

Form Vs. Substance In Means-Plus-Function Analysis

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Section 112(f) of the patent statute allows a patentee to define a structural claim element in terms of its function alone, i.e., “as a means ... for performing a specified function without the recital of structure ... in support thereof.”[1] In that case, the claim is construed “to cover the corresponding structure ... described in the specification and equivalents thereof.”[2] However, following Federal Circuit decisions from the 1980s, traditional “means-plus-function” claim drafting has been steadily declining.[3] The number of issued patents including “means for” language has dropped from about 60 percent in the 1980s to less than 10 percent today.[4]

Despite this decline, means-plus-function claim terms are still a staple of patent litigation. A statistical analysis of recent U.S. district court decisions reveals that about one-fourth of claim construction opinions involve means-plus-function limitations, and in about half of those cases, the court had to decide initially whether a disputed claim term was a means-plus-function limitation.[5] There is likely a correlation between these two statistics. As patent practitioners have abandoned the traditional “means” claim format, courts have had to decide whether generic terms such as “module,” “mechanism,” “element” and “device” effectively serve the same purpose and thus are within the ambit of Section 112(f).[6]

Courts employ a two-step process in order to identify a functional limitation to which Section 112(f) applies, as opposed to an ordinary structural limitation. The first step is a purely formal one. Initially, courts look at whether the patent drafter used the word “means”: if so, there is a rebuttable presumption that the drafter intended to invoke Section 112(f); conversely, if the claim term lacks the word “means,” there is a rebuttable presumption that the drafter did not intend the claim to be governed by Section 112(f).[7] This approach originated in *York Prods. v. Central Tractor Farm & Family Ctr.*[8] and is referred to here as the “York presumption.”[9]

The second step in the analysis is a substantive one, and involves a determination of whether one or the other presumption is rebutted. If the word “means” is used and is accompanied by a function, but recites sufficient structure within the claim itself to perform entirely the recited function, then the presumption that Section 112(f) applies may be rebutted, and the claim is not in means-plus-function format.[10] On the other hand, a term lacking the word “means” may be construed as a means-plus-function limitation if it fails to recite sufficiently definite structure, or if it recites function without reciting sufficient structure for performing that function.[11]

Application of Section 112(f) thus involves a dialectic tension between a formalistic approach and a substantive one. Until recently, a majority of recent appellate decisions favored the formalistic approach,[12] based on the principle that “the presumption flowing from the absence of the term ‘means’ is a strong one that is not readily overcome.”[13] In the recent



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en banc decision in *Williamson v. Citrix Online LLC*, the Federal Circuit expressly overruled the “strong presumption” approach but otherwise left the presumption intact.[14] However, as Judge Jimmie V. Reyna observed in a concurring opinion, the application of two separate tests, one for terms including the word “means” and a different one for all other terms, may be inappropriate because “[t]he statute admits no such variation, supplying only one test: is the element ‘expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof.’”[15]

The remainder of this article outlines some potentially difficult aspects of the York presumption and considers the possible consequences of streamlining the doctrine by abandoning the presumption-based approach altogether, as some have suggested.

Is a Presumption the Correct Approach?

The issue of whether a presumption is the appropriate framework for a Section 112(f) analysis has been occasionally raised but never fully resolved.[16] Presumptions are rooted in evidentiary concepts, rather than as tools of legal analysis. “A presumption is a procedural rule affecting the finder of fact. Under this rule, if a basic fact (Fact A) is established, then the fact-finder must accept that the presumed fact (Fact B) has also been established, unless the presumption is rebutted.”[17] Thus, a presumption provides a default outcome in favor of one party if the other party cannot produce contrary evidence. It is unclear how the burden-shifting effect of a presumption may apply in the context of claim construction, which is a question of law with no well-defined burden of production. Under the current standard, when the court exclusively relies on intrinsic evidence, claim construction is solely a determination of law.[18] Even where a court needs to consult extrinsic evidence, for example to understand the relevant science, there is no indication that any party bears an evidentiary burden with respect to such subsidiary fact-finding.[19]

Should the Presumption Make a Difference?

