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Section 112 Indefiniteness Is Still a "Lofty" Invalidity Attack

Jason W. Whitney

After the U.S. Supreme Court tightened the requirements of 35 U.S.C. § 112 in *Nautilus, Inc. v. Biosig Instruments, Inc.*, by holding that claims must describe "the scope of the invention with reasonable certainty,"[1] some envisioned the possibility of a reinvigorated indefiniteness standard standing as a bulwark against overly broad or vaguely drafted patent claims. Indeed, just months after *Nautilus*, the U.S. Court of Appeals for the Federal Circuit hinted at such a future with *Interval Licensing LLC v. AOL, Inc.*, which established the rule that terms of degree "must provide objective boundaries" for claimed inventions.[2]

But as the Federal Circuit has continued to define the contours of *Nautilus* over the following years, indefiniteness attacks have met uneven success and produced inconsistent application of Section 112. The Federal Circuit's recent opinion in *Guangdong Alison Hi-Tech Co. v. ITC*,[3] which examined the term of degree "lofty," represents one such case. Although *Alison* found that "lofty" satisfied Section 112, the decision illustrates the current paradigm for indefiniteness attacks: unpredictability with a gradual shift in the "delicate balance" back towards tolerating more uncertainty in patent claims.

Jason W. Whitney is a counsel in the Intellectual Property Litigation Practice Group in the San Antonio office of Haynes and Boone. He may be contacted at *jason.whitney@haynesboone.com*.

UNDERLYING ITC INVESTIGATION

The appeal in *Alison* arose from a U.S. International Trade Commission ("ITC") investigation of certain imported aerogels.[4] Originally invented in the 1930s, aerogels are "created by combining a polymer with a solvent to form a gel, and then removing the liquid from the gel and replacing it with air."[5] The resulting lightweight material—an aerogel—is "one of the finest insulation materials available" but also one that is "very fragile."[6]

The complainant in the ITC investigation, Aspen Aerogels, Inc., owned various patents for improved aerogels. Aspen accused products of Guangdong Alison Hi-Tech Co. ("Alison") of infringing three of Aspen's patents.[7] Two of those described and claimed improvements in techniques for manufacturing aerogels in sheet form. Aspen's third patent, U.S. Patent No. 7,078,359 (the "'359 Patent"), described and claimed improved aerogel composites that provided greater flexibility and durability.[8] Relevant to the later appeal, claims 1, 7, and 9 of the '359 Patent claimed composites that combined aerogels with "*lofty* fibrous batting," where "fibrous batting" is simply a layer or sheet of fibrous material, such as that used for stuffing or insulation.[9]

At the ITC, Alison attacked the validity of claims 1, 7, and 9 on several grounds. Alison challenged the term "lofty" as failing to provide reasonable certainty of claim scope as required under Section 112.[10] Alison

also argued that the claimed composites were anticipated under Section 102 and that claim 9 was obvious under Section 103.[11]

After a hearing, the ITC found claims 1, 7, and 9 of the '359 Patent valid and infringed, and subsequently issued a limited exclusion order.[12] Alison appealed the ITC's determinations on the issues of indefiniteness, anticipation, and obviousness.

THE COURT'S INDEFINITENESS ANALYSIS

Given the ultimate conclusion that "lofty" is not indefinite, the *Alison* panel's indefiniteness analysis begins with a puzzling acknowledgment: the '359 Patent provided different "express definitions" for the meaning of "lofty batting."[13] The opinion explains that the '359 Patent defined lofty batting at least two ways:

1. As "a fibrous material that shows the properties of bulk and some resilience (with or without full bulk recovery),"[14] and

2. As batting "contain[ing] sufficiently few individual filaments (or fibers) that it does not significantly alter the thermal properties of the reinforced composite as compared to a non-reinforced aerogel body of the same material."[15]

As such, on its face, the '359 Patent alternately defined lofty batting as either (i) fibrous batting with certain bulk/resilience properties, or (ii) fibrous batting that did not significantly alter thermal properties of the resulting composite.[16]

In past decisions, the Federal Circuit recognized multiple definitions of a claim term as highly problematic and even invalidating. For example, in *Cephalon, Inc. v. Abraxis Bioscience, LLC*,[17] the Federal Circuit reasoned that because lexicography required an inventor to "clearly set forth *a definition* of the disputed claim term," two "inconsistent 'definitions'" could not meet the requirements of definition by lexicography.[18] Furthermore, in *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*,[19] the Federal Circuit found the claim term "molecular weight" indefinite where, notwithstanding the absence of an express definition in the specification, a person of skill in the art could have defined the term by "three different measures."[20]

Yet unlike these earlier cases, the panel in *Alison* found claims 1, 7, and 9 sufficiently definite despite two express definitions for the disputed term "lofty."

