

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

IMMERVISION, INC.,
Patent Owner.

IPR2023-00471
Patent 6,844,990 B2

Before KRISTINA M. KALAN, JOHN D. HAMANN, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

Opinion Dissenting filed by KALAN, *Administrative Patent Judge*.

PER CURIAM.

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

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 2, 4, 27, 29, and 30 of U.S. Patent No. 6,844,990 B2 (Ex. 1001, “the ’990 patent”). ImmerVision, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”). With Board authorization, Petitioner filed a Preliminary Reply (Paper 8, “Reply”) and Patent Owner filed a Preliminary Sur-Reply (Paper 9, “Sur-Reply”).

To institute *inter partes* review, we must determine that the information presented in the Petition shows “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). For the reasons discussed below, after considering the parties’ submissions and the evidence of record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’990 patent, and we institute *inter partes* review on all challenges raised in the Petition. 37 C.F.R. § 42.108(a) (2022).

A. Related Proceedings

The parties identify the following district court litigations as related matters: *ImmerVision, Inc. v. Apple, Inc.*, 1:21-cv-01733-MN-CJB (D. Del.) and *ImmerVision, Inc. v. Apple, Inc.*, 1:21-cv-01484-MN-CJB (D. Del.). Pet. 80; Paper 3, 2–3 (Patent Owner’s Mandatory Notices). Petitioner further identifies the following district court litigations as related matters: *ImmerVision, Inc. v. LG Electronics U.S.A., Inc.*, 1:18-cv-01631 (D. Del.) and *ImmerVision, Inc. v. LG Electronics U.S.A., Inc.*, 1:18-cv-01630 (D. Del.). Pet. 80. Petitioner also identifies the following proceedings as

related matters: IPR2014-01438; Reexamination Request 90/013,410; IPR2020-00195; and IPR2020-00179. *Id.*

B. Real Party-in-Interest

Petitioner states, “Apple is a real party-in-interest.” Pet. 79. Patent Owner states that ImmerVision, Inc. is the real party-in-interest. Paper 3, 2.

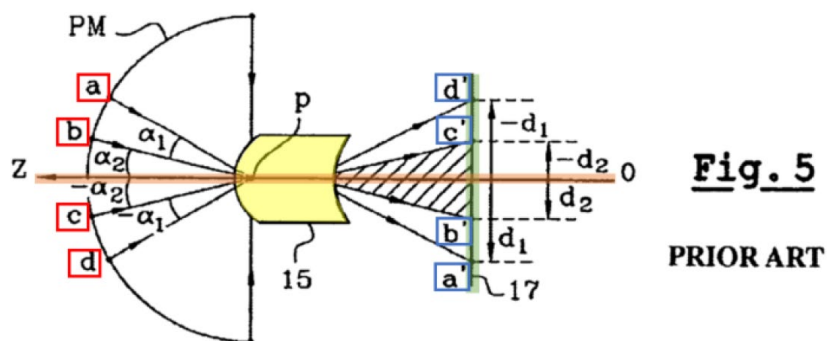
C. The ’990 Patent

The ’990 patent is titled “Method for Capturing and Displaying a Variable Resolution Digital Panoramic Image.” Ex. 1001, code (54). The ’990 patent “relates to obtaining digital panoramic images and displaying panoramic images on computer screens.” *Id.* at 1:12–14. The ’990 patent explains that in order to avoid a displayed image sector having geometrical distortions, “the classical panoramic objective lenses must have a distribution function of the image points according to the field angle of the object points of a panorama that is as linear as possible.” *Id.* at 2:4–8. However, when digital enlargement increases using techniques of displaying a digital panoramic image sector on a computer screen, “the granularity of the image appears as the limits of the resolution of the image sensor are being reached.” *Id.* at 3:1–9. The ’990 patent observes that for this problem of the low quality in enlargements “only certain zones of a panoramic image are of a practical interest and are likely to be expanded by the observer by means of a digital zoom.” *Id.* at 3:43–46. According to the ’990 patent, using a panoramic objective lens that is not linear, which expands certain zones of the image and compresses other zones of the image, “the expanded zones of the image cover a number of pixels of the image sensor that is higher than if they were not expanded, and thus benefit from a better definition.” *Id.* at 3:66–4:6. The ’990 patent thus discloses

a method for capturing a digital panoramic image, by projecting a panorama onto an image sensor by means of a panoramic objective lens, in which the panoramic objective lens has an image point distribution function that is not linear relative to the field angle of object points of the panorama, the distribution function having a maximum divergence of at least $\pm 10\%$ compared to a linear distribution function, such that the panoramic image obtained has at least one substantially expanded zone and at least one substantially compressed zone.

Id. at 4:11–21.

Petitioner's annotated version of Figure 5 is reproduced below:



Pet. 5 (annotating Ex. 1001, Fig. 5). Figure 5 illustrates a classical system for taking panoramic shots using panoramic objective lens 15 (yellow) having optical axis OZ (horizontal orange line) and digital image sensor 17 (vertical green line) arranged in the image plane of lens 15. Ex. 1001, 6:65–7:2. Object points a, b, c, d (in red boxes) are projected through lens 15 and captured as respective image points a', b', c', d' (in blue boxes) at image sensor 17. *Id.* at 7:2–14. Each of field angles α_1 , α_2 , $-\alpha_2$, $-\alpha_1$ of corresponding object points a, b, c, d is an angle that an incident light ray passes through the corresponding object point and center p of panorama PM. *Id.* at 7:2–10. On image sensor 17, image points a', b', c', and d' are located at distances d_1 , d_2 , $-d_2$, $-d_1$, respectively, from the center of the image. *Id.* at 7:11–14.

Figure 7A of the '990 patent is reproduced below:

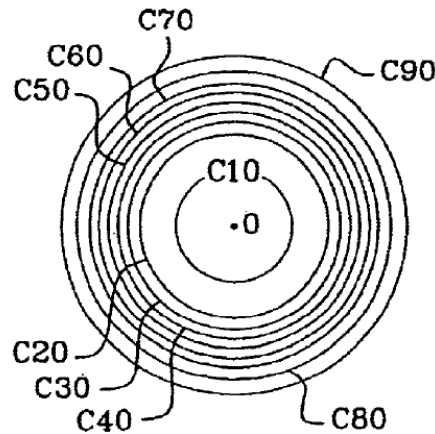


Fig. 7A

Fig. 7A shows the non-linearity of a panoramic objective lens. Ex. 1001, 6:29–30. The circles represent distributions of image points corresponding to object points having an identical field angle on a disk. *Id.* at 2:15–17. Because of the non-linear panoramic objective lens, circles C10 and C20 are further from the center of the image and further from each other whereas circles C30 to C90 are closer to each other, thereby representing a panoramic image having an expanded zone in the center and a compressed zone towards the edge of the image disk. *Id.* at 8:21–28.

