

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ALCON INC., ALCON LENSX, INC., ALCON VISION, LLC, ALCON  
LABORATORIES, INC., and ALCON RESEARCH, LLC.,  
Petitioner,

v.

AMO DEVELOPMENT, LLC,  
Patent Owner.

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IPR2021-00843  
Patent 9,233,023 B2

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Before SHERIDAN K. SNEDDEN, JON B. TORNQUIST, and  
RYAN H. FLAX, *Administrative Patent Judges*.

TORNQUIST, *Administrative Patent Judge*.

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314

## I. INTRODUCTION

### A. *Background and Summary*

Alcon Inc., Alcon LenSx, Inc., Alcon Vision, LLC, Alcon Laboratories, Inc., and Alcon Research, LLC (collectively “Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–17 (all claims) of U.S. Patent No. 9,233,023 B2 (Ex. 1004, “the ’023 patent”). AMO Development, LLC (“Patent Owner”) filed a Preliminary Response to the Petition. Paper 7 (“Prelim. Resp.”). With authorization, Petitioner subsequently filed a Reply (Paper 11, “Reply”) and Patent Owner filed a Sur-Reply (Paper 13, “Sur-Reply”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314; 37 C.F.R. § 42.4(a). The standard for institution is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted “unless the Director determines . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

After considering the parties’ arguments and evidence, and for the reasons set forth below, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the ’023 patent. Accordingly, we institute an *inter partes* review of claims 1–17 of the ’023 patent. *See SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018).

### B. *Real Parties-in-Interest*

Petitioner identifies Alcon Inc., Alcon Vision, LLC, Alcon Laboratories, Inc., and Alcon Research, LLC as the real parties-in-interest, noting that after the Petition was filed “Alcon LenSx, Inc. merged into Alcon Research, LLC, with Alcon Research LLC the surviving entity.”

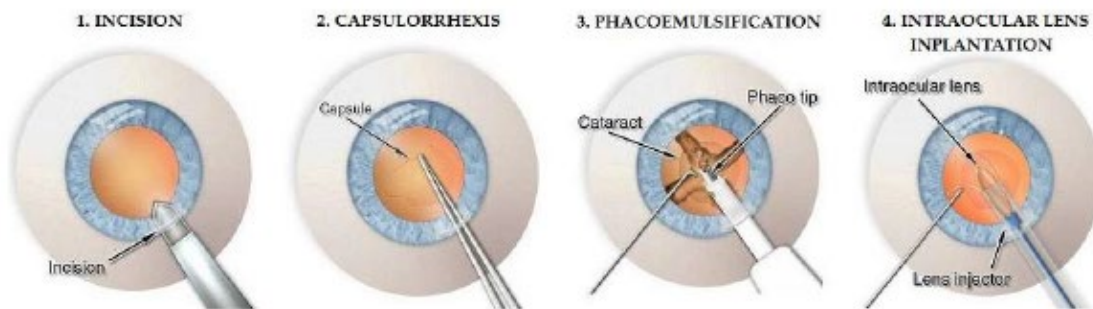
Paper 3, 1; Pet. 2. Patent Owner identifies itself and Johnson & Johnson Surgical Vision, Inc., AMO Manufacturing USA, LLC, and AMO Sales and Services, Inc., as the real parties-in-interest. Paper 5, 1.

### *C. Related Matters*

The '023 patent is asserted in *AMO Development, LLC et al. v. Alcon LenSx, Inc. et al.*, No. 1:20-cv-00842-CFC (D. Del). Pet. 2; Paper 5, 1. *Inter Partes* review petitions were also filed by Petitioner against related patents in IPR2021-00845, -00846, and -00849. Paper 3, 1; Pet. 2–3.

### *D. Background of Cataract Surgery*

Each independent claim of the '023 patent is directed to a “cataract surgery scanning system for treating target tissue in one or more of a cornea, limbus, or sclera of a patient’s eye.” Ex. 1004, 14:5–7, 14:55–57, 15:38–40. Cataract surgery typically involves removal of the natural lens and replacing it with an intraocular lens (IOL). Ex. 1001 ¶ 23; Ex. 2004 ¶ 16. Petitioner’s declarant, Dr. Lubatschowski, provides the following figures depicting these implantation steps (Ex. 1001 ¶ 23):



The figures above show four steps used in the process of implanting an IOL in a patient. *Id.* First, to access the lens, an incision must be made in the cornea or nearby tissues. *Id.* Second, in a process called capsulorhexis or anterior capsulotomy, an opening is made in the anterior lens capsule. *Id.* Third, the eye’s lens is broken apart and removed, usually by ultrasonic

phacoemulsification.<sup>1</sup> *Id.* Finally, an IOL is implanted in the lens capsule. Ex. 1001 ¶ 23; Ex. 2004 ¶ 16.

*E. The '023 Patent*

The '023 patent is directed to a scanning system that implements patterned laser cutting to provide rapid and precise openings in the cornea and/or limbus of the eye. Ex. 1004, 1:62–64. The scanning system of the '023 patent includes a light source for generating a light beam, a scanner for deflecting the light beam to form first and second treatment patterns of the light beam under control of a controller, and a delivery system for delivering the treatment patterns to the target tissue of the eye. *Id.* at 1:66–2:6. The first treatment pattern forms a cataract incision that provides access to an eye chamber and the second treatment pattern forms a “relaxation incision along or near limbus tissue or along corneal tissue anterior to the limbus tissue of the patient’s eye to reduce astigmatism thereof.” *Id.* at 2:3–10.

The '023 patent explains that the “cataract incision” provided by the first treatment pattern “allows access for the lens removal instrumentation” used during cataract surgery. *Id.* at 10:17–19. The '023 patent further explains that when in an unsterile environment, a complete cut may not be desirable because it may expose the eye to the environment and the risk of endophthalmitis. *Id.* at 10:27–30. Thus, the disclosed system allows for a cataract incision that only partially penetrates the cornea, limbus, or sclera. *Id.* at 10:30–31.

The '023 notes that standard cataract incisions are known to induce from 0-1.0 D of astigmatism, on average. *Id.* at 10:64–67. To compensate

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<sup>1</sup> Although not shown in his figures, Dr. Lubatschowski testifies that a surgeon may also correct for astigmatism, “whether pre-existing or surgery-induced,” during cataract surgery. Ex. 1001 ¶¶ 23–24.

for this effect, the second treatment pattern used in the system of the '023 patent may be in the form of a relaxation incision. *Id.* at 11:1–7. According to the '023 patent, although such corneal relaxation incisions (CRI) were known in the art, the present invention allows these incisions to “be planned and executed in conjunction with the cataract incision to achieve a better visual correction than otherwise possible.” *Id.* at 11:10–19.

*F. Illustrative Claims*

Petitioner challenges claims 1–17 of the '023 patent. Pet. 4. Of the challenged claims, claims 1, 8, and 12 are independent. Claim 1 is illustrative of the challenged claims and is reproduced below:

1. A cataract surgery scanning system for treating target tissue in one or more of a cornea, limbus or sclera of a patient's eye, comprising:
  - a treatment light source for generating a treatment light beam;
  - a scanner for deflecting the light beam to form first and second treatment patterns of the treatment light beam under the control of a controller; and
  - a delivery system comprising the controller operatively coupled to the treatment light source and the scanner, and programmed to: (i) deliver the first treatment pattern to a first target tissue selected from the group consisting of the cornea, limbus and sclera of the patient's eye to form a cataract incision therein that provides access to an eye chamber of the patient's eye, the incision to be formed by delivering the first treatment pattern only partially extending through the target tissue, and (ii) deliver the second treatment pattern to a second target tissue to form a relaxation incision along or near limbus tissue, or along corneal tissue-of the patient's eye.

