2017-1517, -1518

United States Court of Appeals for the Federal Circuit

CASCADES PROJECTION, LLC

Plaintiff – Appellant,

v.

EPSON AMERICA, INC., and SONY CORPORATION

Defendant – Appellee.

Appeals from the United States Patent and Trademark Office, Patent Trial and Appeal Board in Nos. IPR2015-01206 and IPR2015-01846.

OPENING BRIEF OF PLAINTIFF – APPELLANT

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June 19, 2017

CERTIFICATE OF INTEREST

Counsel for Appellant Cascades Projection, LLC certifies the following:

1. The full name of every party or amicus represented by me is:

   Cascades Projection LLC.

2. The name of the real party in interest (if the party named in the caption is not the real party in interest) represented by me is:

   Cascades Projection LLC.

3. The parent companies, subsidiaries (except wholly-owned subsidiaries), and affiliates that have issued shares to the public, of the party or amicus represented by me are:

   Cascades Ventures, Inc.

4. The name of all law firms and the partners or associates that appeared for the party or amicus now represented by me in the trial court or agency or are expected to appear in this court are:

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TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES

Page(s)

Cases:

Statutes & Other Authorities:

I. STATEMENT OF RELATED CASES

Under Federal Circuit Rule 47.5, the following cases might directly affect or be affected by this Court's decision:

- *Cascades Projection LLC v. Epson America, Inc. et al.*, Case No. 2:15-cv-00258-SJO-RZ (C.D. Cal.)
- *Cascades Projection LLC v. Barco, Inc. et al.,* Case No. 2:15-cv-00271-SJO-RZ (C.D. Cal.)
- *Cascades Projection LLC v. Christie Digital Systems USA, Inc.,* Case No. 8:15-cv-00050-SJO-RZ (C.D. Cal.)
- *Cascades Projection LLC v. NEC Display Solutions of America, Inc.,* Case No. 2:15-cv-00273-SJO-RZ (C.D. Cal.)
- *Cascades Projection LLC v. Sony Corporation of America, Inc. et al.,* Case No. 2:15-cv-00274-SJO-RZ (C.D. Cal.)

II. APPELLATE JURISDICTIONAL STATEMENT

(a) This is an appeal from two inter partes review ("IPR") proceedings of the Patent Trial and Appeal Board ("PTAB"), IPR2015-01206 and IPR2015-01846, concerning United States Patent No. 7,688,347. The Board issued its decision in

IPR2015-01206 on November 29, 2016, and its decision in IPR2015-01846 on January 11, 2017.

(b) This Court's jurisdiction is based on 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. § 141(c), this being an appeal from a final agency action (the United States Patent and Trademark Office, or USPTO).

(c) This appeal is timely under Fed. R. App. P. 4. Notices of Appeal were timely filed in connection with IPR2015-01206 and IPR2015-01846 on January 25, 2017. This Court consolidated both appeals on January 30, 2017.

III. STATEMENT OF THE ISSUES

The issues raised in this appeal are the following;

1. Whether the Board erred in its construction of claims 29, 30, 32, 33, 47, 48 and 69 of the subject ’347 patent.

2. Whether the Board erred in finding that claims 29, 30 and 32 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of U.S. Patents No. 5,098,184 (“Brandt”) and Japanese Reference JP A-5-45724 (“Uchiyama”).

3. Whether the Board erred in finding that claim 33 is unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Brandt and European Reference EP 0 509 630 A2 (“EP ’630”).

4. Whether the Board erred in finding that claims 48 and 69 are unpatentable under 35 U.S.C. § 103(a) as being obvious in view of Brandt and U.S. Patent No. 5,042,921 ("Sato").

5. Whether the Board erred in finding that claims 29, 30, 32 and 33 are unpatentable under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,689,315 ("Fushimi").

6. Whether the Board erred in finding that claim 47 is unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,912,614 ("Goldenberg").

7. Whether the Board erred in finding that claims 48 and 69 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Goldenberg and U.S. Patent No. 5,566,367 ("Mitsutake") or U.S. Patent No. 5,042,921 ("Sato").

8. Whether patent cancellation by an administrative agency violates Separation of Powers, Due Process or the Seventh Amendment under the United States Constitution.