The '990 patent further discloses that the point of “maximum divergence” refers to the point on an image point distribution function plot that is farthest away from a corresponding point on a linear distribution function plot. *Id.* at 8:44–67. The maximum divergence from the non-linearity of a panoramic objective lens is demonstrated in Figure 8, which is reproduced below:

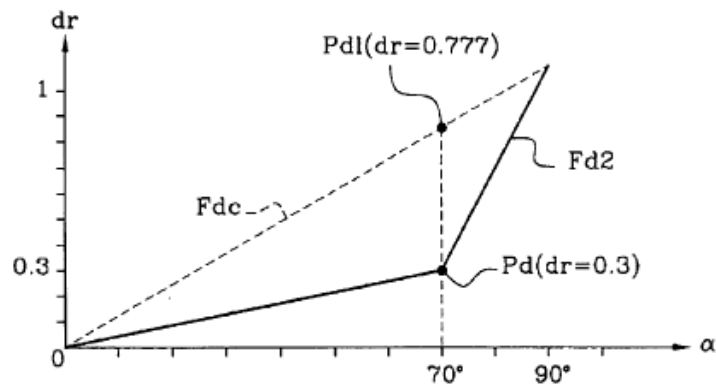


Fig. 8

Figure 8 shows an image point distribution function $Fd2$ plotted on an x-axis that represents the field angle α of the object point and on a y-axis that represents the relative distance dr of an image point in relation to the center of the image. *Id.* at 8:34–38, 9:36–52. Distribution function $Fd2$ here has a point of maximum divergence Pd at the angle $\alpha = 70^\circ$ and at a relative distance $dr = 0.3$ in relation to the center of the image, and the greatest relative distance between image point distribution function $Fd2$ and linear distribution function Fdc is found between points Pd and Pdl . *Id.* at 9:36–52.

Petitioner's annotated version of Figure 13 is reproduced below:

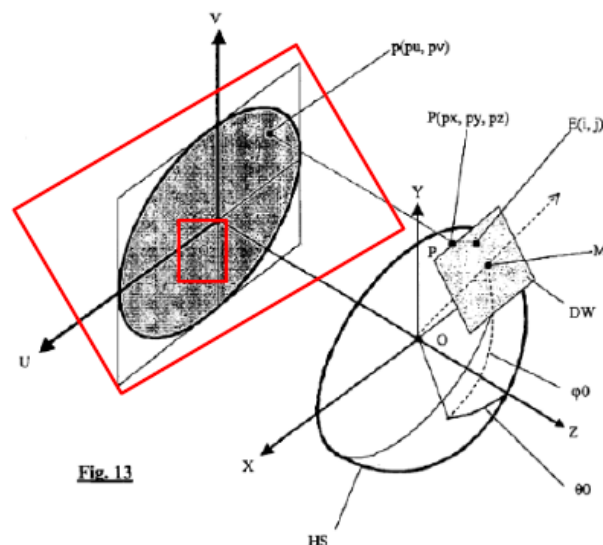


Fig. 13

Pet. 12 (annotating Ex. 1001, Fig. 13). Figure 13 illustrates schematically an image point mapping method for correcting optical distortion of an initial image that was obtained from using the non-linear distribution function of the objective lens. Ex. 1001, 6:46–47, 10:12–17. Display window DW having image point $P(p_x, p_y, p_z)$ is projected on an image disk that has size L (within large red box) and projected to image point $p(p_u, p_v)$ that has a coordinate system with center O' (within small red box) which is the center of the image disk and axes $O'U$ and $O'V$. Ex. 1001, 12:59–14:35. Using an algorithm, image point $p(p_u, p_v)$ is obtained using equations, such as $p_u = L * U * F_d(\alpha)$ and $p_v = L * V * F_d(\alpha)$, in which the size of the image disk L is multiplied with the non-linear distribution function F_d at an angle α . *Id.* at 12:66–14:35.

D. Illustrative Claim

Claim 27 is reproduced below.

27[pre]. A method for displaying a digital panoramic image, the method comprising:

- [a] obtaining a digital panoramic image by projecting a panorama onto an image sensor using a panoramic objective lens,*
- [b] the panoramic objective lens having an image point distribution function that is not linear relative to a field angle of object points of the panorama,*
- [c] the distribution function having a maximum divergence of at least $\pm 10\%$ compared to a linear distribution function,*
- [d] such that the panoramic image obtained has at least one substantially expanded zone and at least one substantially compressed zone; and*
- [e] displaying the obtained panoramic image by correcting the non-linearity of the initial image,*
- [f] performed by retrieving image points on the obtained image in a coordinate system of center O' using at least the non-*

linear distribution function and a size L of the obtained image.

Ex. 1001, 1:54–2:3 (annotations added to correspond to Petitioner’s designations).¹

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims would have been unpatentable on the following grounds:

Ground	Claims Challenged	35 U.S.C. § ²	Reference(s)/Basis
1	2, 4, 27, 29	103	Baker, ³ Shiota ⁴
2	29, 30	103	Baker, Shiota, Fisher ⁵

In support of its unpatentability arguments, Petitioner relies on the Declaration of David Kessler, Ph.D. (Ex. 1003).

II. ANALYSIS

A. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). 37 C.F.R. § 42.100(b) (2021). Under *Phillips*, claim terms are afforded “their ordinary and customary meaning.” *Phillips*, 415 F.3d at 1312. The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.*

¹ Ex Parte Reexamination Certificate US 6,844,990 C1, issued May 8, 2015.

² The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the ’990 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA version of § 103.

³ US 5,686,957, issued November 11, 1997 (Ex. 1006).

⁴ EP 1 028 389 A2, published August 16, 2000 (Ex. 1012).

⁵ US 3,953,111, issued April 27, 1976 (Ex. 1009).

at 1313. Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

Petitioner states that it “is applying the constructions adopted in IPR2020-00195 for certain applicable claim terms in the Challenged Claims” and provides constructions for the claim terms “panoramic objective lens,” “object points of the panorama,” “image point,” “field angle of object points,” “maximum divergence,” “expanded zone,” and “compressed zone.” Pet. 2–4. Petitioner, however, does not do more. *Id.*

Patent Owner states that solely for purposes of this Preliminary Response, it “does not object to the constructions proposed by Petitioner.” Prelim. Resp. 13.

As our Consolidated Trial Practice Guide explains, “[i]f a petitioner believes that a claim term requires an express construction, the petitioner must include a statement identifying a proposed construction of the particular term *and where the intrinsic and/or extrinsic evidence supports that meaning.*” Consolidated Trial Practice Guide (November 2019)⁶ (“CTPG”), 44 (emphasis added). Moreover, the CTPG provides that we should “take into account the prosecution history that occurred previously in proceedings at the Office prior to the IPR . . . proceeding at issue, including in another AIA proceeding.” *Id.* at 46. Petitioner does not identify where in

⁶ Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

the record of the IPR2020-00195 proceeding that these terms were construed, and why, if at all, those constructions should have preclusive effect here. Pet. 2–4.

For purposes of our institution decision, we need not expressly construe any claim term. *See Realtime Data*, 912 F.3d at 1375.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art “would have had at least a Bachelor’s degree in Physics, Optical Engineering, and/or Electrical Engineering and at least five years’ experience in developing and designing optical imaging systems and have familiarity with image processing algorithms and optical design software” and that “[s]uperior education could compensate for a deficiency in work experience, and vice-versa.” Pet. 15 (citing Ex. 1003 ¶¶ 24–25). Patent Owner states that solely for purposes of this Preliminary Response, it “does not object to Petitioner’s definition of a [person of ordinary skill in the art].” Prelim. Resp. 13.

Accordingly, for the purposes of this Decision, we adopt Petitioner’s proposal regarding the level of one of ordinary skill in the art with the exception of the open-ended phrase “at least,” which expands the range of experience indefinitely without an upper bound. The level of ordinary skill in the art is also reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Asserted Prior Art

1. Baker (Ex. 1006)

Baker is titled “Teleconferencing Imaging System with Automatic Camera Steering” and is directed to a system that includes “a video camera and a lens system” that “provides a panoramic display that can electronically

select portions of that image and, through warping techniques, remove any distortion from the most significant portions of the image which lie from the horizon up to approximately 30 degrees in a hemispheric viewing area.”