Ex. 1004, 14:5–24.

*G. Prior Art and Asserted Grounds*

Petitioner asserts that claims 1–17 would have been unpatentable on the following grounds (Pet. 6):

<b>Claims Challenged</b>	<b>35 U.S.C. §<sup>2</sup></b>	<b>Reference(s)/Basis</b>
1–8, 10, 11, 17	103	Blumenkranz <sup>3</sup> , Kurtz <sup>4</sup> , Weikert <sup>5</sup>
4, 9, 12–16	103	Blumenkranz, Kurtz, Weikert, Benedikt <sup>6</sup>
1–3, 6, 17	103	Kurtz, Swinger <sup>7</sup> , Weikert
4, 5, 7–16	103	Kurtz, Swinger, Weikert, Benedikt

In support of its grounds for unpatentability, Petitioner relies upon the declaration of Holger Lubatschowski, Ph.D. (Ex. 1001). In support of its positions, Patent Owner relies on the declarations of Jin U. Kang, Ph.D. (Ex. 2002) and Kathryn M. Hatch, M.D. (Ex. 2004).

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<sup>2</sup> The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. §§ 102 and 103, effective March 16, 2013. Because the latest possible effective filing date of the challenged claims of the ’023 patent is before this date (March 13, 2008), the pre-AIA version of these statutes apply. *See* 35 U.S.C. § 100(i)(2); Ex. 1004, code (22).

<sup>3</sup> US Patent Publication No. 2006/0195076 A1, published August 31, 2006. Ex. 1017 (“Blumenkranz”).

<sup>4</sup> US Patent Publication No. 2008/0058777 A1. Ex. 1018 (“Kurtz”).

<sup>5</sup> Mitchell P. Weikert and Douglas D. Koch, *Refractive Keratotomy: Does It Have a Future Role in Refractive Surgery?*, Cataract and Refractive Surgery (2005). Ex. 1019 (“Weikert”); *see* Ex. 1001 ¶ 73.

<sup>6</sup> US Patent Publication No. US 2004/0066489 A1, published April 8, 2004. Ex. 1020 (“Benedikt”).

<sup>7</sup> US 6,325,792 B1, issued December 4, 2001. Ex. 1021 (“Swinger”).

## II. ANALYSIS

### A. *Level of Ordinary Skill in the Art*

In determining the level of skill in the art, we consider the type of problems encountered in the art, the prior art solutions to those problems, the rapidity with which innovations are made, the sophistication of the technology, and the educational level of active workers in the field. *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986).

Petitioner contends one of ordinary skill in the art “would have had a Ph.D. in Physics, Biomedical Engineering, or a related science, such as Optical Engineering, or at least five years of experience in research, manufacturing, or designing medical optics or medical lasers.” Pet. 28. According to Petitioner, “[i]n either case, a [person of ordinary skill in the art] would have also had a moderate understanding of ophthalmology, and refractive and cataract surgery.” *Id.*

Patent Owner contends Petitioner’s definition is mistaken in two respects. Prelim. Resp. 13. First, according to Patent Owner, a person of ordinary skill in the art “must include the expertise of someone with clinical experience in the field of ophthalmology.” *Id.* Second, a person of ordinary skill in the art need not have Ph.D. level training, as active workers in the field typically held Bachelor’s degrees. *Id.* at 13–14. Given these modifications, Patent Owner would define the ordinarily skilled artisan as “an engineer with a Bachelor’s degree in a laser-related engineering or optics field, with some experience working with medical optics or lasers” and having experience working “with a clinician having experience in ophthalmic surgery.” *Id.* at 12 (citing Ex. 2002 ¶¶ 28–29). Conversely, Patent Owner contends the ordinarily skilled artisan could “include an

ophthalmic surgeon with some experience working with medical optics or lasers” and experience working with an engineer or a graduate from a related field with “experience working with medical optics or lasers.” *Id.* at 12–13.

For purposes of this Decision, we generally accept Petitioner’s proposed definition of the person of ordinary skill in the art (or ordinarily skilled artisan), which appears to be consistent with the level of skill in the art reflected in the prior art of record and the disclosures of the ’023 patent; however, we also agree with Patent Owner that such a definition should be flexible enough to include a person with a lesser academic degree and having experience working in the field, such as an engineer with clinical experience in ophthalmic surgery, as well as a medical doctor, such as an ophthalmic surgeon with experience working with medical optics and lasers. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (noting that the appropriate level of ordinary skill in the art may be reflected in “the prior art itself”) (quoting *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 163 (Fed. Cir. 1985)).

Such an expanded definition of the person of ordinary skill in the art, including aspects of both parties’ definitions, is appropriate based on our review of the record, which demonstrates individuals having a broad array of scientific degrees that collaborate as a team. We note, however, that our decision to institute trial in this proceeding would not change were we to adopt Patent Owner’s proposed definition.

#### *B. Claim Construction*

In this proceeding, the claims of the ’023 patent are construed “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). Under that standard, the words of a claim are generally given their “ordinary

and customary meaning,” which is the meaning the term would have had to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc).

Petitioner provides constructions for the terms “[a] cataract surgery scanning system,” “cataract incision therein that provides access to an eye chamber of the patient’s eye, the incision . . . only partially extending through the target tissue,” and “combine the first and second treatment patterns into a single treatment pattern.” Pet. 6–12.

Patent Owner provides constructions for the terms “[a] cataract surgery scanning system” and “cataract incision . . . only partially extending through the target tissue.” Prelim. Resp. 20–27.

We address the constructions disputed by the parties below. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”)).

1. “*A cataract surgery scanning system*”

The preamble of independent claims 1, 8, and 12 recites “[a] cataract surgery scanning system for treating target tissue in one or more of a cornea, limbus or sclera of a patient’s eye, comprising . . . .” Ex. 1004, 14:5–7, 14:55–57, 15:38–40. Petitioner contends this preamble phrase is not limiting. Pet. 6. Petitioner acknowledges that the Examiner amended the preamble from “scanning systems” to “a cataract surgery scanning system” during prosecution, but contends this is an intended use that “fails to impart

any structure that would patentably distinguish the system from multifunctional, ophthalmic-surgery systems in the prior art.” *Id.* at 6–7.

Patent Owner contends the preamble phrase is limiting because it was added by the Examiner to secure allowance of the claims. Prelim. Resp. 20–21. In particular, Patent Owner notes that an interview summary generated during prosecution states that the “Examiner suggested limiting the claimed apparatus (scanner) to a cataract surgery apparatus in order to exclude the other scanning systems.” *Id.* (citing Ex. 1006, 18).

On this record, we agree with Patent Owner that the disputed preamble phrase is limiting. “[C]lear reliance on the preamble during prosecution to distinguish the claimed invention from the prior art transforms the preamble into a claim limitation because such reliance indicates use of the preamble to define, in part, the claimed invention.” *Catalina Mkt’g Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808–09 (Fed. Cir. 2002). Here, the Examiner expressly allowed the claims in view of the Examiner’s Amendment changing “scanning system” to “cataract surgery scanning system,” thereby transforming this portion of the preamble into a limitation. Ex. 1006, 13, 15, 18; *see Catalina Mkt’g*, 289 F.3d. at 808.

Furthermore, contrary to Petitioner’s arguments, the record appears to suggest that there are structural differences between the optical systems of cataract surgery systems on the one hand and corneal surgery systems on the other. *See* Ex. 2006, 5:30–36; Ex. 2009, 1209–10. Thus, on this record, we are not persuaded that the language added by the Examiner represents merely an intended use for the disclosed system.

