used two small wheels mounted adjacent to the blade, rather than a skid plate.[83] In its literal infringement analysis, the court determined that no reasonable jury could have found that the wheels used in Cardinal's saw were equivalent to the skid plate disclosed in the specification of the '499 patent because the differences between the two structures were not insubstantial.[84]

After resolving the issue of literal infringement, the court next turned to the doctrine of equivalents. Rather than automatically apply-

77. *Id.* at 1305.
78. *Id.* at 1305, 1307.
79. *Id.* at 1305–07.
80. U.S. Patent No. 5,056,499 (filed July 2, 1990) (emphasis added); *see Chiuminatta Concrete Concepts, Inc.*, 145 F.3d at 1306.
81. '499 Patent; *see Chiuminatta Concrete Concepts, Inc.*, 145 F.3d at 1306.
82. *Chiuminatta Concrete Concepts, Inc.*, 145 F.3d at 1305.
83. *Id.* at 1306.
84. *Id.* at 1309.

ing the doctrine of equivalents to the means-plus-function claim as it had in the past, the Federal Circuit devised a new rule. The court held that if an accused device fails to literally infringe a means-plus-function claim under § 112, ¶ 6 because it is not equivalent to the structure disclosed in the patent specification, then the doctrine of equivalents should only be applied if the accused device is after-arising technology.[85] This rule embodies the Partial Convergence Approach and is the current approach taken by the Federal Circuit.

If an accused device fails to literally infringe a means-plus-function claim because the structure used is substantially different from that disclosed in the patent specification, then it would also fail both the insubstantial differences and the function-way-result tests under the doctrine of equivalents. This is because, under the function-way-result test, both literal and doctrine of equivalents infringement of a means-plus-function claim require that the accused device perform in substantially the same way as the structure disclosed in the specification.

The Partial Convergence Approach aims at avoiding duplication of effort.[86] It allows application of both theories of infringement when the accused device is after-arising technology because it would be unfair to the patentee to foreclose this theory when he could not possibly have included that structure in his patent specification because it did not exist when he filed his application.[87] Thus, when "the structure of the accused device differs substantially from the disclosed structure, and [there is] prior knowledge of the technology asserted to be equivalent, it could readily have been disclosed in the patent," and it is therefore unnecessary to conduct essentially the same analysis under the doctrine of equivalents as was already conducted pursuant to § 112, ¶ 6.[88]

This approach removes only some of the redundancy from the analysis. In requiring only that the temporal inquiry be made after a finding of noninfringement under a literal infringement analysis, the court has ignored its own rule that after-arising technologies cannot literally infringe a means-plus-function claim. Applying the doctrine of equivalents to a § 112, ¶ 6 claim after a finding of no literal infringement because the accused device uses after-arising-technology concedes that the literal infringement analysis should never have been conducted in the

85. *Id.* at 1310–11 ("Our case law clearly provides that equivalence under the doctrine of equivalents requires that each claim limitation be met by an equivalent element in the accused device. Because this requirement is not met for § 112, ¶ 6, purposes with respect to one limitation, it is therefore not met in this case for doctrine of equivalents purposes. An element of a device cannot be 'not equivalent' and equivalent to the same structure.").

86. *See id.*

87. *Id.* at 1310 ("The doctrine of equivalents is necessary because one cannot predict the future. Due to technological advances, a variant of an invention may be developed after the patent is granted, and that variant may constitute so insubstantial a change from what is claimed in the patent that it should be held to be an infringement. Such a variant, based on after-developed technology, could not have been disclosed in the patent.").

88. *Id.* at 1311.

first place. The temporal inquiry comes too late in the analysis to achieve consistent judgments or maximum efficiency.

2. *Application of the Partial Convergence Approach in the Federal Circuit*

The inadequacies of the Partial Convergence Approach have caused confusion and inconsistent judgments in the lower courts. The Federal Circuit has occasionally corrected these mistakes yet, in other instances, has added to the confusion.