Ex. 1006, codes (54), (57). Baker explains that although conventional lenses “achieve a view of a large field, the valuable content from the peripheral areas lacks in potential image quality (resolution) mapping because the imaging device and system does not differentiate between these areas and the central areas of less valuable detail.” *Id.* at 3:60–64. Baker purports to resolve this problem by providing a hemispheric electronic image manipulator subsystem having a capture lens “that allows for useful electronic manipulation of a segmented portion of a hemispheric scene” by creating an electronic image that is warped to have “a desired subview in proper aspect ratio.” *Id.* at 5:37–47. “The lens provides an enhanced view of the valuable information in the scene’s periphery by imaging the field of view to the image plane such that the ratio of the size of the smallest detail contained within the periphery of the scene to the size of the smallest resolving pixel of an image device is increased,” in which “the peripheral content must map to a larger percentage of a given image detector area” and, simultaneously, “the mapped image of the central area of the scene must be minimized by the lens so that it does not interfere with the peripheral content now covering a wider annulus in the image plane.” *Id.* at 5:57–6:1.

When a portion of the scene is to be displayed, a transform processor subsystem “electronically manipulates the scene for display as a perspective-correct image on a display device.” Ex. 1006, 6:5–9. Baker discloses:

The transform processor subsystem compensates for the distortion or difference in magnification between the central and peripheral areas of the scene caused by the lens by applying

appropriate correction criteria to bring the selected portion of the scene into standard viewing format. The transform processor subsystem can also more fully compensate for any aberrations of the enhanced peripheral image because of the image's improved resolution as it covers a larger portion of the image device (increased number of pixels used to detect and measure the smallest detail in the periphery image). More pixels equates to more measurement data, hence more accurate data collection.

Id. at 6:12–24.

2. *Shiota (Ex. 1012)*

Shiota is titled “Arithmetic Unit for Image Transformation” and relates to transforming a fisheye image obtained by using a fisheye lens into a plane image for display. Ex. 1012, codes (54), (57). Shiota explains that an image produced by the fisheye lens is “distorted as compared with an image obtained by using the standard lens and is very hard for the operator to watch.” *Id.* ¶ 3. Shiota purports to resolve this problem by providing a unit for image transformation that comprises:

a first coordinate calculating unit for obtaining first projection coordinates on a fisheye image face as an imaginary object face derived by projecting coordinates on the plane image; and a second coordinate calculating unit for obtaining second projection coordinates derived by projecting the first projection coordinates obtained by the first coordinate calculating unit onto the fisheye image face.

Id. ¶ 8.

In a first step, coordinates on a surface of a hemisphere (X, Y, Z) are obtained from a projection from a plane display image (u, v) and then corresponding coordinates in the fisheye image (p, q) are obtained from a projection from the hemisphere. Ex. 1012 ¶¶ 22–23. A coefficient k_1 , taken from a lookup table for various distances L from the origin in the (u, v)

coordinates, is used to map coordinates from the hemispherical surface to the plane image in the (X, Y, Z) coordinate system. *Id.* ¶¶ 28–32.

In a second step, a distribution function of the lens is used to compute a coefficient k_2 , which equals h (the height from the origin of the fisheye image face and defined by the distribution function) divided by distance r from the origin. Ex. 1012 ¶¶ 36–40. These steps, among others, provide a calculating procedure for image transformation to correct for or compensate distortions in an image that is captured by a fisheye lens. *Id.* ¶¶ 8, 26–27.

3. *Fisher (Ex. 1009)*

Fisher is titled “Non-linear Lens” and discloses a non-linear lens that “possesses distortion characteristics which are such that objects along the optical axis of the lens occupy disproportionately large areas of the image cast by the lens, whereas objects near the periphery of the field of view occupy a disproportionately small area of the image.” Ex. 1009, codes (54), (57). “The distortion characteristics approximate the formula $H=\sin^{1/3}\theta$ where H is [the] height measured from the optical axis and θ is the angle measured from the optical axis.” *Id.* at code (57). Fisher’s non-linear lens has three lens groupings: A, B, and C. *Id.* at 5:44–50. The first lens grouping A is “a triplet and provides the mapping function, that is the unique distortion which is essentially defined by the formula $H=\sin^{1/3}\theta$.” *Id.* at 5:52–55. The first lens grouping A has lenses with non-spherical lens surfaces. *Id.* at 5:61–6:2.

D. *Analysis*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed.

Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when presented, objective evidence of nonobviousness, i.e., secondary considerations.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Subsumed within the *Graham* factors are the requirements that all claim limitations be found in the prior art references and that the skilled artisan would have had a reasonable expectation of success in combining the prior art references to achieve the claimed

⁷ At this stage, Patent Owner does not present any objective evidence of nonobviousness as to any of the challenged claims.

invention. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)).

1. Ground 1

Petitioner asserts that Baker in view of Shiota renders obvious claims 2, 4, 27, and 29. Pet. 15. Petitioner presents arguments directed to the limitations of claim 27 as follows:

27[pre] *A method for displaying a digital panoramic image, the method comprising,*⁸ (Pet. 27–32 (citing Ex. 1003 ¶¶ 142–152, Ex. 1006, Abstract, 1:9–13, 5:16–20, 5:37–6:36, 7:45–8:9, 8:17–35, 8:58–9:14, 10:61–11:6, 11:52–12:55, 13:9–32, 13:56–65, 14:9–17, 14:42–15:59, Figs. 1, 1A, 5, 3AA–3AC, 3BA–3BB, 6A–6B; Ex. 1012, Abstract, ¶¶ 1–2, 4, 7–10, 21–26, 48–50, claims 1, 5));

27[a] *obtaining a digital panoramic image by projecting a panorama onto an image sensor using a panoramic objective lens,* (Pet. 32–36 (citing Ex. 1003 ¶¶ 153–162; Ex. 1006, Abstract, 1:10–14, 6:29–34, 7:12–25, 10:22–12:22, 12:33–55, 13:9–65, 14:9–36, Figs. 1, 5, 6A–6B, claim 1; Ex. 1012 ¶¶ 2–7, 21–26, 48–50; Ex. 1011, 135, 229));

27[b] *the panoramic objective lens having an image point distribution function that is not linear relative to a field angle of object*

⁸ We express no opinion on whether the preamble is limiting.

points of the panorama, (Pet. 36–40 (citing Ex. 1003 ¶¶ 163–173; Ex. 1006, Abstract, 4:24–29, 5:37–6:4, 6:29–56, 8:16–55, 9:62–10:5, 10:22–11:6, 11:42–51, 11:52–12:55, 14:18–26, 15:13–19, claims 1–4, Figs. 1, 3AA–3AC, 3BA–3BB, 5; Ex. 1011, 135, 229));

27[c] the distribution function having a maximum divergence of at least +/-10% compared to a linear distribution function, (Pet. 40–42 (citing Ex. 1003 ¶¶ 175–181; Ex. 1011, 135–136, 229));