The *Alison* opinion was able to reach this conclusion with an unorthodox approach: presuming that the two definitions were coextensive. Though the '359 Patent did not itself state that the bulk/resilience and thermal characteristics were tied together, the opinion wove parts of the specification discussing "volume," "thermal performance," "loft," and "insulating properties" into a single set of "functional characteristics" that lofty batting possessed.[21] The opinion cited no authority for its presumption that these two definitions, based on distinct properties, were coincident. Rather, the panel simply said that it did not "expect there to be any such incongruity."[22] The opinion also faulted Alison for failing to offer evidence that the two definitions could "lead to different results."[23] By presuming that the two express definitions of lofty were coextensive, the *Alison* panel avoided the question of whether the '359 Patent claimed batting that could be "lofty" under one definition but not the other.

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Having sidestepped the different definitions, the *Alison* opinion found Section 112 satisfied, and disposed of Alison's counterarguments. The opinion concluded that the presence of "examples and metrics" for each definition gave sufficient guidance on the meaning of "lofty" without explaining how the examples provided a reasonably clear boundary, or what the objective boundary might be.[24] Mirroring the pre-*Nautilus* standard that claims need only be "amenable to construction," the decision also said its determination that claims 1, 7, and 9 were sufficiently definite was bolstered because "both parties' experts *could explain* the meaning" of terminology used in one definition.[25] Finally, the panel brushed off Alison's concern about using another term of degree ("*some* resilience") to define the term of degree "lofty," complaining that Alison "seeks a level of numerical precision beyond that required."[26]

The Federal Circuit thus affirmed the ITC's decision of no indefiniteness for the claim limitation "lofty," a term of degree in the '359 Patent with *different* express definitions and which incorporated *another* term of degree in its definition, with no analysis of *why* the patent's examples provided sufficient certainty, or *what* the objective boundary might be.

THE COURT'S ANTICIPATION AND OBVIOUSNESS ANALYSIS

The *Alison* panel next found claims 1, 7, and 9 of the '359 Patent not anticipated or obvious.[27] However, this conclusion relied on an approach that was at odds with the indefiniteness analysis provided a few pages earlier in the opinion.

The only prior art reference at issue on appeal was U.S. Patent No. 5,306,555 (Ramamurthi), which "discloses methods of manufacturing various aerogel matrix composites that incorporate fibers."[28] The panel determined that Ramamurthi did not "expressly or inherently disclose the 'lofty . . . batting' limitation."[29] But to reach this determination, the panel focused exclusively on Ramamurthi's teachings on *bulk and resilience,* and the expert testimony regarding those concepts. Conspicuously, the panel noted but otherwise ignored Ramamurthi's teachings of composites having the "same . . . *thermal characteristics* as the aerogel composites disclosed in the '359 patent."[30]

As stated in the panel's indefiniteness analysis, one way the '359 Patent defined a "lofty" fibrous batting was as a batting that "does not significantly alter the thermal properties of the reinforced composite as compared to a non-reinforced aerogel body of the same material."[31] There is little doubt that Ramamurthi taught a fibrous batting meeting this definition.

For instance, in Example 1-A, Ramamurthi disclosed five composite samples having the same thermal conductivity range as pure, non-reinforced aerogels.[32] The fibrous battings used in these samples are "lofty" because the thermal properties of the composite samples were substantially the same as a pure aerogel. Ramamurthi's Example 2, referenced in the opinion, described a composite having a slightly lower conductivity range than a pure aerogel.[33] Figure 4 of Ramamurthi likewise showed that its aerogel composites could provide lower thermal conductivities than conventional, pure aerogels.[34] Again, the fibrous battings used in these examples qualify as "lofty" based on the composites' slightly improved thermal characteristics.

Yet the *Alison* panel failed to assess or analyze the thermal teachings in Ramamurthi. Given the earlier presumption that "lofty" batting encompasses both the bulk/resilience properties and resultant thermal properties, the panel should have considered Ramamurthi's thermal teachings. This would have resulted in a determination that Ramamurthi anticipated "lofty" batting. Instead, the panel reached the opposite conclusion by focusing solely on the bulk and resilience characteristics disclosed in Ramamurthi, and the opinion fails to address this inconsistency.