In *Al-Site Corp. v. VSI International, Inc.*, the Federal Circuit applied the Partial Convergence Approach as set forth in *Chiuminatta*.[89] U.S. Patent 5,144,345 ('345 patent) claimed a device for displaying eyeglasses on racks for retail.[90] Claim 1 of the '345 patent included the following language: "means for securing a portion of said frame of said pair of eyeglasses to said hanger member . . . ."[91] The specification of the '345 patent disclosed a rivet fastener or button and hole fastener as the structure to accomplish the function of securing a portion of the eyeglass frame to the hanger.[92] The eyeglass hangers produced by VSI met all of the elements of claim 1 of the '345 patent except that they used glue rather than a rivet or other mechanical means disclosed in the patent specification.[93] A jury verdict was entered in the District Court for the Southern District of Florida, finding that there was no literal infringement of claim 1 of the '345 patent under § 112, ¶ 6, but that there was infringement under the doctrine of equivalents.[94]

The Federal Circuit reasoned that "the jury's finding that the accused structure was equivalent to the 'means for securing' element under the doctrine of equivalents also indicates that it is an equivalent structure under § 112, ¶ 6."[95] The court further clarified *Chiuminatta* by pointing out that an equivalent under § 112, ¶ 6 must have been available at the time the patent application was filed and that after-arising technology can only infringe a means-plus-function claim under the doctrine of equivalents.[96] It went on to hold that the jury's finding that the glue in the accused device was equivalent to the rivet disclosed in the patent specification under the doctrine of equivalents must mean that it is also

89. 174 F.3d 1308, 1320–21 (Fed. Cir. 1999).

90. *Id.* at 1314 (discussing U.S. Patent No. 5,144,345 (filed Oct. 31, 1990)).

91. '345 Patent; *see A1-Site Corp.*, 174 F.3d at 1319.

92. '345 Patent ("Loop 41 is maintained closed by fastening means in the form of metal rivet 43 which extends through aperture 46 in main section 12 and aperture 47 in extension 14 near the free end thereof. . . . Fastening means 54 includes conical button 55 which is disposed slightly to the rear of body 12 near edge 22 and is connected thereto by shank 57 which extends to the base of button 55.").

93. *Al-Site Corp.*, 174 F.3d at 1316.

94. *Id.* at 1314–15.

95. *Id.* at 1319.

96. *Id.* at 1320. The court is unclear in its opinion as to whether the relevant time limit for literal infringement under § 112, ¶ 6 is the date of patent application filing, or the date of issuance, but theoretically the relevant date is that of filing.

equivalent for the purposes of § 112, ¶ 6, and, therefore, the accused device literally infringes the means-plus-function claim.[97]

Thus, the Federal Circuit in *Al-Site* corrected a lower court that essentially had applied the Dual Application Approach, which is inconsistent with current practices. The mistake made at the district level indicates that the jury was confused as to what an equivalent is under § 112, ¶ 6, and under the doctrine of equivalents. If resort had not been taken to the Federal Circuit, a plaintiff that was entitled to relief would have been left uncompensated for his loss.

In *Hewlett-Packard Co. v. Mustek Systems, Inc.*, the Federal Circuit also had to correct a misapplication of the law of means-plus-function claims.[98] The accused device clearly did not perform the identical function as that disclosed in the means-plus-function claim regarding scanning technology.[99] At trial, however, the jury found literal infringement under § 112, ¶ 6.[100] The Federal Circuit set aside this jury verdict.[101] The district court additionally granted JMOL to Hewlett-Packard on the issue of doctrine of equivalents infringement, despite the fact that the jury did not consider this issue given its finding of literal infringement.[102] The Federal Circuit also set aside this judgment because Hewlett-Packard had not made a timely motion for JMOL under the doctrine of equivalents.[103] The court further held that a new trial was unwarranted under the circumstances.[104]

Hewlett-Packard represents one of the two situations where the doctrine of equivalents may be applied to a means-plus-function claim after a finding of no literal infringement: noninfringement because of a lack of functional identity. Because of the misapplication of the law in the district court, a plaintiff that may have been entitled to a judgment of infringement under the doctrine of equivalents was not afforded the benefit of this analysis.

Although the Federal Circuit corrected misapplications of the law in *Al-Site* and *Hewlett-Packard*, it has not consistently followed its own precedent. In *ACTV, Inc. v. The Walt Disney Co.*, the Federal Circuit instructed the lower court to consider literal infringement under § 112, ¶ 6

97. *Id.* at 1322.