IV. STATEMENT OF THE CASE

This matter began as two separate actions brought by Appellant Cascades LLC to enforce its U.S. Patent No. 7,668,347 ("the '347 Patent") entitled, "High-Efficiency Display System Utilizing Optical Element To Reshape Light With Color And Brightness Uniformity." (Appx136-220). In the first action, Cascades sought

to enforce its rights against Appellee Epson America, Inc. In the second, Cascades sought to enforce its rights against Appellee Sony Corporation.

Epson and Sony each initiated separate inter partes Patent Review ("IPR") proceedings before the Patent Trial and Appeal Board ("PTAB") seeking to invalidate the asserted claims of the '347 Patent on prior art grounds. In both proceedings, the PTAB largely adopted the arguments set forth by Epson and Sony and invalidated the challenged claims. (Appx1-32; Appx33-68).

Cascades asks that this Court review and vacate the PTAB's findings of patent invalidity.

V. STATEMENT OF THE RELEVANT FACTS

A. Summary of the '347 Patent Invention

Eugene Dolgoff, the named inventor in the '347 Patent, is a pioneer in the now well-established field of projecting electronically produced images onto a large screen in order to permit an enhanced viewing experience by large numbers of people. (Appx136-220).

From the earliest days of motion pictures dating to the time of Thomas Edison, photographic film was used to create a series of images that were sequentially and rapidly projected onto a screen using a bright light source and series of optical lenses.

This technology of "films" and "projectors" was improved and perfected over the course of more than a century and remained in active use until very recently.

While highly effective, film still had some drawbacks, such as the need to make multiple copies of a movie, physically transport the copies to theaters around the country (with the attendant risk of loss or theft) and then employ skilled projectionists to display and repair them as they often broke during projection.

In the mid-Twentieth Century, a new form of providing moving pictures, namely "television," came into existence. Television differed in that images were created, distributed and displayed electronically, rather than through the use of film and projectors. Television permitted the widespread, economic distribution of images to viewers in their homes without requiring attendance at a theater. At the heart of a television display is the cathode ray tube that is constrained by limited image brightness and relatively small size. Television hardly offered the dramatic, often breath-taking viewing experience that could be achieved using film and projector techniques in a large, commercial movie theater. (Appx187-189).

More recently, new digital technologies have revolutionized how images are created, stored and distributed. Digital cameras now permit scenes to be recorded without the use of photographic film, while computer-generated imaging now permits the creation of scenes that never existed, or could exist, in real life. Filmmakers now have creative freedom their predecessors could only dream of. Full

blown feature films can now be copied, stored and distributed digitally (and in encrypted form to avoid theft), which greatly reduces the cost and inefficiencies associated with physically making and sending out large "cans" of film as was done in the past.

Although creating digital images is now a well-developed technology, displaying them in a large, movie-theater setting is not straight-forward. Liquid Crystal Display ("LCD) technology is now in widespread use and, in the area of personal devices, such as personal computers and smart phones, has largely supplanted the cathode ray tube. While highly effective in small personal computer displays, LCDs are not readily adapted to large-scale displays such as would be required to directly replace a large screen in a traditional movie theater.

Beginning in the late 1960s, Mr. Dolgoff began his life-long mission to project electronically-generated images onto a large screen and thereby duplicate the viewing experience that could be achieved using film and projector techniques without the drawbacks of such technology. Recognizing that the inherent deficiencies of cathode ray tubes limit image brightness and quality (early, three-color "projection" TVs largely failed for this reason), Mr. Dolgoff knew that an electronic "Image Forming Element ("IFE") or liquid crystal display, in combination with a bright light and projecting lens, was the key to achieving success. (Appx188).

However, several technical challenges remained to be overcome before success could be realized.

After a long, painstaking methodical analysis, Mr. Dolgoff recognized that making the maximum use of the available light from a projection bulb was critical to success. Mr. Dolgoff set about to determine where light was being lost in a conventional projector setup and set about developing techniques to avoid such loss. (Appx189).

