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A Means-Plus-Function Looking-Glass into Statutory Subject Matter Post-*Alice*

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Method patents – especially for computer-implemented inventions – have been increasingly under attack. With the tightening (some may say over-tightening) of eligibility standards post-*Alice Corp. Pty. Ltd. v. CLS Bank Intern.* (2014) and *Mayo Collaborative v. Prometheus Labs.* (2012),[1] and the availability of post-AIA proceedings to challenge issued patents under 35 U.S.C. § § 101 and 112, many innovators are left wondering how to adequately protect their intellectual property.

The Supreme Court's decision in *Alice* – and the breadth with which the decision is being applied – is responsible for much of the current concern. It is becoming more difficult for patent applicants to obtain allowances for software claims in a host of technologies – from web operations to healthcare analytics. Even if issued under the U.S. Patent and Trademark Office's current rules, claims are still vulnerable to § 101 attacks through summary judgment motions in the courts and covered business method reviews (CBMs) at the Patent Trial and Appeal Board.

In fact, the situation is so dire in some fields that larger companies are practicing ''efficient infringement'' – infringing because the present benefits outweigh the potential damages. With the availability of post-grant proceedings at the PTO, the now-common challenge to § 101 at the summary judgment stage of trial, and the seemingly broad reading of *Alice* adopted by the PTO and courts alike, there are many tools for a potential infringer to challenge a patent enforcement effort. The outcomes of these challenges appear to be heavily skewed against the patent owner.[2]

So how can innovators best position themselves not only for obtaining patents, but also for enforcing their patent rights? Strategic use of means-plus-function claims – vilified over the past decade as overly narrow,

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[1] *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 134 S. Ct. 2347 (2014); *Mayo Collaborative v. Prometheus Labs.*, 566 U.S. 10 (2012).

[2] When the AIA became effective in September 2012, patent owners immediately felt the effects. Initially, *inter partes* reviews (IPRs) and CBMs were being instituted at a collective rate of over 90%. While the institution rate has since dropped to a collective 72%, claims that are subject to a full proceeding are invalidated at a much higher rate. This is especially true for CBMs, where 96% of the claims for which trial is instituted are ultimately cancelled (Statistics as of November 13, 2015).

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and downright deadly for software inventions – may be an answer.

A. Brief history of means-plus-function claiming

The thought of subjecting a software claim to § 112(f)[3] interpretation may be particularly scary for software patentees. Because many software applications were drafted with only high-level disclosures in their specifications, their claims are at risk of being found invalid for not disclosing sufficient written description to support a § 112(f) construction. But for inventions supported by a proper disclosure, means-plus-function may be a way out of the current § 101 morass. To understand why, let us first review the evolution of means-plus-function claiming.

1. Early usage. Means-plus-function claiming was added to the patent statute in 1952 as somewhat of an expedient. Means- or step-plus-function language permits functional claiming without the need to recite structures, materials, or acts in the claims themselves. The statute itself sets forth that such claims would be construed to cover the corresponding structures, materials, or acts described in the specification and equivalents thereof.[4] Such claiming was used liberally by patent practitioners for many years before the courts began to address the inherent limiting nature of the *quid pro quo*. But, it was not initially clear that using this claiming technique would result in arguably narrower claims when construed for infringement.

2. Change in scope. The Court of Appeals for the Federal Circuit issued a series of decisions in the 1990's that explained the drawbacks of means-plus-function claiming. The Federal Circuit held that literal infringement of a means-plus-function claim requires that an accused product or method perform the identical function, and be identical or equivalent to the structures, materials, or acts disclosed in the specification.[5] Absent literal infringement, application of the doctrine of equivalents to means-plus-function hinged on the date the equivalent structures, materials, or acts became available. Under a literal infringement analysis, any structural equivalent must have been known at the time the patent issued. While equivalents under the statute do not cover later-developed technology, so as to fix the literal meaning of the claim upon issuance, later-developed technologies can be found to be structurally equivalent under the doctrine of equivalents. As a likely result, means-plus-function claiming has dropped off significantly in the past decade.

B. § 112(2) support

As discussed in *Elcommerce.com, Inc. v. SAP AG* (2012), ''a means-plus-function clause is indefinite if a person of ordinary skill in the art would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim.''[6] The patent need only disclose sufficient structure for a person of skill in the art to provide an operative software program for the specified function. So the detail that must be provided depends on the subject matter described and its role in the invention as a whole, in view of the known state of the relevant art.