In view of the foregoing, for purposes of this Decision, we construe the preamble phrase “cataract surgery scanning system” recited in independent claims 1, 8, and 12 to be limiting.

2. *“cataract incision therein that provides access to an eye chamber of the patient’s eye, the incision . . . only partially extending through the target tissue”*

Claim 1 requires a “cataract incision therein that provides access to an eye chamber of the patient’s eye, the incision . . . only partially extending through the target tissue.” Ex. 1004, 14:18–21. Petitioner contends this claim phrase is potentially subject to two different claim constructions.

Pet. 8–10.

First, Petitioner argues that a “cataract incision” could be interpreted to mean “an incision that fully extends through the target tissue,” which requires multiple passes of the laser along the treatment pattern to ultimately form a fully penetrating incision that “provides access to an eye chamber.” *Id.* at 8–9. The problem with this construction, according to Petitioner, is that it reads limitations out of the claim. *Id.* at 10.

Second, Petitioner argues that the disputed language could merely recite the purpose of the partial incision, with ultimate access provided by a surgeon in another step. *Id.* at 9–10. Petitioner contends this construction is generally consistent with the disclosures of the ’023 patent, but reads the term “provides access to an eye chamber” out of the claim. *Id.* at 10.

Unable to definitively determine the correct interpretation of the claim, Petition adopts “both for purposes of [the] Petition,” and seeks to show the claims would have been obvious under either interpretation. *Id.*

Patent Owner contends the claim phrase should be construed to mean “a partially penetrating incision to allow access for the lens removal instrumentation, without causing refractive changes.” Prelim. Resp. 22. Patent Owner reasons that the definition of a “cataract incision” set forth in the ’023 patent is an incision that “allow[s] access for the lens removal

instrumentation,” and the written description explains that a partial cataract incision provides access by “starting the incision at the correct location” thereby “preparing the tissue at the point of entry for the surgeon’s laser removal instrumentation.” *Id.* at 22, 26 (quoting Ex. 1004, 10:17–19).

Patent Owner further contends that limiting the incisions to those that do not cause refractive changes is supported by the prosecution history of the ’023 patent, wherein the Examiner asserted that a partial cataract incision is one that “only partially extends through the target tissue and provides access to the eye chamber of the patient’s eye without causing refractive changes.” *Id.* at 23 (citing Ex. 1006, 15).

The ’023 patent explains that a “cataract incision” is an incision created “to allow access for the lens removal instrumentation.” Ex. 1004, 10:17–19. The potential ambiguity in the claim comes, as Petitioner notes, from the fact that the cataract incision of claim 1 “only partially extend[s] through the target tissue,” which would not appear to provide immediate “access to an eye chamber of the patient’s eye.” Pet. 10; Ex. 1004, 10:19–23, 14:15–21. Although somewhat ambiguous on its face, the prosecution history provides guidance as to how this claim phrase is to be interpreted. *Phillips*, 415 F.3d at 1317 (“Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent.”).

During prosecution, the Applicants explained that the invention allows “straight cataract incisions [to be] made at the correct location,” and that partially penetrating cataract incisions are advantageous because they allow the laser delivery system to be located in an “unsterile field,” with the final penetrating incision to be made “by a physician after a patient has been moved to a sterile field.” Ex. 1006, 52–53. The Applicants then explained that despite the fact that partially penetrating cataract incisions do not fully

penetrate the eye tissue, the partial incisions are understood to “allow access for the lens removal instruments,” as that term is used in the ’023 patent. *Id.* at 52 (noting the purpose of “partially penetrating cataract incisions” is “to allow access for lens removal instruments”), 55 (“In short, none of the cited art teaches . . . to deliver the first treatment pattern to the target tissue to form **partially penetrating cataract incisions** – *i.e.* incisions that allow access for the lens removal instruments.”). The Examiner agreed with this reasoning. *Id.* at 15 (agreeing that the prior art did not teach or suggest partially penetrating cataract incisions that provide “access to the eye chamber of the patient’s eye”). Given these disclosures, we agree with Patent Owner that “provides access to an eye chamber of the patient’s eye” in claim 1 means that the partial incision is a starting incision, made in the appropriate shape and location, that allows complete access for lens removal instrumentation when completed, for example, by the surgeon.

In view of the foregoing, we construe the claim phrase “cataract incision therein that provides access to an eye chamber of the patient’s eye, the incision . . . only partially extending through the target tissue” to require “a partially penetrating cataract incision that, when completed by the

surgeon or another individual, allows access for lens removal instrumentation.”<sup>8</sup>

*C. Multiple Claim Construction Positions*

As noted above, Petitioner proposed two potential claim constructions for the term “cataract incision therein that provides access to an eye chamber of the patient’s eye, the incision . . . only partially extending through the target tissue.” Pet. 8–10. Petitioner explains that it maintains that “this term is indefinite under any construction but provide[s] these work-arounds solely for purposes of applying the prior art.” Pet. 9 n.4.

Patent Owner contends the Petition must be dismissed because Petitioner argues that the claim is indefinite. Prelim. Resp. 18–19.

The Board has dismissed petitions when a petitioner asserted that certain claim terms were indefinite. For example, where a petitioner contends that a means-plus-function claim term lacks corresponding structure in the specification, the Board has found that the petition should be dismissed, as opposed to ruling on an indefiniteness issue for which the Board lacks jurisdiction. *See Samsung Elecs. Am., Inc. v. Uniloc 2017 LLC*, IPR2020-00046, Paper 6 at 7–8 (PTAB April 1, 2020). The Board has also

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<sup>8</sup> Because resolution of the question is not necessary for this Decision, we do not address Patent Owner’s argument that the partial cataract incisions must cause no refractive changes. *See Nidec Motor*, 868 F.3d at 1017. We note, however, that we are directed to no disclosure in the claims, written description, or prosecution history made by the *Applicants*, that the partially penetrating incisions cause no refractive changes. To the extent this claim construction dispute is relevant during trial, the parties should address whether the Applicants, as opposed to the Examiner, ever asserted that partial cataract incisions produce no refractive changes. *See Ex. 1004*, 10:64–67 (asserting that standard cataract incisions induce from 0-1.0 D of astigmatism, on average).

dismissed petitions where the petitioner advocated using a construction proposed by a patent owner in the district court, but asserted that this construction was indefinite. *Hologic, Inc. v. Enzo Life Sciences, Inc.*, IPR2018-00019, Paper 21 at 6 (PTAB November 28, 2018) (“Petitioner does not satisfy Rule 42.104(b)(3) when, in a proceeding applying the *Phillips* claim construction standard, it ‘expressly disagree[s] with its proffered constructions.’”).

We note, however, that not all panels of the Board are in agreement with this reasoning and have moved forward on obviousness grounds despite the fact that a petitioner asserts that a claim term may be indefinite (in the petition or in a parallel district court proceeding), as long as the Board is ultimately able to sufficiently understand the scope of the claims and apply that understanding to the prior art. *See Election Sys. & Software, LLC v. Hart Intercivic, Inc.*, PGR2020-00031, Paper 29 at 29 (PTAB September 1, 2021) (applying, solely for the purposes of demonstrating obviousness, the petitioner’s proposed construction of a term that it also asserted was indefinite); *Hospira, Inc. v. Amgen Inc.*, IPR2021-00528, Paper 7 at 9 (PTAB August 17, 2021) (“We discern no prejudice against Patent Owner in allowing Petitioner to adopt Patent Owner’s claim constructions before the Board (where Petitioner is precluded from arguing indefiniteness), while arguing that that claim construction is indefinite before the district court.”); *Zillow Group, Inc. v. Int’l Business Machines Corp.*, IPR2020-01656, Paper 8 at 11 (PTAB March 15, 2021) (“Patent Owner cites no authority nor are we aware of any authority for the proposition that we may not assess the patentability of claims in an *inter partes* review because the Petitioner also challenges those claims as indefinite in the District Court.”); *Target Corp. v. Proxicom Wireless, LLC*, IPR2020-00931, Paper 10 at 9 (PTAB November

10, 2020) (noting that “[a]lternative pleading before a court is common practice”).