27[d] such that the panoramic image obtained has at least one substantially expanded zone and at least one substantially compressed zone, and (Pet. 42–45 (citing Ex. 1003 ¶¶ 182–192, 50–61; Ex. 1006, Abstract, 5:37–6:4, 6:29–56, 8:17–55, 10:37–12:55, 13:29–65, 14:18–26, 15:14–19, Figs. 3BA–3BB, 2A–2B, 5, claims 1–4));

27[e] displaying the obtained panoramic image by correcting the non-linearity of the initial image, (Pet. 45–48 (citing Ex. 1003 ¶¶ 191–198, 70–74; Ex. 1006, Abstract, 5:31–37, 6:5–35, 7:6–11, 8:32–55, 9:5–13, 14:41–16:47, Figs. 1, 6A–6B, claims 1, 12–14; Ex. 1012, Abstract, ¶¶ 1, 4–4, 14–17, 21–26, 29–42, 44, 48–50, claim 1));

27[f] performed by retrieving image points on the obtained image in a coordinate system of center O' using at least the non-linear distribution function and a size L of the obtained image. Pet. 48–55 (citing Ex. 1003 ¶¶ 199–213, Ex. 1006, Abstract, 6:5–23, 13;15–28, 14:41–16:46, claims 12–14; Ex. 1012, Abstract, ¶¶ 1, 4–5, 14–17, 21–26, 29–42, 44, 48–50, claim 1; Ex. 1011, 117–118).

Petitioner argues that one of ordinary skill in the art “would have understood that Baker’s system corrects or compensates for the distortion introduced into the image by its objective lens (which has a non-linear image

distribution)” but that “Baker does not expressly describe how such corrections are applied as part of its image transformation.” *Id.* at 22–23. Shiota “discloses compensation or correction of distortion in an image captured by a fisheye lens using a non-linear distribution function.” *Id.* at 23. Thus, according to Petitioner, “implementing Baker’s image transformation functionality using Shiota’s described technique . . . would have amounted to the use of a known technique to improve similar devices in the same way, and combining prior art elements according to known methods to yield predictable results.” *Id.* at 24 (citing Ex. 1003 ¶¶ 133–134). Additionally, one of ordinary skill in the art “would have been motivated to implement Shiota’s specific image transformation functionality—namely, the use of the non-linear distribution function—as part of the image transformation functionality already contemplated and provided by Baker’s transform processing subsystem,” with a “reasonable expectation of success.” *Id.* at 26 (citing Ex. 1003 ¶¶ 137–138).

Petitioner presents additional arguments directed to claims 2, 4, and 29, which depend from claim 27. Pet. 55–62.

At this stage of the proceeding, Patent Owner does not substantively dispute Petitioner’s allegations under Ground 1. *See generally* Prelim. Resp.

Based on the record before us, including the reasons stated in the Petition at pages 15–62, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its challenge to claims 27, 2, 4, and 29.

2. *Ground 2*

Petitioner argues that Baker in view of Shiota and Fisher would have rendered obvious claims 29 and 30, which depend from claim 27. Pet. 62–

70. Claim 29 requires that the “objective lens comprises a set of lenses forming an apodizer” and claim 30 requires that “the set of lenses forming an apodizer comprises at least one aspherical lens.” *Id.* at 69. Petitioner relies on “Fisher’s teachings of implementing one or more aspheric lenses as part of the combination’s panoramic objective lens to control the objective lens’ angular distribution and thereby achieve the same non-linear image distribution.” *Id.* at 70 (citing Ex. 1003 ¶¶ 257–260).

At this stage of the proceeding, Patent Owner does not substantively dispute Petitioner’s allegations under Ground 2. *See generally* Prelim. Resp.

Having reviewed Petitioner’s arguments and evidence, on this record, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on its challenge to claims 29 and 30.

E. Discretion under 35 U.S.C. § 325(d)

We have discretion to deny review when “the same or substantially the same prior art or arguments previously were presented to the Office.” 35 U.S.C. § 325(d). In that respect, Section 325(d) provides that the Director may elect not to institute a proceeding if the challenge to the patent is based on matters previously presented to the Office. *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 7 (PTAB Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

In evaluating the exercise of discretion to deny institution under § 325(d), the Board applies a two-part framework: (1) first, we determine whether the same or substantially the same art previously was presented to the Office, or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of the first part of the framework is satisfied, we examine whether the petitioner

has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Id.* at 8.

In applying the two-part framework, we consider several non-exclusive factors (“the *Becton, Dickinson* factors”), including:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which Petitioner relies on the prior art or patent owner distinguishes the prior art;
- (e) whether Petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and
- (f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to § III.C.5, first paragraph) (“*Becton, Dickinson*”).

Factors (a), (b), and (d) of the *Becton, Dickinson* factors relate to whether the art or arguments presented in the petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. Factors (c), (e), and (f) “relate to whether the petitioner has demonstrated a material error by the Office” in its prior consideration of that art or arguments. *Id.* Only if the same or substantially the same art or arguments were previously presented to the Office do we then consider whether a petitioner has demonstrated a material error by the Office. *Id.* “At bottom, this framework reflects a commitment to defer to

previous Office evaluations of the evidence of record *unless material error is shown.*” *Id.* at 9 (emphasis added).

1. *Prosecution History*

The application that resulted in the ’990 patent was filed on November 12, 2003, as a continuation of Application No. PCT/FR02/01588, filed on May 10, 2002. Ex. 1001. The ’990 patent claims foreign priority to FR Application 01 06261 filed on May 11, 2001. *Id.*

During the original prosecution of the ’990 patent, Fisher (Ex. 1006), and the foreign counterpart of Baker (Ex. 1005) were cited to the Examiner by the Applicant.

On September 3, 2014, Panasonic System Networks Co., Ltd. (“Panasonic”) petitioned for *inter partes* review of the ’990 patent (“Panasonic IPR”). IPR2014-01438, Paper 2. On November 21, 2014, the parties in that proceeding filed a joint motion to terminate the Panasonic IPR due to settlement (*id.*, Paper 9), which was granted on November 26, 2014 (*id.*, Paper 11). On the same day, the Panasonic IPR was terminated, the Patent Owner requested *ex parte* reexamination of claims 1–4, 6–7, 10–11, 15–20, 22–23, and 25 of the ’990 patent using the same art from the then-terminated Panasonic IPR. Ex. 1011, 116–118, 226–237. Patent Owner filed along with the reexamination request an amendment to claim 10 to attempt to distinguish over the Baker-Shiota combination and others, and adding new claims 27–31, and changing the dependence of claims 2–4 to depend from claim 27. *Id.* at 248, 242, 239–240.

On January 9, 2015, the Examiner granted the Patent Owner’s request for *ex parte* reexamination of the ’990 patent, finding that the request raised substantial new questions of patentability with respect to claims 1–4, 6, 7,

10, 11, 15–20, 22, 23, and 25 of the '990 patent. Ex. 1011, 283. In an Office Action, the Examiner found claim 10 patentable and claim 27 (and its dependent claims) to contain patentable subject matter. *Id.* at 322. The Examiner issued a Notice of Intent to Issue *Ex Parte* Reexamination Certificate restating the findings in the Office Action. *Id.* at 343.