98. 340 F.3d 1314, 1321 (Fed. Cir. 2003); *see also* Ballard Med. Prods. v. Allegiance Healthcare Corp., 268 F.3d 1352, 1363 (Fed. Cir. 2001); Nagle Indus., Inc. v. Ford Motor Co., No. 97-1449, 1999 U.S. App. LEXIS 13918, at *20–21 (Fed. Cir. June 22, 1999).

99. *Hewlett-Packard Co.*, 340 F.3d at 1321 ("By conceding that it is resolution and not scan speed that is selected by the user, Hewlett concedes that the accused devices do not perform the required function as defined in the instruction and thus that the accused devices do not literally infringe the asserted claims.").

100. *Id.* at 1319.

101. *Id.* at 1321.

102. *Id.*

103. *Id.* at 1322.

104. *Id.* at 1323.

without placing any temporal restrictions on the accused technology.[105] The court similarly instructed the lower court in *Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc.*, to apply both theories without placing restrictions on the application.[106]

3. The Partial Convergence Approach and Confusion in the Lower Courts

Faced with a change in an already confusing area of patent law and inconsistencies in Federal Circuit cases, district courts have taken various approaches that are inconsistent with the Partial Convergence Approach set forth in *Chiuminatta.* In *NOMOS Corp. v. Brainlab, Inc.*, the district court foreclosed application of the doctrine of equivalents after finding no literal infringement under § 112, ¶ 6 because no party contended that the technology utilized in the accused device was unavailable at issuance.[107] While it is consistent with *Chiuminatta* and the Partial Convergence Approach to require that the accused device constitutes after-arising technology before applying both theories of infringement, the court failed to recognize that literal infringement *cannot* exist under § 112, ¶ 6 if the technology in the accused device did *not* exist at the time that the patent application was filed.

NOMOS is just one example among many in which a literal infringement analysis of a means-plus-function claim was undertaken without first considering the temporal requirements. This error was taken one step further in *Kudlacek v. DBC, Inc.*, where the court conducted analyses under both § 112, ¶ 6 and the doctrine of equivalents because neither party contended that the technology existed at the time the patent application was filed.[108] The court continued with this analysis despite the fact that the patent concerned an archery bow stabilizer consisting of mechanical components, none of which were likely to contain after-arising technology given the simple nature of the components.[109] Thus, the defendant was subjected to a second infringement analysis and a risk of inconsistent judgments.

Many district courts applying the doctrine of equivalents to means-plus-function claims make no mention of the requirement that the accused technology did not exist at the time of patent filing in order to literally infringe. Rather, the courts only consider temporal restraints after a finding that the accused devices do not literally infringe, and plaintiffs are asserting doctrine of equivalents infringement in the absence of literal infringement. Thus, it appears that if a jury found the accused device and the claimed invention to be equivalent, the temporal require-

105. 346 F.3d 1082, 1094 (Fed. Cir. 2003).
106. 183 F.3d 1347, 1358–59 (Fed. Cir. 1999).
107. 239 F. Supp. 2d 430 (D. Del. 2003).
108. 115 F. Supp. 2d 996, 1053 (N.D. Iowa 2000).
109. *Id.* at 1003–04.

ment for literal infringement under § 112, ¶ 6 would never be considered.[110]

Improper and inconsistent applications of the Partial Convergence Approach can seriously and adversely effect both plaintiffs and defendants. The most serious misapplication of the law for a defendant is demonstrated in cases like *Dawn* and *Kudlacek* where the district court allows the jury to consider both literal and doctrine of equivalents infringement without proper application of the limitations on each. As seen in *Dawn,* the unrestrained application of both theories can lead to the jury finding infringement under the doctrine of equivalents and not under a literal infringement analysis without any indication of why essentially identical analyses would yield differing results.[111]

Revisiting the rubber toe stopper example sheds further light on this problem. The accused device uses a rubber brake pad that applies pressure to one of the wheels when the user presses a button on a handheld remote control, and the technology necessary for that design was known in the art when the patent application was filed. If the jury finds that the device does not literally infringe the claim because a rubber brake pad does not perform the function of "stopping" in the same way, or to achieve the same result as a rubber toe stopper does, then infringement under the doctrine of equivalents should be foreclosed.