From a substantive standpoint, the York presumption creates a fork in the decision process, but logically both branches of the fork lead to the same substantive analysis. The current rule can be restated as follows:

I. Claim recites “means”: Section 112(f) applies, unless [NOT A] the claim does not recite a function,[20] [OR] [B] the claim recites sufficient structure to perform entirely the recited function.[21]

II. Claim does not recite “means”: Section 112(f) does not apply [NOT], unless [A] the claim recites a function, [AND] [NOT B] the claim does not recite sufficient structure for performing that function.[22]

A little Boolean logic manipulation reveals that the two tests are equivalent:

NOT A OR B = NOT (A AND NOT B).[23]

This means that the two tests should always return the same up/down result (i.e., Section 112(f) applies/does not apply)

regardless of which branch we take. In other words, application of the York presumption should have no effect on the outcome, as the substantive test is the same regardless of whether the word “means” appears in the claim.

This result can be puzzling until one considers that the presence or absence of the word “means” does not just determine which branch the analysis should follow, but also has an objective impact on the substantive test in that it affects the outcome. As Judge Reyna observed, “[w]hat arguably changes is the weight we attach to different recitations in meeting this test: ‘means’ weighs heavily, non-structural terms like ‘module’ weigh a little less, and, at the other end of the spectrum, purely structural terms weigh heavily in the opposite direction.”[24] In the logic expression outlined above, element [B] of the test requires the claim to recite sufficient structure to perform entirely the recited function. Whether this condition is met depends strongly on the choice of words used in the claim, which can be roughly divided into four groups.

First, the word “means” can only connote structure when accompanied by other words that do, as in “system memory means.”[25] Second, “nonce words” such as “module,”[26] “mechanism,” “element”[27] and “device”[28] generally do not connote structure, but sometimes they do,[29] and therefore do not benefit from the presumption. There is, however, little if any substantive difference between using “means” and these nonce words. The third group includes terms such as “circuit,” as in the limitation “first circuit for monitoring a signal from the output terminal to generate a first feedback signal.”[30] The term “circuit” has been held to connote structure even though, as a practical matter, limitations of the form “circuit for [performing a function]” are often defined by the function recited in the claim. The fourth group includes terms, such as “connector” or “receiver,” as in “connector assembly for connecting each pair of adjacent support members”[31] and “receiver for receiving a first radiofrequency signal,”[32] that have been held to connote structure to a person skilled in the art. Thus, a claim reciting “means” will likely fail element [B] (unless the word “means” is accompanied by structural language) and other words are more likely to pass element [B].

The York presumption may also have another, more subjective impact on the outcome of the analysis. It may be that injecting a presumption into the decisional mix stacks the odds in one or the other direction, even though in theory the same substantive test should be applied. This argument is especially strong when comparing claims reciting “means” with claims reciting generic substitutes such as “device.” Recent Federal Circuit dissents have called the replacement of “means” with one of those substitutes a “minor substitution”[33] that should have no substantive impact on the scope of the claim. In the context of Section 101, the [U.S. Supreme Court](#) has warned “against interpreting patent statutes in ways that make patent eligibility ‘depend simply on the draftsman’s art,’”[34] and the same principle could apply here.[35]

Consistency with [Halliburton](#)

It may be useful to consider this issue from the viewpoint of the 1946 Supreme Court decision that originally triggered it, *Halliburton Oil Well Cementing Co. v. Walker*.^[36] In *Halliburton*, the court held invalid an apparatus claim in which a key element was claimed “in terms of what it will do rather than in terms of its own physical characteristics or its arrangement in the new combination apparatus,” based on the principle that “a patentee cannot obtain greater coverage by failing to describe his invention than by describing it as the statute commands.”^[37] Thus, *Halliburton* prohibits functional claiming, at least with respect to the “most crucial element” of a claim.^[38] In response, Congress enacted Section 112(f)

to prevent invalidation of functional claims, but narrowed the scope of such claims.[39]

Nothing in the history of *Halliburton* and Section 112(f) involves the word “means.”[40] Congress provided means-plus-function analysis as a way to save claims from invalidity under *Halliburton*. From this perspective, where a claim element recites a function but no structure to perform it, it must be analyzed under Section 112(f), regardless of the language employed. Judge Newman in her dissent in *Williamson* asserted that a drafter’s use of the signal “means for” clearly indicates that Section 112(f) is to be applied.[41] However, others have argued that Section 112(f) “is not optional for functional claims,” meaning that, regardless of the drafter’s intent, “absent application of [Section 112(f)], functional claims are simply invalid as indefinite.”[42]

A World Without the York Presumption?