The Supreme Court's recent decision in *Nautilus, Inc. v. Biosig Instruments, Inc.*(2014) should not affect the analysis of whether a means-plus-function limitation is supported by sufficient corresponding structure.[7] The *Nautilus* decision altered the prior insolubly-ambiguous standard for indefiniteness under § 112(b), substituting a new reasonably-certain test. The issue here concerns the proper test under § 112(f). The Federal Circuit addressed the proper test for § 112(f) in two recent post-*Nautilus* cases, neither of which cite *Nautilus* on this issue.[8]

For a patent claiming a function performed on a general-purpose computer, a means-plus-function limitation is not indefinite if the patent describes and links an ''algorithm'' disclosed in the specification to the claimed function.[9] The term ''algorithm'' has a broad meaning in this context, and can be expressed ''in any understandable terms including as a mathematical formula, in prose. . ., or as a flow chart, or in any other manner that provides sufficient structure.''[10] And, the disclosure of structure can be implicit and rely on the knowledge of a skilled artisan to ''flesh out a particular structural reference in the specification for the purpose of satisfying the statutory requirement of definiteness.''[11] For computer-implemented inventions, it is standard to describe algorithms in prose, block diagrams, and flow charts. A patent may also omit information and knowledge possessed by persons of ordinary skill in the field of the invention. ''When the structure or acts that perform the function 'would be ''well within the skill of persons of ordinary skill in the art'' such functional-type block diagrams may be acceptable and, in fact, preferable if they serve in conjunction with the rest of the specification to enable a person skilled in the art to make such a selection and practice the claimed invention with only a reasonable degree of routine experimentation.' ''[12]

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[3] § 112(f) corresponds to the America Invents Act (AIA) version of § 112, paragraph 6. For ease of explanation, we will refer herein to § 112(f), but the discussion is also pertinent to pre-AIA § 112, paragraph 6.

[4] 35 U.S.C. § 112(6) (1975) (current version at 35 U.S.C. § 112(f) (2011)). ''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.''

[5] *See, e.g., Welker Bearing Co. v. PHD, Inc.*, 550 F.3d 1090 (Fed Cir. 2008); *WMS Gaming Inc. v. International Game Technology*, 184 F.3d 1339 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries*, 145 F.3d 1303 (Fed Circ. 1998); *Al-Site Corp. v. VSI International, Inc.*, 174 F.3d 1308 (Fed. Circ. 1999); *Elcommerce.com v. SAP AG*, 745 F.3d 490, 501 (Fed. Cir. 2014).

[6] *Elcommerce.com*, 745 F.3d at 501, (quoting *Noah Sys., Inc. v. Intuit, Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012)).

[7] *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120 (2014).

[8] *Augme Technologies, Inc. v. Yahoo!, Inc.*, 755 F.3d 1326 (Fed. Cir. 2014); *Triton Tech of Texas, LLC v. Nintendo of America*, 753 F.3d 1375 (Fed. Cir. 2014).

[9] *WMS Gaming Inc.*, 184 F.3d at 1348.

[10] *Finisar Corp. v. DirectTV Group, Inc.*, 523 F.3d 1323, 1340 (Fed. Cir. 2008).

[11] *Creo Products, Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1347 (Fed. Cir. 2002).

[12] *Elcommerce.com*, 745 F.3d at 503-04.

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C. § 112(f) vis-à-vis § 101

So why is this relevant to a § 101 analysis? Because the *Alice* test for subject matter eligibility asks whether computer-implemented claims recite ''significantly more'' than an abstract idea. Specifically, *Alice* requires a two-part analysis.

In the first step, one must determine whether the claims as a whole are directed to a patent-ineligible concept, such as an abstract idea. The courts have yet to explicitly define an ''abstract idea,'' but there has been some guidance. This includes whether the idea at issue was a long-standing fundamental practice or a mathematical algorithm, and whether the idea can be practiced entirely in the human mind or with a pencil and paper.[13]

If the claims are found to be directed to an abstract idea in step one, the claims are then evaluated to determine whether the additional recited elements render them a patent-eligible application of the abstract idea. This has been referred to as the search ''for an 'inventive concept' — an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.''[14] Implementing a known method on a ''generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.''[15] But specific limitations that remove any concern of preemption should generally be patent-eligible, and applications of an abstract idea are still patent-eligible.

This is where means-plus-function claims come in. The very purpose behind means-plus-function construction is to clearly limit the scope of the claim to a particular physical implementation (together with equivalents). For computer-implemented means-plus-function claims, the corresponding structure of a means-plus-function limitation *must be more than simply a general-purpose computer* or microprocessor to avoid impermissible functional claiming.[16] When properly construed and supported, the means-plus-function limitations encompass specific algorithms that *transform* an otherwise general purpose computer into a special purpose computer programmed to perform the recited function. When a special purpose computer constitutes the structure that performs the recited functions, it may impart a meaningful limitation or add significantly more to the abstract idea itself. [17]

This idea has been endorsed by at least one PTAB panel. In *Chicago Mercantile Exchange, Inc. v. 5th Market, Inc.* (2015), the PTAB found that the claims recited an abstract idea – but also recognized that the claimed means-plus-function element was ''not capable of being performed by just any generic computer that performs generic computer functions.''[18]

[13] *Alice,* 134 S. Ct. at 2355-2356; *Bilski v. Kappos*, 561 U.S. 593, 608-614 (2010); *DDR Holdings v. Hotels.com*, 773 F.3d 1245, 1256 (Fed. Cir. 2014).