If the jury is nevertheless allowed to apply the doctrine of equivalents and finds infringement under this theory, then the two verdicts clearly contradict one another. The finding of infringement under the doctrine of equivalents requires that the jury find that the rubber brake pad performs substantially the same function as "stopping," in substantially the same way, and to achieve substantially the same result as a rubber toe stopper; or, in other words, that the rubber brake pad is structurally equivalent to the rubber stopper. One of these verdicts must be incorrect because the rubber brake pad cannot be both structurally nonequivalent and structurally equivalent to the rubber stopper at the same time. This error is most likely to adversely affect the defendant and result in a finding of infringement under the doctrine of equivalents when in fact no infringement has occurred.

Defendants are not the only ones hurt by this confusion. Cases such as *Hewlett-Packard Co.* demonstrate how jury confusion can hurt plaintiffs as well.[112] A failure to apply the doctrine of equivalents when war-

110. *See, e.g.*, BEI Techs., Inc. v. Matsushita Elec. Indus. Co., 268 F. Supp. 2d 782, 800–02 (E.D. Mich. 2003) (applying the doctrine of equivalents after the court found that the accused device was not equivalent because direct bonding technology had not previously been used in the same context, and thus the court found it to be after-arising technology); Itron, Inc. v. Benghiat, 169 F. Supp. 2d 1073, 1095 (D. Minn. 2001) (applying both theories because the accused device contained enhanced memory capabilities that were not available at the time the patent application was filed).

111. *See* Tony Caliendo, *A Proposed Solution to Jury Confusion in Patent Infringement Cases Involving Means-Plus-Function Claims*, 2004 BYU L. REV. 209, 221–22.

112. Hewlett-Packard Co. v. Mustek Sys., Inc., 340 F.3d 1314, 1319 (Fed. Cir. 2003).

ranted under the rule set forth in *Chiuminatta* is just as damaging to plaintiffs as the blind application of both theories of infringement is to defendants. When an accused device fails to literally infringe § 112, ¶ 6 due to a lack of functional identity, or because the technology did not exist at the time of filing, the plaintiff is entitled to an infringement analysis under the doctrine of equivalents. Failure to do so may prevent an injured plaintiff from recovering.

Thus, it appears that there are two problems with the Partial Convergence Approach. First, the approach does not require a determination, *before* a literal infringement analysis is conducted, that the relevant technology in the accused device existed at the time the patent was filed. This failure causes improper literal infringement analyses to be conducted. If infringement is found under such an analysis, then a plaintiff will recover where he is not entitled. If literal infringement is not found and an analysis is conducted under the doctrine of equivalents, then the initial analysis was a waste and the process is inefficient. Second, the approach itself is confusing and provides no tools or specific framework for the analysis. This contributes to the problem of erroneous judgments even when the jury was properly instructed.

D. The Temporal Predetermination Approach

Under the Temporal Predetermination Approach, the temporal restrictions placed on literal infringement of § 112, ¶ 6 claims are strictly adhered to. This approach requires an initial determination as to whether the relevant technology in the accused device existed at the time the patent was filed or if it arose after filing. If the technology existed at the time of filing, then a literal infringement analysis may be conducted and the doctrine of equivalents may subsequently be applied only if the finding of noninfringement was based upon a lack of functional identity. If the technology did not exist at the time of filing, then only a doctrine of equivalents infringement analysis may be conducted. This approach differs from the Partial Convergence Approach in that the literal infringement analysis cannot be conducted absent an explicit finding that the technology existed at the time of filing. The need for this approach arises from the inadequacy of jury instructions and special verdicts in patent cases.