2. *Petition*

Petitioner argues that the Board should not exercise its discretion to deny institution under 35 U.S.C. § 325(d). Pet. 73–79. More particularly, Petitioner argues that, although all of Baker, Fisher, and Shiota “were relied upon during the '990 Patent’s reexamination,” the Petition “relies upon grounds/arguments that are different than those previously presented to and considered by the Office.” *Id.* at 73–74 (citing *Advanced Bionics*). Petitioner further argues that “Patent Owner’s own statements during reexamination confirmed the obviousness of those features [of claim 27] in view of the Baker-Shiota combination,” and during reexamination, Patent Owner “guided the Office away from the pertinent teachings in Shiota.” *Id.* at 74. Petitioner focuses on claim limitations 27[e] and 27[f], which were added during reexamination as “additional features” dissimilar to those recited in claim 10, to argue that Patent Owner’s reexamination arguments “ratify . . . that Shiota alone or in view of Baker teaches obtaining” the recitations of limitations 27[e] and 27[f]. *Id.* at 76. Petitioner also argues that Patent Owner, during reexamination, “omitted reference to relevant teachings from within Shiota that demonstrate that the size of the image disk would in fact be used to correct the image in the Baker-Shiota combination.” *Id.* at 77. Petitioner argues that “there is no evidence suggesting that the Office considered or otherwise relied upon” the teachings of Shiota and

Baker that are presented in the Petition, particularly with reference to limitations 27[e] and 27[f]. *Id.* at 78.

3. *Patent Owner Preliminary Response*

Patent Owner responds that the Board should exercise its discretion to deny the Petition under § 325(d) because “Petitioner misapplied the established framework for analyzing prior art previously before the Office and failed to demonstrate the material error necessary to warrant reconsideration of the prior art.” PO Resp. 14. More particularly, Patent Owner argues that “Petitioner spent all six pages of its § 325(d) analysis portraying the Petition as advancing new arguments not previously considered by the Office,” addressing the first prong of the *Advanced Bionics* test, which Patent Owner argues is a “wasted” effort because “Petitioner relied on the exact same references considered by the examiner during reexamination.” *Id.* at 16.

Regarding the second prong of the *Advanced Bionics* test, Patent Owner argues that “Petitioner made no attempt to show material error by the Office,” but to the “extent any of Petitioner’s arguments may, nevertheless, be deemed relevant to the second part of the framework, Petitioner still failed to meet its burden to show error.” *Id.* at 17–18. Patent Owner argues that the “examiner’s prior consideration of Baker and Shiota is well developed,” in that the “examiner *twice* remarked on Baker and Shiota in finding claim 27 contained patentable subject matter, which included the feature at issue.” *Id.* at 18 (citing Ex. 1011, 242, 259–250, 322–323, 343).

Patent Owner also argues that Petitioner’s allegation of error is unsupported and its declarant’s testimony is entitled to no weight. *Id.* at 19–21. According to Patent Owner, Petitioner “accused Patent Owner of

leading the examiner away from [paragraphs 23 and 24–26] through citation to supposedly less relevant paragraphs later in the reference,” but (1) “cited no authority holding an examiner is only deemed to have considered portions of a reference cited by others” and (2) “the record demonstrates the examiner fully evaluated Shiota.” *Id.* at 19. Conversely, there is “no evidence the examiner skipped over the identified paragraphs in Shiota, particularly when the description around it was explicitly under review for the feature at issue here (size L of the obtained image as a factor in correcting non-linearity).” *Id.* Patent Owner argues that Dr. Kessler’s declaration is “a nearly *verbatim* copy of argument from the Petition” and he “cited no other evidence in support of his conclusion, nor did he provide any technical reasoning.” *Id.* at 20.

4. *Petitioner’s Preliminary Reply*

Petitioner replies that the ’990 patent’s prosecution “did not reference ¶ 23 of Shiota” and the Petition “highlights the significance of this unrecognized disclosure.” Reply 1–2. Petitioner argues that Patent Owner “cobble together independent portions of the reexamination record” to argue that the examiner did not skip over the identified paragraphs of Shiota, which “leave out important detail—which when viewed in proper context—leads to the reasonable inference that the Examiner **did not** actually consider or rely upon” ¶¶ 23–26 of Shiota. *Id.* at 3. First, Petitioner argues, Patent Owner “omits that [¶¶ 24, 30–35, 37, 42, and 49] were cited in a claim chart provided **with respect to claim 10** (in its unamended form)—**not claim 27.**” *Id.* at 3. Second, Petitioner argues that Patent Owner did not identify ¶¶ 23–26 of Shiota, or address “magnification adjustment” during image transformation, when adding and discussing claim 27. *Id.* at 4. Third,

Petitioner argues that the Examiner did not include ¶¶ 23–26 of Shiota in her reasons for allowance. *Id.* at 4–5. In sum: “Even if the Examiner considered these portions of Shiota—which her own account states she did not—the Petition explains the Examiner’s error in failing to appreciate their significance to the relevant claim 27 feature.” *Id.* at 5.

5. *Patent Owner’s Preliminary Sur-Reply*

Patent Owner responds that the Reply fails to save Petitioner’s flawed *Advanced Bionics* analysis. Sur-Reply 1. First, Patent Owner reiterates that “neither the Petition nor the Reply cite any case or decision holding that an examiner is deemed to only have considered explicitly enumerated paragraphs or passages from a prior art reference.” *Id.* Patent Owner again faults Petitioner’s expert testimony for mirroring the Petition without providing evidence or reasoning. *Id.* at 2. Additionally, Patent Owner argues that “Petitioner’s assertion of error rests on the absence of an explicit mention of Shiota’s paragraph [0023], but Petitioner mischaracterizes the reexamination record to arrive at this conclusion,” arguing that nothing in the notice of allowance indicates that the examiner considered only the cited paragraphs relative to claim 27’s allowability. *Id.* at 3–4 (citing *Juniper Networks, Inc. v. Mobile Telecomms. Techs., LLC*, IPR2017-00642, Paper 31 at 17 (PTAB Mar. 14, 2018); *General Elec. Co. v. United Techs. Corp.*, IPR2018-01172, Paper 7 at 18 (PTAB Nov. 29, 2018)).

6. *Analysis*

a) *Part One of Advanced Bionics - Same or Substantially the Same Art or Arguments*

The parties agree that Baker, Shiota, and Fisher were before the Examiner and relied upon during reexamination of the ’990 patent.

Petitioner admits that “Baker, Fisher, and Shiota . . . were relied upon during the ’990 Patent’s reexamination.” Pet. 73. Patent Owner argues that “Petitioner relied on the exact same references considered by the examiner during reexamination This fact alone is sufficient to satisfy the first part of the *Advanced Bionics* framework.” Prelim. Resp. 16–17. In addition, Patent Owner argues that (i) Baker and Shiota, as a combination, was before the Examiner in the reexamination, and (ii) Fisher was part of the reexamination as well. *Id.* at 11 (citing Ex. 1011 (file history of the reexamination), 227–31). We agree with Patent Owner that the first part of the *Advanced Bionics* framework is met. *See Advanced Bionics*, Paper 6 at 20.

b) Part Two of Advanced Bionics - Whether the Office Erred in a Manner Material to the Patentability of Challenged Claims

We now turn to the second part of the *Advanced Bionics* framework, and *Becton, Dickinson* factors (c), (e), and (f). *See Advanced Bionics*, Paper 6 at 8, 10. In so doing, we focus on whether Petitioner “has demonstrated that the Office erred in a manner material to the patentability of challenged claims.” *Id.* For the reasons below, we determine that Petitioner shows such error.