In this case, we are able to construe the disputed claim term with sufficient precision to address the obviousness arguments presented by Petitioner. Accordingly, we decline Patent Owner’s invitation to dismiss the Petition in view of Petitioner’s argument that claim 1 is both obvious and indefinite.

*D. Prior Art Status of Weikert*

The Petition asserts that Weikert is an article, titled *Refractive Keratotomy: Does it Have a Future Role in Refractive Surgery?*, that was published in 2005 “as Chapter 14 in CATARACT AND REFRACTIVE SURGERY” and is therefore prior art to the ’023 patent under 35 U.S.C. § 102(b). Pet. 5, 30. In support of the Petition, Dr. Lubatschowski testifies that the identified chapter of Weikert was part of “the 2005 edition” of “CATARACT AND REFRACTIVE SURGERY.” Ex. 1001 ¶ 73.

Patent Owner contends the Petition should be denied because Petitioner fails to demonstrate that Weikert was ever made publically available. Prelim. Resp. 14. According to Patent Owner, all the Petition “does is attach a few pages that it claims are a book chapter, but offers no date, no copyright notice, no other pages from the alleged book, no declarations attesting to publication, no proof that it was publically accessible—no evidence whatsoever.” *Id.*

In its authorized Reply, Petitioner provides a copy of the front cover of Weikert, as well as pages identifying the ISBN number, ISSN number, Library of Congress Control Number, and a 2005 copyright date for the

reference. Reply 1; Ex. 1060, 1–5.<sup>9</sup> Petitioner also argues that a simple internet search of the citation provided in the Petition would provide the same information. Reply 1–2.

In its Sur-Reply, Patent Owner argues that it is the petition that must provide evidence that a reference was publically accessible before the critical date of the challenged patent, and this information may not be supplied in a reply. Sur-Reply 1 (citing *Hulu, LLC v. Sound View Innovations, LLC*, IPR2018-01039, Paper 29 at 13 (Dec. 20, 2019)) (precedential). According to Patent Owner, “[Petitioner] cites *no decisions*—and [Patent Owner] located none—where the Board instituted an IPR based on publication information submitted after the petition. For good reason: the statute forbids it. That ends the matter.” *Id.*

A petition must “identify *with particularity* the grounds for institution and evidence supporting such grounds,” including “the prior art relied upon and evidence that it qualifies as such.” *Hulu*, Paper 29 at 13 (citing 35 U.S.C. § 312(a)). The Petition identifies the grounds for institution and the evidence supporting such grounds, and presents evidence that Weikert qualifies as prior art under 35 U.S.C. § 102(b). Pet. 5, 30. For example, Petitioner and Dr. Lubatschowski assert that CATARACT AND REFRACTIVE SURGERY “is a quarterly review series comprising chapters written by well-known specialists,” and that Weikert was included in the 2005 edition of CATARACT AND REFRACTIVE SURGERY as Chapter 14: *Refractive Keratotomy: Does it Have a Future Role in Refractive Surgery?* Ex. 1001 ¶ 73. Although minimal, given the type of document involved, and in the

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<sup>9</sup> Here we reference the page numbers added in the bottom-right corner of the reference that were added by Petitioner.

absence of any reason to question Petitioner's and Dr. Lubatschowski's assertions, Petitioner's evidence is sufficient to present a reasonable likelihood that Weikert is prior art to the '023 patent.

In addition, *Hulu* contemplates additional evidence being admitted in a reply to a patent owner preliminary response, as long as that evidence is responsive to the prior briefing. *Hulu*, Paper 29 at 14. In this case, Petitioner's evidence submitted in its Reply is responsive to arguments made in the Preliminary Response, and simply confirms what was asserted in the Petition and Dr. Lubatschowski's declaration, i.e., that Weikert is Chapter 14 of CATARACT AND REFRACTIVE SURGERY and the document bears a copyright date of 2005 (or, as asserted by Dr. Lubatschowski, is a "2005 edition"). Ex. 1060, 5, 12; Pet. 5, 30; Ex. 1001 ¶ 73. In addition, this evidence indicates that CATARACT AND REFRACTIVE SURGERY was published by "Springer," which is a well-known publishing company, and is the type of document that would be expected to be made publically accessible. *See* Ex. 1001 ¶ 71 (asserting that CATARACT AND REFRACTIVE SURGERY "is a quarterly review series comprising chapters written by well-known specialists"); Ex. 1019, 220, 224, 227, 228, 230, 232 (providing a "Summary for the Clinician" at the end of several sub-chapters); Ex. 1060, 4–5.

In the absence of evidence or argument suggesting that Weikert was not publically available, at this stage of the proceeding, we find the information presented in the Petition, as confirmed by the Reply evidence submitted by Petitioner, demonstrates a reasonable likelihood that Weikert is prior art to the '023 patent.

*E. Claims 1–8, 10, 11, and 17 as Obvious over Blumenkranz, Kurtz, and Weikert*

Petitioner contends the subject matter of claims 1–8, 10, 11, and 17 would have been obvious over the combined disclosures of Blumenkranz, Kurtz, and Weikert. Pet. 31–45.

### 1. Blumenkranz

Blumenkranz is directed to a system and method for making incisions in eye tissue at different depths. Ex. 1017, Abstr. The primary disclosed use of the system of Blumenkranz is for cataract surgery, with the disclosed system providing “rapid and precise openings in the lens capsule and fragmentation of the lens nucleus and cortex . . . using 3-dimensional patterned laser cutting.” *Id.* ¶¶ 3–11, 57, 69.

Figure 11 of Blumenkranz is reproduced below:

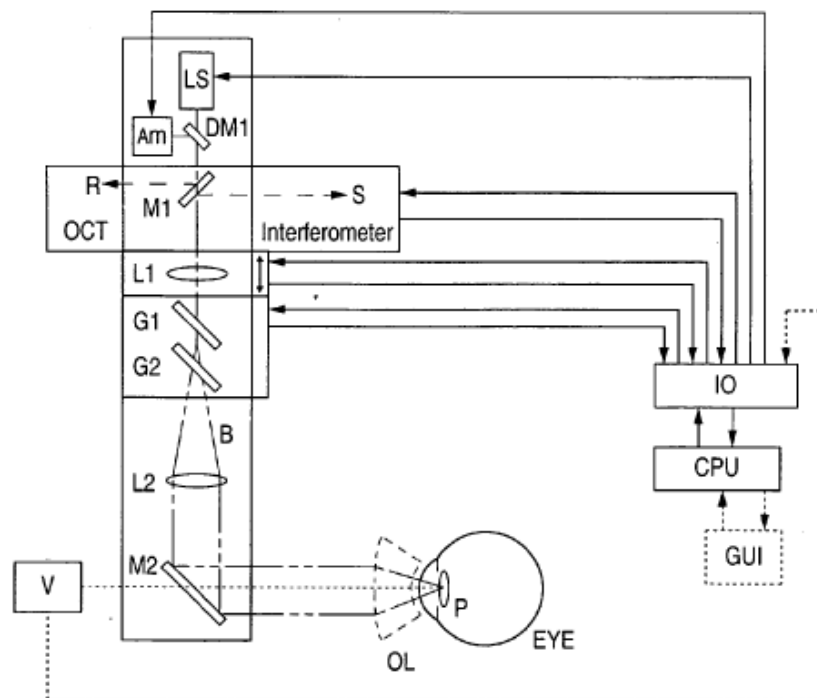


FIG. 11

Figure 11 is a plan diagram of one embodiment of Blumenkranz wherein the system projects or scans an optical beam into a patient's eye. *Id.* ¶ 34.