What, then, if courts abandoned the York presumption altogether? The petition for en banc rehearing in *Williamson* argued that “[n]othing in the statute or its legislative history warrants imposing a presumption based on the presence or absence of a ‘magic word.’”[43] It is uncertain whether the Federal Circuit will, in one fell swoop, erase nearly 20 years of case law. However, if the York presumption logically should have no effect on the outcome, and if anything it may unduly bias the decision, we might skip the presumption and cut to the substantive two-step analysis. First: Does the claim recite a function? Second: If so, does it also recite sufficient definite structure for performing entirely that function? This analysis would then call for answers to other important questions: Are words such as “module”[44] or “circuit,”[45] accompanied by a function, specific enough to escape Section 112(f)? And if the claim recites a nonstandard term such as “modernizing device,”[46] should one consult the specification to construe that term? Perhaps paying less attention to the word “means” would help focus on these questions without substantively impacting the outcome, and would also address the concerns of commentators who see the Federal Circuit’s current approach as overly formalistic.[47]

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[1] 35 U.S.C. § 112(f).

[2] *Id.* The statute also allows drafting of “step-plus-function” limitations, which are outside the scope of this article.

[3] B.K. Wheelock et al., 35 U.S.C. 112, ¶ 6 - Means for Better Patent Protection, 47 *St. Louis L.J.* 1065, 1065–66 (2003).

[4] *Id.*; D. Crouch, *Functional Claim Language in Issued Patents*, Patently-O (Jan. 23, 2014), at <http://patentlyo.com/patent/2014/01/functional-language-patents.html>.

[5] This statistics was obtained by running a word-proximity search on around 1,150 published claim construction rulings from the three years 2012–14, verified by a spot-check of randomly selected opinions.

[6] *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *21 (Fed. Cir. June 16, 2015); *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006).

[7] *Flo Healthcare Solutions, LLC v. Kappos*, 697 F.3d 1367, 1373 (Fed. Cir. 2012).

[8] 99 F.3d 1568, 1574 (Fed. Cir. 1996).

[9] See also M.D. Janis, *Who's Afraid of Functional Claims? Reforming the Patent Law's §112, ¶6 Jurisprudence*, 15 Santa Clara High Tech. L.J. 231, 236 n.19 (1999) (using “York presumption” terminology).

[10] *Flo Healthcare*, 697 F.3d at 1373.

[11] *Id.*

[12] Out of nine Federal Circuit decisions addressing this issue in 2012–14, the presumption was rebutted only in two cases: *TecSec, Inc. v. [International Business Machines Corp.](#)*, 731 F.3d 1336 (Fed. Cir. 2013) and *[Robert Bosch](#), LLC v. Snap-On Inc.*, 769 F.3d 1094 (Fed. Cir. 2014).

[13] *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004).

[14] 2015 U.S. App. LEXIS 10082, *18–19 (Fed. Cir. June 16, 2015).

[15] *Id.* at *36 (Reyna, J., concurring).

[16] See *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003); *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *35 (Reyna, J., concurring) (Fed. Cir. June 16, 2015).

[17] 1-301 Weinstein's Federal Evidence § 301.02.

[18] *[Enzo Biochem](#), Inc. v. Applera Corp.*, 780 F.3d 1149, 1153 (Fed. Cir. 2015).

[19] See *id.*

[20] “Without an identified function, the term ‘means’ in this claim cannot invoke 35 U.S.C. § 112, ¶ 6. Without a ‘means’ sufficiently connected to a recited function, the presumption in use of the word ‘means’ does not operate.” *York Prods. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574 (Fed. Cir. 1996).

[21] “[W]here a claim recites a function, but then goes on to elaborate sufficient structure, material, or acts within the claim itself to perform entirely the recited function, the claim is not in means-plus-function format.” *Sage Prods. v. Devon Indus.*, 126 F.3d 1420, 1427–28 (Fed. Cir. 1997) (citing *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 41 USPQ2d 1001 (Fed.Cir.1996)).