Independent claim 27 recites “displaying the obtained panoramic image by correcting the non-linearity of the initial image, performed by retrieving image points on the obtained image in a coordinate system of center O’ using at least the non-linear distribution function *and a size L of the obtained image*.” Ex. 1001 (Reexam. Cert.), 1:66–2:3 (emphasis added). During reexamination, Patent Owner argued that no reference, including Shiota, taught this limitation. *See* Ex. 1011, 249–250. In particular, Patent

Owner argued that in Shiota “[t]he size of the image disk is not utilized to correct the image.” *Id.* at 250 (citing Ex. 1012 ¶¶ 33–41, Fig. 1).

Patent Owner followed this argument up with “[n]one of the other references teaches the use of the size of the image disk in correcting the non-linearity of the initial image,” and “[a]ccordingly, claim[] 27 . . . [is] believed to be patentable over the references cited in the reexamination request.” *Id.* Patent Owner added that claims that depend from claim 27 are likewise patentable. *Id.*

The Examiner subsequently found, after an unrelated amendment to overcome a rejection under 35 U.S.C. § 305, that the challenged claims are patentable and stated as a reason for patentability that “the prior art of record, including . . . Baker, Fisher, [and] Shiota, . . . does not specifically disclose or fairly teach . . . displaying the obtained panoramic image by correcting the non-linearity of the initial image, performed by retrieving image points on the obtained image in a coordinate system of center O' using at least the non-linear distribution function and a size L of the obtained image (e.g., claims 2–4 . . . and 27–31).” *Id.* at 309, 322, 331, 336, 343.

In light of the above, we find that Baker, Shiota, and Fischer were evaluated during reexamination of the '990 patent, and find that *Becton, Dickinson* factor (c) favors exercising discretion to deny institution.⁹

⁹ The parties dispute whether the Examiner considered paragraph 23 in Shiota. This dispute largely is immaterial here because, as we discuss below, we preliminarily find that paragraph 23 teaches what the Examiner found Shiota does not teach, and thus, the Examiner erred by misapprehending the teachings of paragraph 23 or erred by overlooking paragraph 23.

Petitioner argues that Shiota does in fact teach correcting the non-linearity of the image also using the size of the obtained image.¹⁰ Pet. 77–78. More specifically, Petitioner points to paragraph 23 and argues that Shiota teaches using the size of the image disk to correct the image. *Id.* at 77 (citing Ex. 1012 ¶ 23). We reproduce this paragraph below.

A plane image (fisheye image) obtained through the fisheye lens is expressed by a (p, q) coordinate system as shown in Fig. 1. It is assumed that the (p, q) coordinate system is parallel to the (X, Y) plane and has the origin on the Z axis. In a position on an image pickup face (for example, position of a pixel on a CCD image pickup device), the image circle diameter differs according to the size of the image pickup device and the focal distance of the fisheye lens. Consequently, it is assumed that a fisheye image is projected in a circle of radius 1 of an image of an object positioning at 90 degrees ($Z = 0$) from the front of the lens. At the time of actually use, magnification adjustment is performed.

Ex. 1012 ¶ 23. In other words, Shiota teaches “(1) correction techniques illustrated using a normalized radius of 1 for the size of the image circle at a field angle of 90° . . . and (2) that the image circle diameter (i.e., the size of the image) ‘differs according to at least the size of the image pickup device’ and that ‘at the time of actual[] use, magnification adjustment is performed’ for the correction,” according to Petitioner. Pet. 77 (citing Ex. 1012 ¶ 23). Petitioner adds that in view of these teachings from Shiota that one of ordinary skill in the art would have understood that the reference to “‘magnification adjustment’ refers to an adjustment that accounts for the actual size of the image pickup device (i.e., image disk)—and by extension,

¹⁰ Patent Owner stated in reexamination that Shiota teaches using the non-linear distribution function to correct non-linearity of an initial image. *E.g.*, Ex. 1011, 248 (citing Ex. 1012 ¶¶ 1, 22, 28–41).

the actual size of the image—as part of the image transformation.” *Id.* at 77–78 (citing Ex. 1003 ¶ 205 (citing Ex. 1012 ¶ 23)).

At this stage of the proceeding, we agree with Petitioner that Shiota teaches correcting the non-linearity of the initial image also using the size of the obtained image. Ex. 1012 ¶ 23. In particular, we agree with Petitioner and find that Shiota teaches that “the image circle diameter differs according to the size of the image pickup device and the focal distance of the fisheye lens” and that “[a]t the time of actual[] use, magnification adjustment is performed” to address the assumed projection of a circle of radius 1 positioned at 90 degrees. *Id.* At this stage of the proceeding, we find persuasive Dr. Kessler’s testimony on this issue as the testimony is consistent with Shiota’s teachings. *Compare* Ex. 1003 ¶¶ 205–212, *with* Ex. 1012 ¶ 23.

Accordingly, we find that Petitioner pointed out how the Examiner erred in evaluating the art, and thus, *Becton, Dickinson* factor (e) weighs against exercising discretion to deny institution. We also find in view of the above that *Becton, Dickinson* factor (f) weighs against exercising discretion to deny institution because the additional evidence (i.e., Dr. Kessler’s detailed testimony) and facts presented in the Petition warrant reconsideration of Shiota, as combined with Baker and Fischer. *See* Pet. 49–55 (citing Ex. 1012 ¶¶ 23–26; Ex. 1003 ¶¶ 116–121; Ex. 1003 ¶¶ 205–212). In particular, Dr. Kessler walks through in detail how Baker and Shiota teach “correcting the non-linearity of the initial image . . . by retrieving image points on the obtained image in a coordinate system of center O’ using at least the non-linear distribution function and a size L of the obtained image.” Ex. 1003 ¶¶ 205–212; Pet. 49–55 (citing same).

Moreover, as we discuss above in Section II.D, we determine that Petitioner has established a reasonable likelihood that claim 27 is unpatentable.

In addition, the dissent proffers that “reasonable minds can disagree regarding the treatment of [Shiota],” which in the abstract may be true, but this is not the situation presented by the record before us. As we discuss above, at this stage of the proceeding, we find that Shiota teaches correcting the non-linearity of the image also using the size of the obtained image, contrary to the Examiner’s findings. *See* Ex. 1012 ¶ 23; Ex. 1003 ¶¶ 205–212. The Examiner did not have the benefit of Petitioner’s arguments concerning the teachings of Shiota (only Patent Owner’s arguments) or Dr. Kessler’s detailed explanation and interpretation of Shiota from the vantage point of the skilled artisan, which presently is the only evidence of record concerning what the skilled artisan would have considered Shiota to teach. The Examiner also did not discuss paragraph 23 of Shiota, nor address expressly why this paragraph does not teach the subject limitation.

In sum, we agree with Petitioner and find that the Office erred in a manner material to the patentability of the claim 27. *See* Pet. 78 (arguing that “[h]ad this evidence been properly put forth and considered by the Office, the Office would not have reached its erroneous finding of patentability of claim 27”).¹¹ Moreover, the remaining challenged claims

¹¹ Patent Owner’s argument that “Petitioner made no attempt to show material error by the Office other than the bare allegation that ‘[h]ad this evidence been properly put forth and considered by the Office, the Office would not have reached its erroneous finding of patentability of claim 27’ is unavailing. PO Resp. 17–18. Patent Owner ignores the almost two pages of

(e.g., 2, 4, 29, and 30) depend from claim 27, and thus, also include the discussed limitation. Ex. 1001, (Reexam. Cert.), 1:26–31, 1:35–37, 2:8–12; Pet. 1. Thus, the Office erred in a manner material to the patentability of all of the challenged claims.