Figure 12 shows laser source LS and aiming beam source AIM having outputs that are combined using mirror DM1. *Id.* ¶ 75. In this configuration, laser source LS may be used for both therapeutics and diagnostics. *Id.* Mirror M1 serves to provide both reference input R and sample input S to an OCT Interferometer, which provides images to graphical user interface GUI. *Id.* ¶¶ 75, 77. Cutting of ocular tissue is determined by scanning patterns that can be circular and spiral, with a vertical step similar to the length of the rupture zone. *Id.* ¶ 68.

Blumenkranz explains that although the primary discussion is of using the described system for capsulotomy and fragmenting the lens of the eye, the techniques described in the patent application “may be used to perform new ophthalmic procedures or improve existing procedures, including anterior and posterior capsulotomy, lens fragmentation and softening, dissection of tissue in the posterior pole (floaters, membranes, retina), as well as incisions in other areas of the eye such as, but not limited to, the sclera and iris.” *Id.* ¶ 71.

## 2. Kurtz

Kurtz discloses a system and method for resecting corneal tissue using a surgical laser. Ex. 1018, Abstr. In particular, Kurtz discloses a system and techniques for transplanting corneas. *Id.* ¶ 2.

Kurtz explains that traditional techniques used for performing penetrating keratoplasty involved using a full-thickness cylindrical cut in both the recipient and donor corneas to resect corneal tissue. *Id.* ¶ 4. The resected donor tissue is then grafted into the recipient cornea in the same operating room and within minutes of the resection. *Id.*

Kurtz explains that femtosecond surgical lasers were previously used to create full thickness corneal incisions, but such systems have the drawback of taking up “valuable space within the operating room.” *Id.* ¶ 5. Given this drawback, Kurtz discloses that “[a]s an alternative, the femtosecond surgical laser could be placed in a surgical preparation room.” *Id.* In that scenario, extreme care must be taken not to expose the internal tissues of the cornea to contaminants “during the process of transferring the recipient and the donor tissue to the operating room for completion of the procedure.” *Id.*

To overcome these limitations, Kurtz discloses having the pulsed laser beam skip portions of the resection pattern, thereby leaving uncut gaps in the to-be-resected cornea. *Id.* ¶ 7. Kurtz explains that by leaving uncut gaps in the resection pattern, tissue along the incision and the internal chambers of the eye remain protected and unexposed to environmental contaminants, allowing the patient to be moved between the preparation room and the operating room without exposing the patient to contamination risks. *Id.* ¶ 14. Once in the operating room, the uncut gaps may be incised by the surgeon using an alternate surgical instrument, preferably a bladed instrument. *Id.* ¶¶ 8, 15.

### 3. *Weikert*

Weikert reviews the history, use, and potential future of refractive keratotomy, which involves making incisions into the cornea of the eye, often to correct astigmatism. Ex. 1019, 217.<sup>10</sup> Weikert explains that the first clinical use of keratotomy to correct refractive error occurred in 1885, where a penetrating limbal incision was used to decrease astigmatism

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<sup>10</sup> Our citations are to the original page numbers of the document.

following cataract surgery. *Id.* (section 14.2). Although by the late 1990s laser-based systems “had replaced refractive keratotomy as the dominant technique for the surgical correction of refraction error,” Weikert notes that “incisional corneal surgery remains a useful tool in the surgeon’s repertoire of refractive procedures.” *Id.* at 218.

Weikert notes that clear corneal incisions (CCIs) “made during cataract surgery have been known to induce astigmatism by flattening the meridian on which the incision is centered.” *Id.* at 227 (section 14.7.1). “The amount of this surgically induced astigmatism (SIA) varies with incision length and placement.” *Id.* Weikert reports that one study comparing incision sizes of 3.2 mm, 4.0 mm, and 5.2 mm, found that the mean SIA was 0.09 D, 0.26 D, and 0.54 D, respectively. *Id.* In view of the various studies on the subject, Weikert reports that “0.0–0.5 D of SIA can be expected from temporal CCIs less than or equal to 3.2 mm.” *Id.* at 228.

Weikert notes that one method of correcting the astigmatism caused by corneal incisions for cataract surgery was to provide “a similar incision placed opposite to the temporal CCI,” with cataract surgery being performed only through one wound. *Id.* (section 14.7.2). Although such a procedure can reduce astigmatism, its “range is limited” and “carries [the] additional risk associated with the extra penetrating corneal wound.” *Id.* To correct higher levels of astigmatism, Weikert reports that “[p]artial thickness, arcuate or transverse corneal incisions” may be used and that “[a]rcuate incision have been combined with cataract surgery to reduce pre-existing astigmatism.” *Id.* at 228–229 (section 14.7.3).

In its conclusion, Weikert reports that “[a]s advances continue in the areas of intraocular lens design, crystalline lens removal and excimer laser

refractive surgery, we are likely to see further decline in the use of refractive keratotomy.” *Id.* at 232.

4. *Analysis: Claim 1*

Petitioner contends that Blumenkranz discloses a scanning system for cataract surgery that can “treat target tissue in one or more of the cornea, limbus, or sclera of a patient’s eye.” Pet. 33 (citing Ex. 1017 ¶¶ 8, 11, 21, 45, 71, 74). Petitioner further contends that the system of Blumenkranz has a treatment light source for generating a treatment light beam, as well as a scanner for deflecting the light beam to form treatment patterns under the control of a controller, the scanner programmed to deliver multiple treatment patterns to target tissue, including the sclera of the patient’s eye, to form incisions. *Id.* at 34–35, 37 (citing Ex. 1017 ¶¶ 45, 57, 68, 71, 73).

Petitioner concedes that Blumenkranz does not disclose delivering either a cataract incision that only partially penetrates the target tissue or a relaxation incision, but contends that such incisions are taught in Kurtz (cataract incision) and Weikert (relaxation incisions). *Id.* at 36–37. Petitioner contends one of ordinary skill in the art would have sought to use partially penetrating cataract incisions in Blumenkranz in view of Kurtz’s disclosure that such incisions protect the eye from environmental contaminants and infection when made in less-than-sterile environments. *Id.* at 31 (citing Ex. 1018 ¶ 14). Petitioner further contends that one of ordinary skill in the art would have sought to use the system of Blumenkranz to form the relaxation incisions of Weikert because such incisions were well known in the art and because using a laser to perform steps that were previously handled manually would have been obvious. *Id.* at 32 (citing *Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (“Accommodating a prior art mechanical device that accomplishes [a

desired] goal to modern electronics would have been reasonably obvious to one of ordinary skill.”).

Patent Owner asserts claim 1 would not have been obvious over Blumenkranz, Kurtz, and Weikert for multiple reasons.<sup>11</sup> We address these arguments below.

*a) Combination of Blumenkranz and Kurtz*

Patent Owner contends Petitioner’s arguments fail because one of ordinary skill in the art would not have sought to combine the cataract system of Blumenkranz and the corneal transplant system of Kurtz. Prelim. Resp. 32–37. Patent Owner reasons that, contrary to Petitioner’s assertions, not all laser surgical systems are interchangeable, as evidenced by Petitioner’s repeated statements in its own patents and by the prior assertions of Dr. Lubatschowski. Prelim. Resp. 32–35 (citing Ex. 2006, 5:30–36, 25:27–31; Ex. 2007, 8:32–39; Ex. 2009, 1210).