AN ERRATIC STANDARD

Although the Supreme Court requires claims to define "the scope of the invention with reasonable certainty," the application of this rule by the Federal Circuit stands in flux and appears to be slowly trending towards allowing greater uncertainty. *Guangdong Alison Hi-Tech Co. v. ITC* confirms that there are few settled principles when it comes to applying Section 112. What one panel finds troublesome (*e.g.*, multiple express definitions), another panel may approve.

Moreover, *Alison* demonstrates a willingness to accept "guidance" as providing sufficient certainty (*e.g.*, another term of degree or the existence of examples in the specification), with little critical assessment of whether or how the guidance circumscribes a reasonably clear boundary.

And *Alison* shows that courts may sometimes treat claim scope differently for purposes of anticipation or obviousness than for purposes of indefiniteness.

Notes

1. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014).
2. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).
3. No. 2018-2042 (Fed. Cir. Aug. 27, 2019), *available at http://www.cafc.uscourts.gov/sites/default/files/opinions-orders/18-2042.Opinion.8-27-2019.pdf* (last visited Sept. 16, 2019).
4. *Composite Aerogel Insulation Materials and Methods for Manufacturing the Same*, U.S. International Trade Commission, *https://www.usitc.gov/*

composite_aerogel_insulation_materials_and_methods.htm_0 (last visited Sept. 16, 2019).

5. *E.g., Aerogels: Thinner, Lighter, Stronger*, NASA (July 28, 2011), *https://www.nasa.gov/topics/technology/features/aerogels.html*.
6. *Id*.
7. *Composite Aerogel Insulation Materials and Methods for Manufacturing the Same*, U.S. International Trade Commission, *https://www.usitc.gov/composite_aerogel_insulation_materials_and_methods.htm_0* (last visited Sept. 19, 2019).
8. *Guangdong Alison Hi-Tech Co. v. ITC*, No. 2018-2042, slip op. at 3-4 (Fed. Cir. Aug. 27, 2019).
9. *Id*. at 3-4, 10.
10. *Id*. at 4-5.
11. *Id*. at 5-6.
12. Limited Exclusion Order, *https://www.usitc.gov/intellectual_property/exclusion_orders/337-ta-1003_0.pdf* (last visited Sept. 16, 2019).
13. *Guangdong Alison Hi-Tech Co. v. ITC*, No. 2018-2042, slip op. at 10 (Fed. Cir. Aug. 27, 2019).
14. *Id*. (quoting '359 Patent col. 7:1-3).
15. *Id*. (quoting '359 Patent col. 7:28-32).
16. In fact, the '359 Patent also appears to provide a third definition of lofty batting based on its compressibility/resilience properties: "Another way of determining if a batting is sufficiently lofty to be within the scope of this invention is to evaluate its compressibility and resilience. In this case a lofty batting is one that (i) is compressible by at least 50% of its natural thickness . . . and (ii) is sufficiently resilient that after compression for a few seconds it will return to at least 70% of its original thickness, ..." '359 Patent col. 7:40-48.
17. *Cephalon, Inc. v. Abraxis Bioscience, LLC*, Nos. 2014-1411, 2014-1442 (Fed. Cir. June 17, 2015) (nonprecedential), *available at http://www.cafc.uscourts.gov/sites/default/files/opinions-orders/14-1411.Opinion.6-12-2015.1.PDF* (last visited Sept. 16, 2019).
18. *Id*. at 8-9.
19. *Teva Pharmaceuticals USA, Inc. v. Sandoz, Inc.*, 789 F.3d 1335 (Fed. Cir. 2015).
20. *Id*. at 1341, 1344-45.
21. *Guangdong Alison Hi-Tech Co. v. ITC*, No. 2018-2042, slip op. at 10-11 (Fed. Cir. Aug. 27, 2019).
22. *Id*. at 14.
23. *Id*.
24. *Id*. at 11-14.
25. *Id*. at 12 (emphasis added).
26. *Id*. at 13.
27. *Id*. at 16-19.
28. *Id*. at 5.
29. *Id*. at 16.
30. *Id*. at 17 (emphasis added).
31. *Id*. at 10.
32. Ramamurthi col. 7, Table I, Part B (describing composites A, B, C, D, and E with conductivities of 18 to 21 mW/m-K and conventional aerogel sample F with conductivity of 18 to 21 mW/m-K).
33. *Guangdong Alison Hi-Tech Co. v. ITC*, No. 2018-2042, slip op. at 17 (Fed. Cir. Aug. 27, 2019) (noting Example 2); Ramamurthi col. 12:56-58 (describing Example 2 as a flexible, silica-fiber reinforced aerogel with conductivity of 18 to 20 mW/m-K).
34. Ramamurthi fig. 4 & col. 3:43-49.