On the whole, and considering *Becton*, *Dickinson* factors (c), (e), and (f), we find that the second part of the *Advanced Bionics* framework is met. Accordingly, we decline to exercise discretion to deny institution under 35 U.S.C. § 325(d).

F. Word Count

Patent Owner argues that Petitioner violated the word count limit under 37 C.F.R. § 42.24(a)(1) because Petitioner used improper formatting to obtain its certified word count. Prelim. Resp. 21–23. Patent Owner estimates that “the Petition’s word count is nearly 400 words over the limit, at least.” *Id.* at 22.

Our Rules require “normal spacing” be used in documents created for a proceeding. *See* 37 C.F.R. § 42.6(a)(2)(ii). Our CTPG provides that “[i]f a party feels that it would suffer undue prejudice from an opposing party’s alleged word count limit violation or abuse, that party should raise the issue with the Board promptly after discovering the issue.” CTPG 40. If Patent Owner had done so, and if we agreed with Patent Owner, we could have fashioned an appropriate remedy, such as allowing 400 additional words for Patent Owner’s Preliminary Response or not considering a portion of the Petition. Thus, at this point, we find that this issue need not be further addressed.

arguments preceding this statement, which clearly lay out why Petitioner contends that the Examiner erred. *See* Pet. 77–78.

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the '990 patent, and we institute *inter partes* review on the challenges raised in the Petition.

At this preliminary stage of the proceeding, we have not made a final determination as to the patentability of any challenged claim or any factual or legal issue underlying the patentability inquiry. Any final determination will be based on the record developed during trial. We place Patent Owner on express notice that any argument not asserted in a timely-filed Response to the Petition, or in another manner permitted during trial, shall be deemed waived, even if that argument was presented in the Preliminary Response.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that *inter partes* review is instituted on each of the grounds asserted in the Petition; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which shall commence on the entry date of this decision.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

IMMERVISION, INC.,
Patent Owner.

IPR2023-00471
Patent 6,844,990 B2

Dissenting Opinion filed by *Administrative Patent Judge* KALAN.

I respectfully dissent from the majority decision instituting *inter partes* review in this proceeding. In my view, the Board should exercise its discretion to deny institution under 35 U.S.C. § 325(d).

I agree with the majority regarding the analysis of the first prong of *Advanced Bionics*, and that it supports exercising our discretion to deny institution. I also agree with the majority regarding the analysis of the second prong of *Advanced Bionics*, with respect to *Becton, Dickinson* factor (c), the extent the asserted art was evaluated during examination, including whether it formed the basis for rejection, and that it supports

exercising our discretion to deny institution. I disagree, however, with the analysis of the majority regarding the analysis of the second prong of *Advanced Bionics*, with respect to *Becton, Dickinson* factors (e) and (f).

Regarding *Becton, Dickinson* factor (e), whether Petitioner has pointed out sufficiently how the Examiner erred in its evaluation of the asserted prior art, I am not persuaded that Petitioner has made a satisfactory identification of Examiner error. As alleged by Patent Owner, the Petition's only mention of error by the Office is an argument that, if the evidence put forth in the Petition had "been properly put forth and considered by the Office, the Office would not have reached its erroneous finding of patentability of claim 27." Prelim. Resp. 17–18 (quoting Pet. 78). I agree with Patent Owner that the Petition's allegations of Examiner error are "insufficient" (*id.* at 16), as the Petition's § 325(d) allegations are directed primarily to Petitioner's "grounds/arguments that are different than those previously presented to the office." Pet. 73–78; *Google, LLC v. Valtrus*, IPR2022-01197, Paper 18 at 22 (disagreeing that "this Board panel should mine the Petition's grounds," the prosecution history, and the art to "determine *on our own* how the Office allegedly materially erred in its previous consideration" of the same prior art "in the absence of any explanation from Petitioner as to what that material error is"). In the Reply, Petitioner asserts that the Petition contained a "detailed analysis of material error" and focuses on the Examiner's failure to reference ¶ 23 of *Shiota*. Reply 1–2.¹² I understand that the Examiner had the entirety of *Shiota*

¹² I disagree with the majority's position that whether the Examiner considered paragraph 23 of *Shiota* is "immaterial" (Pet. 26 n.9) because such a position disregards Patent Owner's argument that the Examiner not only

before her, and cited and/or was pointed to paragraphs 22 and 24, which are immediately adjacent to paragraph 23 and part of the same discussion covering Shiota's Figure 1. Ex. 1011, 117, 248, 323; Ex. 1012 ¶¶ 20–26. In the reexamination, the Examiner quoted from multiple portions of Shiota, including the paragraphs bookending paragraph 23. Ex. 1011, 248, 250, 323. It is reasonable to assume that the Examiner was familiar with the entirety of the contents of Shiota, Baker, and Fisher. Sur-Reply 1, 4; *Juniper Networks, Inc. v. Mobile Telecomms. Techs., LLC*, IPR2017-00642, Paper 31 at 17 (PTAB Mar. 14, 2018) (“In addressing [reference] substantively and citing to portions of [reference], we determine that the Examiner was aware of the entire reference and that he or she evaluated [reference]’s applicability to the pending claims, notwithstanding the citation to only certain portions of the reference”); *Gen. Elec. Co. v. United Techs. Corp.*, IPR2018-01172, Paper 7 at 18 (PTAB Nov. 29, 2018) (“The mere fact that the Examiner cited only paragraphs 3–5 and 18 of [reference] does not indicate that the Examiner failed to consider paragraphs 22 and 23 of [reference].”). Petitioner has provided no persuasive reason that the Examiner was unaware of the disclosure of paragraph 23, or erroneously ignored it.

To the extent we are expected to take the Petition’s “insufficient” (Prelim. Resp. 16) allegation of error and investigate on our own whether the Examiner erred, I disagree that there was Examiner error. Patent Owner presented arguments in reexamination that limitation 27[f] (“retrieving image points on the obtained image in a coordinate system of center O' using at least the non-linear distribution function and a size L of the obtained

considered paragraph 23 but correctly agreed that it did not teach the limitations of 27[f].

image”) requires “an image disk having a size L , which may be provided in the number of pixels,” and that image points p (p_u, p_v) “can be obtained using equations that multiply, among other things, the size of the image disk L with the non-linear distribution function at an angle ϕ (e.g., $p_u = L * U * F_d(\phi)$ and $p_v = L * V * F_d(\phi)$).” Ex. 1011, 249. Patent Owner argued to the Examiner that, in Shiota: “The size of the image disk is not utilized to correct the image.” *Id.* at 250 (citing Ex. 1012, Fig. 1, ¶¶ 33–41). The Examiner agreed. *Id.* at 323. Although Petitioner’s declarant argues in this proceeding that one of ordinary skill in the art would have understood that Shiota’s reference to “magnification adjustment” (Ex. 1012 ¶ 23) “refers to an adjustment that accounts for the actual size of the image pickup device—and by extension, the actual size of the image—as part of the image transformation” (Pet. 50–51 (citing Ex. 1003 ¶ 205)), it is unclear whether Shiota does so in the manner contemplated by limitation 27[f], which requires “using at least the non-linear distribution function and a size L of the obtained image,” where L is expressed in pixels. As noted by Patent Owner (and agreed to by Petitioner (Ex. 1003 ¶ 205)), the “radius of the fisheye image is assumed as 1” in Shiota (Ex. 1012 ¶ 23); also, Shiota’s second step “involves only multiplication and the use of a lookup table to find k_2 ” (Ex. 1012 ¶ 42). Prelim. Resp. 9. Patent Owner adds that Shiota “does not explain how the magnification adjustment is determined, implemented within the calculations or lookup tables, or otherwise utilized as part of the projection process.” *Id.* I do not believe the Examiner erred in evaluating Shiota and Patent Owner’s arguments directed to this limitation during reexamination, even in light of the arguments now before us. Thus, I believe factor (e) weighs in favor of exercising discretion to deny institution.