In support of this line of argument, Patent Owner points to Petitioner’s statements in one of its own patents, where it asserted that the difference in lasers, design, and optics between corneal and cataract laser systems posed “considerable challenges” in using one system to perform procedures intended for the other. *Id.* at 33 (citing Ex. 2006, 5:33–36) (“laser systems designed for corneal procedures do not offer solutions for the considerable challenges of performing surgery on the lens of the eye.”); *see also* Ex. 2006, 25:27–31 (“Therefore, laser delivery systems which are intended to be used for both corneal and lens surgeries, need to cover a broad range of

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<sup>11</sup> At this stage of the proceeding it is uncontested that Blumenkranz and Kurtz (as well as Swinger and Benedikt) are prior art to the challenged claims. *See* Pet. 4, n.2; *see generally* Prelim. Resp.

apertures and corresponding NA ranges. This requirement poses considerable design challenges.”).

Patent Owner also argues that in a 2013 update on femtosecond laser technologies in ophthalmology, Dr. Lubatschowski discussed the different goals and components of cataract and corneal surgery laser systems. Prelim. Resp. 35–36; Ex. 2009, 1210. In this publication, Dr. Lubatschowski notes that due to the high cost and large space requirements, “the question as to why a system designed for the cornea cannot be used for the lens and vice versa arises.” Ex. 2009, 1209. Dr. Lubatschowski explains that the difficulty in adapting one type of system for use on different tissue types arises because the laser and optics necessary for the two types of systems are different. *Id.* at 1209–10. Providing a “look into the future,” Dr. Lubatschowski speculates that gradual progress in “all-in-one systems (refractive and cataract)” can be expected, and in a different section he notes that “[t]here are now manufacturers that claim both application areas for their system,” although “there are no scientific study results on this yet.” *Id.* at 1209, 1211.

The evidence set forth by Patent Owner presents significant issues of fact to be addressed at trial. On the one hand, it is evident that modifying cataract surgical systems for use on the cornea, or providing a system that is capable of performing both corneal and lens surgery, was extremely difficult. Ex. 2006, 5:33–36, 25:27–31; Ex. 2009, 1209–11. On the other hand, Blumenkranz specifically asserts that its system is useful for not only cataract surgery, but also surgery on other areas of the eye, including the sclera (one of the tissue types specifically recited in claim 1), and Dr. Lubatschowski testifies that the system of Blumenkranz is “well-suited to perform . . . anterior incisions to permit access to the inner eye chamber.”

Ex. 1017 ¶ 71; Ex. 1001 ¶ 107. Such evidence facially supports Petitioner's case for obviousness. Thus, considering the evidence as a whole we are left with a material issue of fact as to the capabilities of the Blumenkranz system that is best resolved on a complete trial record, and after reviewing the cross-examination testimony of the parties' declarants.

*b) Formation of Partially Penetrating Cataract Incisions*

Claim 1 requires a cataract incision that only partially extends through the target tissue. Ex. 1004, 14:15–21. Patent Owner argues that one of ordinary skill in the art would not have combined Blumenkranz and Kurtz to form such an incision for three reasons. First, according to Petitioner, Kurtz's large corneal transplant incisions would cause significant refractive changes. Prelim. Resp. 38. Second, one of ordinary skill in the art would not have removed the entire cornea, as disclosed in Kurtz, to allow for insertion of lens removal instrumentation. *Id.* at 39. Finally, one of ordinary skill in the art would have understood that cataract surgery and corneal transplant surgery are entirely different procedures, which would not work together. *Id.* at 39–40.

Patent Owner's arguments are not persuasive because Petitioner does not assert that one of ordinary skill in the art would have used Kurtz's corneal transplant procedure to provide access for surgical instruments during cataract surgery.<sup>12</sup> Instead, Petitioner contends Kurtz's disclosures of

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<sup>12</sup> Petitioner does argue that the term "cataract incisions" is broad enough to encompass corneal transplant incisions. Pet. 7–8. We do not understand Petitioner's proposed combination, however, to require Kurtz's corneal transplant incisions, as opposed to the well-known cataract incisions used during cataract surgery, and as described in Weikert and by Drs. Lubatschowski and Hatch. Pet. 36; Ex. 1019, 227; Ex. 2004 ¶ 18

the risk of environmental contamination when the internal structures of the eye are exposed during laser surgery would have motivated one of ordinary skill in the art to use the system of Blumenkranz to make partial cataract incisions (as known in the art and disclosed in Weikert). Pet. 30–32. As such, on this record and for purposes of this Decision, Petitioner explains sufficiently why one of ordinary skill in the art would have adopted the teachings of Kurtz when operating the system of Blumenkranz.

c) *Combination of Laser Surgical Systems with Weikert’s Manual Relaxation Incision*

Weikert discloses making manual relaxation incisions in the cornea to correct existing astigmatism, as well as astigmatism caused by cataract incisions. Ex. 1019, 227–28. These incisions are implemented manually using precision diamond blades, which provide “predictable and reproducible incision profiles.” *Id.* at 220. Petitioner contends one of ordinary skill in the art would have sought to make the relaxation incision of Weikert using the surgical laser of Blumenkranz because laser systems were known to provide “more accurate and precise incisions to ocular tissue” and because such a substitution represents the use of modern technology to make an incision that has been known for approximately 150 years. Pet. 32.

Patent Owner contends Weikert teaches away from using laser surgery to make relaxation incisions in eyes with cataracts. Prelim. Resp. 41. Patent Owner points to the following disclosure of Weikert:

Since [photorefractive keratectomy (PRK)] and LASIK can treat myopic, hyperopic, and mixed astigmatism, they are

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(Dr. Hatch describing the location and size of cataract incisions used during IOL placement); Ex. 1001 ¶¶ 67, 107, 117 (Dr. Lubatschowski explaining that the term “cataract incision” in his declaration refers to incisions specifically made for cataract surgery).

typically the procedures of choice for healthy eyes, without contraindication that fall within their treatment ranges. However, in eyes with cataracts, corneal transplants, or other issues that could reduce the efficacy and safety of laser treatment, refractive keratotomy can be an effective and low-cost option for surgically reducing astigmatism.

*Id.* (citing Ex. 1019, 227). We are not persuaded, on this record, that this disclosure rises to the level of a teaching away. First, Weikert does not address the specific laser system disclosed in Blumenkranz, which is already designed to treat eyes with cataracts, and Patent Owner and Dr. Kang do not persuasively explain why Weikert’s concerns would apply to a laser surgery system that is already designed to treat “eyes with cataracts.” *See* Ex. 1017 ¶ 8; Ex. 2002 ¶¶ 64–65. Second, Weikert merely suggests that eyes with cataracts “*could* reduce the efficacy and safety of laser treatment” and that refractive keratotomy “*can be* an effective” option, but does not indicate that laser surgery is never, or even generally not, suitable for treating astigmatism in eyes with cataracts. Ex. 1019, 227 (emphasis added). As such, we are again left with a disputed issue of material fact that is best resolved on a complete trial record.

Patent Owner further argues that “[s]ince manual relaxation incisions were known to be safe, effective, and inexpensive,” one of ordinary skill in the art “would not have chosen to undergo the difficult and expensive task of modifying Blumenkranz to apply relaxation incisions to the cornea, especially when Weikert explicitly states that laser surgery is to be avoided in cataract patients.” Prelim. Resp. 43. This argument goes to the issue, discussed above, of whether Blumenkranz is capable of applying relaxation incisions to the sclera and cornea of the eye, as asserted by Petitioner. Pet. 34–35 (asserting that Blumenkranz contemplates applying treatment

patterns to the cornea of the eye). As such, it is part of the disputed issues of material fact that are best resolved on a full trial record.