The Temporal Predetermination Approach may be viewed as a refinement or manifestation of the Partial Convergence Approach. This approach values the policy behind recognizing the distinct theories, but still aims to eliminate the redundancy in the analyses. There is no policy reason why the doctrine of equivalents should be restricted based upon the style with which the patentee chooses to draft his claims.[113] Section

113. Dawn Equip. Co. v. Ky. Farms, Inc., 140 F.3d 1009, 1022 (Fed. Cir. 1998) (Newman, J., additional views) ("The style of claims is not the sine qua non of the patent right, and the equitable pur-

112, ¶ 6 and the doctrine of equivalents have different origins and purposes, and thus should act independently of each other. Rather than changing the law in the face of precedent and further muddling an already confusing area of the law, the Temporal Predetermination Approach favors more explicit special verdicts as a suitable solution to the problem of jury confusion.[114]

Model jury instructions could be of tremendous help in ensuring that the law of means-plus-function claims is properly and consistently applied. However, thus far they have been of little help to district courts faced with such claims. Standard jury instructions regarding literal infringement and the doctrine of equivalents instruct that literal infringement should first be considered and, if the jury does not find literal infringement, they are to move on to infringement under the doctrine of equivalents. One such set of model jury instructions reads:

> In your deliberations you should consider the issue of literal infringement first. If you find that defendant's product does not literally infringe a particular claim, you should then consider whether it infringes that claim under the doctrine of equivalents. On the other hand, if you determine that defendant's product literally infringes a particular claim, you should then move on to the next claim allegedly infringed by the accused product without considering the doctrine of equivalents. If you find that plaintiff has failed to prove by a preponderance of the evidence that defendant infringed any of the claims listed above, either literally or under the doctrine of equivalents, you must find for defendant.[115]

Such a jury instruction does not account for the peculiarities of the law applying to means-plus-function claims.

Special verdicts are recognized as particularly useful in patent infringement actions.[116] However, most suggested special verdicts also fail to account for the complicated area of means-plus-function claims. The following is a typical set of special verdicts for a patent infringement action:

> Do you find from a preponderance of the evidence:
>
> 1. That the Defendant's product literally infringes a claim contained in the patent?
>
> Answer Yes or No _____

poses of the doctrine of equivalents do not rise and fall with whether the patentee used the claim form authorized in section 112 paragraph 6.").

114. *Id.*

115. 3A KEVIN F. O'MALLEY ET AL., FEDERAL JURY PRACTICE AND INSTRUCTIONS § 158.01 (5th ed. 2001).

116. *Id.* § 158.23 ("If the court submits both literal infringement and the doctrine of equivalents to the jury, it may be advisable for the court to use an instruction and special verdict form permitting the jury to make findings of fact on literal infringement and on the doctrine of equivalents.").

2. That the Defendant's product infringes, under the "doctrine of equivalents," a claim contained in the patent?

Answer Yes or No _____

[Note: If you answered No to both of the preceding questions you need not answer the remaining questions.]

3. That the Plaintiff's patent is invalid because [state the basis of the Defendant's claim of invalidity]?

Answer Yes or No _____

4. If you answered "No" to Question No. 3, that the Plaintiff should be awarded $_____ in damages.

SO SAY WE ALL.[117]

Such a set of special verdicts would do little to eliminate the confusion that exists in the application of the doctrine of equivalents to means-plus-function claims. Useful special verdicts must be more specific and reveal on what grounds the jury is or is not finding literal or doctrine of equivalents infringement. However, it is precisely in this area of need that resources are lacking. Many jurisdictions that offer suggested jury instructions for patent cases do not do so for means-plus-function claims because the area is complicated and fact specific.[118]

Model special verdicts would nicely complement the Temporal Predetermination Approach. Their use would ensure that the approach was properly and consistently applied. Furthermore, the rationale of the Federal Circuit in adopting the Partial Convergence Approach would be realized while avoiding the inconsistency that is inherent in that approach. In addition, the separate origins and purposes of the two theories of infringement would be recognized while removing the maximum amount of redundancy from the analyses.

IV. RECOMMENDATION

More explicit special verdicts could resolve the confusion when applying the doctrine of equivalents to means-plus-function claims.[119] If a series of more specific questions embodying the Temporal Predetermination Approach were submitted to the jury, then the policies behind § 112, ¶ 6 and the doctrine of equivalents could be supported and the goal of increased efficiency could be met.

117. *Id.* § 158.01.