Regarding *Becton, Dickinson* factor (f), the extent additional evidence and facts present in the Petition warrant reconsideration of the art or arguments, I disagree that the Petition's evidence and facts warrant reconsideration of the art or arguments. The Petition does not present any new art. The facts and evidence presented in the form of arguments and the declaration do not provide a reason to reconsider the art, and are insufficiently supported on this record.

For claim element 27[e] (“displaying the obtained panoramic image by correcting the non-linearity of the initial image”), Petitioner argues that Patent Owner acknowledged that Shiota disclosed correction of “the non-linearity of the initial image,” and then relies on Shiota to disclose this limitation. Pet. 46–47 (citing Ex. 1012 ¶¶ 31–35, 24, 37–42; Ex. 1003 ¶¶ 195–196). Thus, as to limitation 27[e], Petitioner presents the same art and restates arguments already set forth.

For claim element 27[f] (“performed by retrieving image points on the obtained image in a coordinate system of center O’ using at least the non-linear distribution function and a size L of the obtained image”), Petitioner again relies on the already-considered combination of Baker and Shiota. Pet. 48–55. Petitioner relies on its declarant to discuss the “magnification” feature of Shiota allegedly overlooked by Examiner. *See* Ex. 1003 ¶ 205 (discussing Ex. 1012 ¶¶ 23–26). The Examiner, however, was already presented with the entirety of Shiota, including reference to Shiota's use of “magnification.” Ex. 1011, 117 (citing Ex. 1012 ¶¶ 24, 30–35, 37–42); 248 (citing Ex. 1012 ¶¶ 1, 22, 28–41). The Examiner relied on both Shiota's “Positional relation of coordinate system” section (Ex. 1012 ¶¶ 20–26 (referring to Figure 1)) and “Calculating procedure for image

transformation” section (Ex. 1012 ¶¶ 27–42 (referring to Figure 3)) in determining that Shiota does not teach correcting the non-linearity of an image captured by a lens as claimed. Ex. 1011, 323 (relying on Shiota Fig. 1, ¶¶ 1, 22, 28–41). Notably, Petitioner does not direct us to any portion of the “Calculating procedure for image transformation” section of Shiota to discuss how Shiota in its actual calculations retrieves image points “using at least the non-linear distribution function and a size L of the obtained image.” See Prelim. Resp. 9 (“Nothing in Shiota describes the use of a size L in pixels of the obtained panoramic image to correct the non-linearity of the obtained image.”). Petitioner agrees that “Shiota assumes a normalized radius of 1 of the image circle” (Pet. 50; Ex. 1003 ¶ 205) but relies on Shiota’s statement that “[a]t the time of actually use, magnification adjustment is performed” (Pet. 50; Ex. 1012 ¶ 23; Ex. 1003 ¶¶ 205–206). It is unclear from Shiota’s otherwise untethered statement that “[a]t the time of actually use, magnification adjustment is performed” (Ex. 1012 ¶ 23; Ex. 1003 ¶ 206) if or how Shiota, alone or in combination with Baker, would correct the non-linearity of the initial image “*by retrieving image points on the obtained image in a coordinate system of center O' using at least the non-linear distribution function and a size L of the obtained image.*”

Moreover, as noted by Patent Owner, Petitioner’s declarant generally restates the Petition. Prelim. Resp. 20 (relying on *Xerox Corp v. Bytemark, Inc.*, IPR2022-00624, Paper 9 (PTAB Aug. 24, 2022) (precedential)); see also Sur-Reply 2. More particularly, the relied-upon portions of Petitioner’s declarant’s testimony closely track the language of the Petition. Compare Pet. 50–52 with Ex. 1003 ¶¶ 205–207. I disagree with the majority that Petitioner’s declarant “walks through in detail how Baker and Shiota teach

‘correcting the non-linearity of the initial image . . . by retrieving image points on the obtained image in a coordinate system of center O’ using at least the non-linear distribution function and a size L of the obtained image.’” Pet. 28. Petitioner’s declarant does not cite to sources apart from the relied-upon art in its ¶¶ 205–207 conclusions that Shiota discloses the disputed limitation of 27[f]. *Xerox*, IPR2022-00624, Paper 9 at 15 (the testimony of a declarant that merely repeats, verbatim, conclusory assertions from a petition, without citing additional supporting evidence or providing technical reasoning to support the testimony, is entitled to little weight); 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”). Because the art cited by Petitioner is identical to the art relied upon by the Examiner, Petitioner relies heavily on its declarant’s testimony to assert that the Examiner erred. Pet. 78 (if the evidence put forth in the Petition had “been properly put forth and considered by the Office, the Office would not have reached its erroneous finding of patentability of claim 27”). This heavy reliance on declarant testimony that cites no sources or technical reasoning in support, and replicates the Petition essentially word-for-word, should not form the basis for a finding of Examiner error. To the extent that Petitioner’s obviousness arguments directed to claim 27[f] rely on this declarant testimony, I disagree with the majority that a reasonable likelihood of unpatentability exists based on the record before us.

Additionally, as set forth in *Advanced Bionics*:

If a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review. *If reasonable minds can disagree regarding the*

purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.

Advanced Bionics, 8–9 (emphasis added). I believe that reasonable minds can disagree regarding the treatment of the art or arguments, as evidenced by the opposing arguments and interpretations presented by Patent Owner and the Examiner on the one hand, and Petitioner and its declarant on the other. Because, here, reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability. Additionally, I note the *Advanced Bionics* “commitment to defer to previous Office evaluations of the evidence of record unless material error is shown,” which I believe to be the case here.

For these reasons, I am not persuaded that the additional evidence and facts presented in the Petition warrant reconsideration by the Board of a challenge based on *Baker and Shiot*a, or on *Baker, Shiot*a, and *Fisher*. Rather, I agree with Patent Owner that Petitioner’s arguments do not change that the Examiner previously and substantively considered these disclosures during prosecution and allowed the claims following such consideration. Prelim. Resp. 1–2; Sur-Reply 1–2. Thus, I believe *Becton, Dickinson* factor (f) weighs in favor of exercising discretion to deny institution.

On this record, after weighing the parties’ arguments and evidence, I disagree with the majority that we should institute *inter partes* review to consider again whether the repeatedly asserted and evaluated art discloses the challenged claim limitations.

IPR2023-00471
Patent 6,844,990 B2

FOR PETITIONER:

W. Karl Renner
Karan Jhurani
David Holt
FISH & RICHARDSON P.C.
axf-ptab@fr.com
jhurani@fr.com
holt2@fr.com

FOR PATENT OWNER:

Stephen Murray
John Simmons
Dennis Butler
Keith Jones
PANITCH SCHWARZE
smurray@panitchlaw.com
jsimmons@panitchlaw.com
dbutler@panitchlaw.com
kjones@panitchlaw.com