*d) Specific Claim Limitations*

Patent Owner contends the combination of Blumenkranz, Kurtz, and Weikert fails to disclose a partially penetrating cataract incision or a laser-applied relaxation incision. Prelim. Resp. 43–51. We address these arguments in turn.

*(1) Partially Penetrating Cataract Incision*

Claim 1 recites “a cataract incision . . . that provides access to the eye chamber of the patient’s eye, the incision to be formed by delivering the first treatment pattern only partially extending through the target tissue.”

Ex. 1004, 14:18–21. Patent Owner contends that Petitioner’s reliance on Blumenkranz and Kurtz for this claim limitation is unpersuasive because neither reference discloses a cataract incision. Patent Owner reasons that Blumenkranz discloses only generic incisions in eye tissue, not a partially penetrating cataract incision, and Kurtz discloses corneal transplant incisions that do not “allow access for lens removal instrumentation” and could not be made “without causing refractive changes” in the eye. Prelim. Resp. 44–45, 47–48.

The evidence of record demonstrates that “cataract incisions” providing access for lens removal instrumentation were well known in the art. Ex. 1001 ¶ 23; Ex. 2004 ¶ 18; Ex. 1019, 227; Ex. 1004, 10:17–19. These incisions were typically made using physical instruments and fully penetrated the eye tissue. Ex. 1019, 227; Ex. 1001 ¶ 23. Blumenkranz and Kurtz, however, disclose making laser incisions in the cornea or sclera of the eye and Kurtz explains that, because surgical laser systems may take up valuable floor space within an operating room, they were known to be

placed in a surgical preparation room, which potentially exposes the patient's eye to environmental contamination. Ex. 1018 ¶¶ 5, 14. To avoid exposing the interior of the eye to contamination during corneal procedures, Kurtz expressly discloses leaving the corneal tissue in place during laser surgery, with the final penetrating cuts performed within the operating room using a surgical instrument. *Id.* ¶¶ 5, 14–15. Given these disclosures, Petitioner provides a reasoned argument as to why one of ordinary skill in the art would have sought to make partially penetrating cataract incisions within the sclera or cornea of a patient. Pet. 31–32. Petitioner also provides a reasoned argument as to why one of ordinary skill in the art would have sought to make such partially penetrating incisions using Blumenkranz's laser surgery system. *Id.* at 32 (asserting that using modern technology to perform procedures historically performed manually would have been obvious).

Patent Owner's counter arguments relating to corneal transplant procedures and "refractive changes" do not dissuade us from instituting trial because Petitioner does not assert that one of ordinary skill would have used Kurtz's corneal transplant incisions for cataract surgery. Pet. 31–32, 36.

Accordingly, Petitioner explains sufficiently for purposes of institution where Blumenkranz, Kurtz, and Weikert teach or suggest using a laser surgery system to provide partially penetrating cataract incisions.

*(2) Laser-Applied Relaxation Incision*

Claim 1 requires a controller operatively coupled to the treatment light source and programmed to "deliver the second treatment pattern to a second target tissue to form a relaxation incision along or near limbus tissue, or along corneal tissue of the patient's eye." Ex. 1004, 14:13–24. Weikert discloses providing partial thickness, arcuate or transverse corneal incisions

to correct astigmatism during cataract surgery. Ex. 1019, 227–228.

Although these incisions are made using a surgical instrument, Weikert also discloses that laser surgery has led to “a tremendous decrease” in refractive surgery performed using diamond bladed instruments. *Id.* at 217, 220–221. Moreover, Blumenkranz discloses laser scanning patterns that can be used in laser surgery and that its disclosed system and method can be used for other parts of the eye “such as, but not limited to,” the sclera. Ex. 1017 ¶¶ 61–69, 71. The remaining question of whether one of ordinary skill in the art would have found it obvious to use Blumenkranz’s laser surgical system to perform the relaxation incisions of Weikert is a disputed issue of material fact that is best resolved on a complete trial record.

*e) Conclusion with Respect to Claim 1*

Upon review of the parties’ arguments and submitted evidence, and for the reasons set forth above, Petitioner sufficiently identifies for purposes of institution where Blumenkranz, Kurtz, and Weikert teach or suggest every limitation of claim 1. Petitioner also provides a sufficient explanation, supported by record evidence, as to why one of ordinary skill in the art would have combined the references to arrive at the subject matter of claim 1. Accordingly, Petitioner demonstrates a reasonable likelihood that claim 1 would have been obvious over Blumenkranz, Kurtz, and Weikert.

*5. Analysis: Claims 2–8, 10, 11, and 17*

Petitioner identifies where it contends every limitation of claims 2–8, 10, 11, and 17 is taught or suggested in Blumenkranz, Kurtz, and Weikert. Pet. 37–45.

Patent Owner does not address Petitioner’s arguments with respect to these claims, beyond its arguments addressing claim 1 discussed above. Prelim. Resp. 51.

Upon review of the parties' arguments and evidence, we determine that Petitioner demonstrates a reasonable likelihood that claims 2–8, 10, 11, and 17 would have been obvious over Blumenkranz, Kurtz, and Weikert.

*F. Claims 4, 9, and 12–16 as Obvious over Blumenkranz, Kurtz, Weikert, and Benedikt*

Claims 4, 9, and 12–16 require, either directly or indirectly, a device for measuring a surface profile of a surface of a cornea. *See* Ex. 1004, 14:33–35. Petitioner contends the subject matter of claims 4, 9, and 12–16 would have been obvious over Blumenkranz, Kurtz, Weikert, and Benedikt. Pet. 45–51. In support of its arguments, Petitioner identifies where it contends each limitation of the challenged claims is taught or suggested in the references and provides an explanation as to why one of ordinary skill in the art would have combined these references to arrive at the subject matter of claims 4, 9, and 12–16. *Id.*

Patent Owner contends this ground fails because Benedikt “does not disclose any of the missing limitations addressed above” with respect to the limitations of claim 1. Prelim. Resp. 51.

Upon review of the parties' arguments and supporting evidence, we determine that Petitioner demonstrates a reasonable likelihood that claims 4, 9, and 12–16 would have been obvious over Blumenkranz, Kurtz, Weikert, and Benedikt.

*G. Claims 1–3, 6, and 17 as Obvious over Kurtz, Swinger, and Weikert*

Petitioner contends the subject matter of claims 1–3, 6, and 17 would have been obvious over the combined disclosures of Kurtz, Swinger, and Weikert. Pet. 51–58.