118. *Id.* § 158.23; Northern District of California, Model Patent Jury Instructions, Instruction 3.6, http://www.cand.uscourts.gov/cand/ForAttys.nsf (last visited Sept. 2, 2005) ("No model instruction is provided since an instruction on this subject is necessarily case specific.").

119. *Dawn Equip. Co.*, 140 F.3d at 1022 (Newman, J., additional views); *see generally* Caliendo, *supra* note 112 (proposing special verdicts similar to those propose here, which were devised before his article was published).

If a series of four questions were submitted to the jury, the application of the two theories would be greatly simplified. The four questions would substantially consist of the following:

1. Does the (portion of the accused device relevant to the claim at issue) contain technology that did not exist at the time the patent application was filed?
2. Does the (structure utilized in the accused device) perform the identical function as the (function claimed in the means-plus-function claim)?
3. Does the (structure utilized in the accused device) perform an equivalent function to the (function claimed in the means-plus-function claim)?
4. Is the (structure utilized in the accused device) the same or equivalent to the (structure disclosed in the patent specification)?

Once the preceding questions have been answered, the two theories may be easily applied without confusion. For instance, if a jury replies "Yes" to questions 1, 3, and 4, then the accused device infringes only under the doctrine of equivalents. If the jury replies "No" to question 1, but "Yes" to questions 2 and 4, then the accused device literally infringes under § 112, ¶ 6. If the jury replies "No" to question 4, then the accused device cannot infringe under any theory.

The simplicity of the proposed special verdicts can be demonstrated by returning to the example of the claim for a roller skate. The claim includes the means-plus-function element of a "means for stopping" with disclosure of a rubber toe stopper in the specification. The accused device utilizes a rubber brake pad that applies pressure to one of the wheels. The jury would respond "No" to question 1 because the technology used in rubber brake pads was known when the patent application was filed. The jury would respond "Yes" to question 2 because rubber brake pads also perform the function of "stopping." At this point, the jury has been effectively steered away from inconsistent judgments. If the jury responds "Yes" to question 4, then the accused device literally infringes the claim. If the jury responds "No" to question 4, then there is no infringement under either theory.

Given the substantial confusion among lower courts with regards to § 112, ¶ 6 claims, congressional action is in order. As stated previously, the text of § 112, ¶ 6 reads as follows:

> 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 the corresponding structure, material, or acts described in the specification and equivalents thereof.[120]

The language of § 112, ¶ 6 could easily be modified to codify the temporal requirement that the Federal Circuit has applied in its interpretation of § 112, ¶ 6. Codification would make it more difficult for the lower courts to ignore this requirement and would help enforce *Chiuminatta*'s prohibition against applying the doctrine of equivalents after conducting a literal infringement analysis unless the failure was either due to a lack of functional identity or if the accused device contains after-arising technology. The amended § 112, ¶ 6 could read as the following:

> 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 the corresponding structure, material, or acts described in the specification and equivalents thereof *that were known in the art at the time that the claim was filed*.

Although this amendment alone is unlikely to fully resolve the confusion in the application of the doctrine of equivalents to means-plus-function claims, it would represent a step toward consistent application of the law and adherence to the policies behind both § 112, ¶ 6 and the doctrine of equivalents. If the proposed amendment were combined with use of the proposed special verdicts, jury confusion would dramatically decrease, causing significant improvement in the consistency of judgments for means-plus-function claims.

V. CONCLUSION

Both means-plus-function claims and the doctrine of equivalents must continue to exist in patent law if patentees are to continue to use functional claim language without unjustly broad constructions and still recover against products that do not literally infringe the patent claims but make merely insubstantial changes. However, the application of these theories must be reigned in so that the law is correctly and consistently applied.

The use of special verdicts would ensure that the factual determinations of juries lead to proper legal conclusions and would substantially eliminate the confused state of infringement analyses. To further promote consistency and the policies behind the theories, Congress should undertake to amend § 112, ¶ 6 to clearly require that those devices found to literally infringe means-plus-function claims exist at the time of filing.

120. 35 U.S.C. § 112, ¶ 6 (2004). Pending legislation would strike "An element" and insert "(f) Element in Claim for a Combination—An element." H.R. 2795, 109th Cong. § 4 (2005). Such a change is technical in nature, and would not affect this note's proposed resolution. *See id.*