[14] *Alice*, 134 S.Ct. at 2355.

[15] *Id.* at 2358.

[16] *Aristocrat Techs. Australia v. Intern. Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

[17] *Chicago Mercantile Exchange, Inc. v. 5th Market, Inc.*, CBM2015-00061, Paper 9, pp. 37 (P.T.A.B. July 16, 2015).

[18] Id.

II. When are means-plus-function claims an option for computer-implemented inventions?

Whether it is an option to use means-plus-function claims to overcome § 101 depends on the stage of the application or patent. Certainly, newly drafted applications present the best canvas for adding the necessary detail to support means-plus-function claims. But pending applications or patents in post-grant proceedings may also contain enough detail to make strategic use of this claim strategy.

A. Pending applications

If a pending application has not yet been examined on the merits, then an applicant can amend claims with relative ease. An applicant must make sure that the specification would hold up to an *Aristocrat*-type analysis. As discussed above, the support for means-plus-function claim elements may be in any form understandable by one of skill in the art – flowcharts, equations, pseudo-code, or even just further details or examples that provide additional granularity to the claimed element.

If the application has already received an office action containing a § 101 rejection, then an applicant must consider the overall strategic value of the claims' scope. Amending or adding claims in this situation will likely extinguish the applicant's ability to rely on the doctrine of equivalents if the patent is ultimately enforced. This is because the amendment to include means-plus-function claims will be presumed to have been made for reasons related to patentability – which is likely if the amendment's sole purpose is to overcome a § 101 rejection. As discussed above, this may hinder the applicant's ability to enforce the patent against infringers using later-developed technology. But unless the applicant disclaimed equivalent structures during prosecution (*e.g.*, if an amendment is being made to exclude certain structures recited in the prior art), it is possible that equivalent structures to those described in the specification (and known at the time the patent issues) could still be included under the statutory *literal* infringement of the claim.[19] And if the applicant is not able to satisfy § 101 with broader claims in a different form, then a narrower patent issuing with means-plus-function claims may still have value when compared to not getting a patent at all.

B. New applications

New applications for computer-implemented inventions should be drafted so as to provide sufficient support for possible means-plus-function claims, even if such claims are not included upon filing. It is possible that the PTO or the courts may interpret the claims as invoking § 112(f), even if such an interpretation was not intended by the applicant. This is especially true after *Williamson v. Citrix Online, LLC* (2015), which removed the strong presumption against § 112(f) construction when the term ''means for'' was not used.[20]

[19] *See*, Ulbrich, Scott G. ''Festo, Notice and the Application of Prosecution History Estoppel to Means-Plus-Function Claim Limitations.'' Wm. Mitchell L. Rev. 28 (2001): 1165.

[20] *Williamson v. Citrix Online, LLC,* 792 F.3d 1339 (Fed. Cir. 2015).

Further, including this detail in the specification gives the applicant the most flexibility for adapting to changes in § 101 jurisprudence.

Full descriptions of multiple embodiments provide the best opportunity for satisfying a later analysis of means-plus-function definiteness – and thus successfully overcoming a § 101 rejection. For example, for a claim reciting various method steps, an applicant might include flowcharts providing a further breakdown of how each of those steps is performed. Sample mathematical equations or pseudo-code may be provided where applicable. While applicants do not want to ultimately be limited by such specific implementations, it is important to remember that the algorithm defined by such disclosures constitutes the *structure*, not the function (since the function is that explicitly recited by the claims). Since literal infringement of the claim would include equivalent *structures*, other code implementations or process flows may be captured within the claim's scope, as long as they perform the identical *function* claimed.

III. Benefits of adding means-plus-function claims to a portfolio

Adding means-plus-function claims to a portfolio can provide a number of benefits. Even for a well-developed portfolio, means-plus-function claims add to the arsenal of claims available to a patentee. They also provide flexibility, allowing a portfolio to adapt as § 101 law continues to change and develop, and having a variety of claim types gives patentees the best likelihood that at least one of the claim types will be found eligible. Given the current requirements for post-grant challengers (*e.g.*, via IPRs and CBMs) to construe all means-plus-function claims in the petition by showing where support exists in the specification, means-plus-function claims also hinder a challenger's ability to easily attack such claims. And as discussed here, such claims may be an approach to overcoming a § 101 rejection when other strategies are unable to do so. Finally, ensuring that a patent application contains support for means-plus-function claims helps protect innovation outside the U.S., where means-plus-function claims are still seen as broadly protecting any physical implementation of a claimed process.

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