1. *Swinger*

Swinger discloses the use of low energy, ultra-short (femtosecond) pulsed laser radiation to ablate ocular tissue in a controlled fashion. Ex. 1021, Abstr. Swinger explains that the disclosed photodisruption process is gentle enough that it may be used for surgical procedures that were previously impossible using laser radiation, including “radial and arcuate keratotomy,” “capsulectomy, capsulorhexis, and phacoablation.” *Id.*

Figure 6 of Swinger is reproduced below:

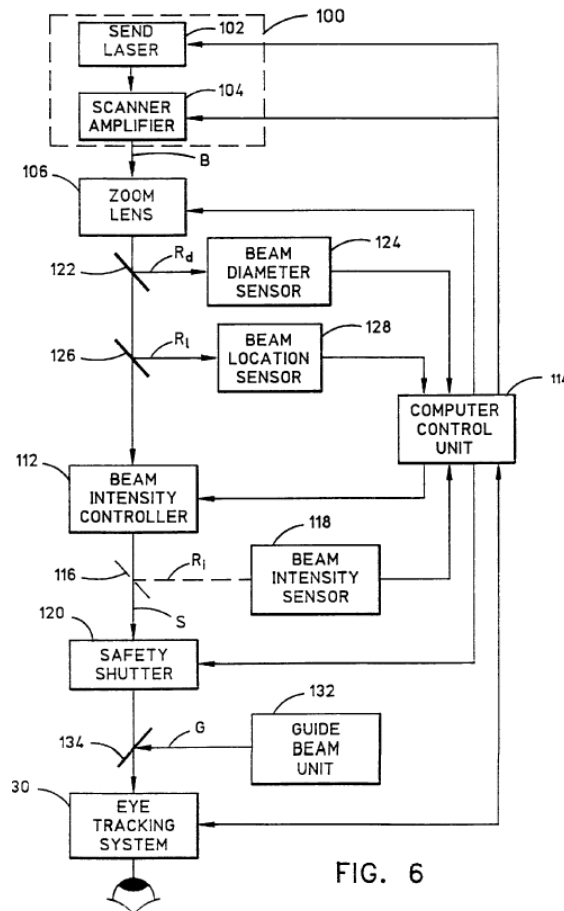


FIG. 6

Figure 6 is a block diagram of a preferred embodiment of the laser and control system of Swinger. *Id.* at 10:61–62, 17:1–30. As shown in Figure 6, laser unit 100 generates laser beam B. *Id.* at 17:1–2. Swinger explains that the preferred laser system includes a broad gain bandwidth laser using lasing

ions such as titanium, chromium or neodymium and emitting at a preferred wavelength of 400 nm to 1900 nm, “which is generally transmissive in eye tissue.” *Id.* at 8:43–48.

Zoom lens 106 provides control over the diameter of laser beam B. *Id.* at 17:21–24. Beam-splitting mirrors 122 and 126 reflect part of the beam energy to beam diameter sensor 124 and beam location sensor 128, respectively. *Id.* at 18:43–45, 19:30–33. Beam intensity controller 112 is coupled to computer control unit 114, which is programmed to vary the intensity of surgical laser beam S, as necessary for a particular surgical procedure. *Id.* at 17:50–54. Safety shutter 120 is coupled to computer control unit 114 and is used to prevent unwanted or accidental laser radiation exposure of eye tissue. *Id.* at 18:10–24, 19:24–29. Guidebeam unit 132 includes a low-power laser that provides a guide beam appropriate for direct viewing that is aligned with surgical laser beam S and acts as an indicator of the location of the treatment beam. *Id.* at 20:22–34.

Swinger discloses that its system “can easily create straight line and curved-line excisions, of any predetermined length and depth, at any location determined by a surgeon.” *Id.* at 20:49–51. One use of this system is “for performing radial keratotomies or making T-cuts or arcuate cuts, to correct myopia, hyperopia, or astigmatism (regular or irregular).” *Id.* at 21:12–19. Swinger explains that these cuts may be made using various laser scanning patterns and that these cuts may completely penetrate the cornea or may be made within the cornea. *Id.* at 33:7–17.

Swinger explains that capsulorhexis surgery may also be performed using the disclosed system as follows. *Id.* at 34:30–51. First, the focus of the laser beam spot is localized to the anterior lens capsule “by direct visualization using a visual HeNe laser beam focused to the same focal point

as the ablating laser.” *Id.* at 34:52–55. “Then the surgeon displaces the HeNe positioning beam just posteriorly to” the lens capsule and “photodisruption begins.” *Id.* at 34:58–61. According to Swinger, “[t]he cutting process can be totally computerized once the reference point on the capsule has been fixed, or the surgeon can terminate the process when the capsule has been visibly cut for 360 degrees.” *Id.* at 34:64–67.

*2. Analysis: Claim 1*

Petitioner argues that one of ordinary skill in the art would have found it obvious to use Kurtz’s corneal laser system to create both a cataract incision and relaxation incisions, as disclosed in Weikert. Pet. 51–52. Petitioner asserts that Swinger discloses a multi-functional ophthalmic-surgery system to make incisions during cataract surgery and that one of ordinary skill in the art would have used “the system disclosed by Kurtz” “to deliver relaxation incisions to correct any surgery-induced astigmatism.” *Id.* at 52. In support of the Petition, Dr. Lubatschowski testifies that one of ordinary skill in the art would have understood that Kurtz’s system is capable of making both a “cataract incision” and relaxation incisions in the cornea. Ex. 1001 ¶¶ 163–164.

As noted by Patent Owner, claim 1 of the ’023 patent requires a “cataract surgery scanning system,” and, for the reasons set forth above, we find that this preamble phrase is limiting. Ex. 1004, 14:5; Prelim. Resp. 53–54. We understand such a “cataract surgery scanning system” to be one that can be used to treat cataracts in a patient, i.e., is capable of opening the capsule of the eye for subsequent removal of the lens and placement of an intraocular lens. *See* Ex. 1001 ¶ 23 (Dr. Lubatschowski describing the steps necessary for cataract surgery). Petitioner does not persuasively explain why one of ordinary skill in the art would have considered Kurtz to be a

cataract surgery system, or why such an ordinarily skilled artisan would have modified the system of Kurtz to perform cataract surgery. Thus, we question the sufficiency of Petitioner's evidence with respect to the combination of Kurtz, Swinger, and Weikert.

The parties are encouraged to address this issue, as well as all other issues discussed herein or addressed in the parties' briefing, during trial.

*3. Analysis: Claims 2, 3, 6, and 17*

Claims 2, 3, 6, and 17 all depend from claim 1. Ex. 1004, 14:25, 14:29, 14:43, 14:46. Petitioner's arguments with respect to these claims do not resolve the issue noted above with respect to claim 1. Accordingly, we also question the sufficiency of Petitioner's evidence with respect to claims 2, 3, 6, and 17.

*H. Claims 4, 5, 7–15, and 16 as Obvious over Kurtz, Swinger, Weikert, and Benedikt*

Petitioner contends the subject matter of claims 4, 5, 7–15, and 16 would have been obvious over the combined disclosures of Kurtz, Swinger, Weikert, and Benedikt. Pet. 58–67. In this ground, Petitioner relies on Benedikt for its disclosure of using multiple imaging or profiling devices for planning ophthalmic surgery. *Id.* at 58–59. Petitioner's arguments for this ground, however, do not resolve the issues noted above for the combination of Kurtz, Swinger, and Weikert. Accordingly, we question the sufficiency of Petitioner's evidence with respect to its ground based on Kurtz, Swinger, Weikert, and Benedikt.

### III. CONCLUSION

For the reasons discussed above, Petitioner demonstrates a reasonable likelihood that it would prevail in showing that challenged claims 1–17 of the '023 patent are unpatentable. Our decision at this stage derives from our

review of the preliminary record before us and the parties are encouraged to further develop the record as to all arguments and positions discussed herein.

In accordance with the Court’s decision in *SAS*, 138 S. Ct. at 1359–60, and Guidance on the Impact of *SAS* on AIA Trial Proceedings (April 26, 2018),<sup>13</sup> we institute *inter partes* review of all challenged claims (1–17) of the ’023 patent on all grounds asserted in the Petition.

This decision does not reflect a final determination on the patentability of the claims. No arguments from the Preliminary Response carry over to trial and any arguments not made in Patent Owner’s Response may be considered waived.

#### IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–17 of the ’023 patent is instituted with respect to all grounds set forth in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), an *inter partes* review of the ’023 patent shall commence on the entry date of this Order, and notice is hereby given of the institution of trial.

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<sup>13</sup> Available at <https://www.uspto.gov/patents-application-process/patent-trial-and-appeal-board/trials/guidance-impact-sas-aia-trial>.

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Patent 9,233,023 B2

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