[22] “[T]he presumption that § 112, paragraph 6 [does] not apply [can] be rebutted by showing that the claim element recite[s] a function without reciting sufficient structure for performing that function.” *Watts v. XL Sys.*, 232 F.3d 877, 880 (Fed. Cir. 2000).

[23] This is an application of De Morgan’s theorem. See, e.g., J.F. Wakerly, *Digital Design Principles and Practices* (1990) at 154. The first test rebuts an affirmative presumption, and the second test rebuts a negative presumption. Therefore the two logical expressions must be the negative of each other, hence the NOT preceding the right-hand side of the equation.

[24] *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *36 (Reyna, J., concurring) (Fed. Cir. June 16, 2015).

[25] *TecSec, Inc. v. International Business Machines Corp.*, 731 F.3d 1336, 1347–48 (Fed. Cir. 2013).

[26] *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *21 (Fed. Cir. June 16, 2015).

[27] *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006).

[28] *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014).

[29] See, e.g., *Inventio AG v. ThyssenKrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1357–59 (Fed. Cir. 2011) (“modernizing device”). Because the holding in *Inventio* relied on the “strong presumption” approach, 649 F.3d at 1358, it is unclear whether the same outcome would result after the *Williamson* en banc decision. The Federal Circuit has recently distinguished *Inventio* on the merits but also observed that in that case “the Court was applying . . . now-superseded case law.” *Media Rights Techs., Inc. v. Capital One Financial Corp.*, No. 014-1218, slip op. at 9–11 (Fed. Cir. Sept. 4, 2015).

[30] *Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1319–21 (Fed. Cir. 2004). Other claim terms including “circuit” language were held not to be means-plus-function limitations in *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1373–75 (Fed. Cir. 2003); *Mass. Inst. of Tech. v. Abacus Software*, 462 F.3d 1344, 1355–57 (Fed. Cir. 2006); *Power Integrations v. Fairchild Semiconductor*, 711 F. 3d 1348, 1363–66 (Fed. Cir. 2013).

[31] *Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358–63 (Fed. Cir. 2004). The rule applied in *Lighting World* was expressly overruled in *Williamson*, 2015 U.S. App. LEXIS 10082 *18, therefore it is unclear whether the same outcome would result today.

[32] *EnOcean GmbH v. Face Int'l Corp.*, 742 F.3d 955, 958–60 (Fed. Cir. 2014).

[33] *Williamson v. Citrix Online, LLC*, 770 F.3d 1371, 1382 (Fed. Cir. 2014) (Reyna, dissenting).

[34] *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294 (U.S. 2012).

[35] See Brief of Amicus Curiae [Electronic Frontier Foundation](#) in Support of Appellees' Petition for Rehearing En Banc at 6, *Williamson v. Citrix Online, LLC*, No. 13-1130 (Fed. Cir. Dec. 18, 2014).

[36] 329 U.S. 1 (1946).

[37] *Id.* at 9, 13.

[38] [Valmont Industries](#), *Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1041 (Fed. Cir. 1993).

[39] See *id.*

[40] *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *38 (Reyna, J., concurring) (Fed. Cir. June 16, 2015).

[41] *Williamson v. Citrix Online, LLC*, 2015 U.S. App. LEXIS 10082, *42 (Newman, J., dissenting) (Fed. Cir. June 16, 2015).

[42] Brief of Amicus Curiae [Electronic Frontier Foundation](#) in Support of Appellees' Petition for Rehearing En Banc at 3–4, *Williamson v. Citrix Online, LLC*, No. 13-1130 (Fed. Cir. Dec. 18, 2014).

[43] Appellees' Petition for Rehearing En Banc at 11, *Williamson v. Citrix Online, LLC*, No. 13-1130 (Fed. Cir. Dec. 5, 2014).

[44] See *Williamson v. Citrix Online, LLC*, 770 F.3d 1371, 1377–80 (Fed. Cir. 2014).

[45] See *Power Integrations v. Fairchild Semiconductor*, 711 F. 3d 1348, 1363–66 (Fed. Cir. 2013).

[46] See *Inventio AG v. ThyssenKrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1357–59 (Fed. Cir. 2011).

[47] See M. Lemley, Software Patents and the Return of Functional Claiming, 2013 Wis. L. Rev. 905, 944–46.