One serious loss of light occurred because the illuminating light source produced a round beam of light, while the Image Forming Elements or "IFEs" (along with virtually all movie screens) are rectangular. Illuminating a rectangular IFE with a round beam meant that all of the light falling outside the rectangle (nearly 50% of the beam) was wasted. Mr. Dolgoff sought to make effective use of this otherwise wasted light. (Appx202-203; Appx1692-1761, ¶¶18&19).

Knowing that LCDs need polarized light for operation, Mr. Dolgoff further recognized that the polarizers in existence at the time wasted more than 50% of the light going through them. Another problem Mr. Dolgoff sought to solve was how to recapture and make effective use of the light otherwise lost during polarization. (Appx208).

Finally, Mr. Dolgoff recognized that, while cathode ray tubes display images that are brightest at the center and fall off in brightness toward the edges of the

screen, an effective projected image requires *uniform* brightness out to each of the corners. Achieving uniform image brightness was yet another problem Mr. Dolgoff needed to solve. (Appx205-206, 38:57 – 38:67; Appx1703-1711, ¶¶20-29).

After recognizing, considering and solving each of these problems, Mr. Dolgoff created an optical system that proved highly effective for its purpose, that is currently in widespread use today and that makes modern projection of digitally created images in a movie theater setting a reality.

These solutions, developed through the painstaking efforts of Mr. Dolgoff, are the subject of the '347 Patent.

B. Mr. Dolgoff's Solutions

1. Reducing Polarization Loses

As noted, LCD image forming elements cannot be used with ordinary light, such as that produced by a standard light bulb. Such light is "non-polarized," or "randomly polarized," meaning that the electric fields making up the light are oriented in random directions. For proper operation, LCD devices require that the electric fields of the light beam be oriented in one of two mutually orthogonal (i.e. perpendicular) directions, referred to as "S" and "P" polarization. Standard polarizers operate by, in essence, absorbing light waves of the undesired orientation. Thus, to achieve S polarization, the P oriented waves are absorbed, while to achieve P polarization, the S waves are absorbed.

While effective in achieving the desired polarization, the absorption technique of standard polarizers results in the loss of approximately 65% of the original light. Hence a light beam passing through a polarizer will be less than half as bright following polarization than before polarization. Using standard polarizers is, thus, a major source of light loss and inimical to Mr. Dolgoff's goal of making maximum use of available light. (Appx1711-1715; ¶¶30-34).

To avoid such light loss, Mr. Dolgoff looked to so-called "MacNeille" prism polarizers as a possible solution. Unlike conventional polarizers that polarize randomly polarized light by using crystals to absorb the light of the unwanted polarization, MacNeille polarizers include two prisms and a multi-layer dielectric coating that work together to polarize light by directing the P polarized component of a light beam in one direction, while separating out and directing the S polarized component in another direction. Although MacNeille prisms have the advantage that substantially all of the original light remains (rather than having more than 50% of it converted into heat as in other polarizers) a problem still exists in that the non-wasted 50% of the light is still of the wrong polarization and traveling in the wrong direction. (Appx1711-1715, ¶¶30-34).

To overcome this problem, Mr. Dolgoff hit upon the idea of using a half-wave plate in conjunction with the MacNeille prism to convert the previously unusable S polarized component of the light into the desired P polarized form and a mirror to

redirect that newly formed P component into a usable direction. By using his newly developed concept, Mr. Dolgoff was able to achieve his goal of converting substantially *all* of the light from a randomly polarized light source into a single beam, heading in a single direction, and having the desired polarization. (Appx1711-1715; ¶¶30-34).

Unfortunately, MacNeille prism polarizers are heavy, big, bulky, and expensive and not practically suited to Mr. Dolgoff's purpose. Thinking still further, Mr. Dolgoff realized that he could achieve substantially the same result by creating what he invented and dubbed, a "Fresnel MacNeille Prism" or "Fresnel polarizer." Such a polarizer utilizes a 2-dimensional array of tiny MacNeille prism polarizers, each with its own additional mirror and half-wave plate, to accomplish the same functions without the big size, bulk, weight, and cost of prior techniques. The final Fresnel Polarizer looks like a plate having, "a multiplicity of tiny saw-tooth surfaces" in combination with "[a] multi-layer dielectric coating...deposited on the flat surfaces of [the] saw-tooth component." (Appx208-210; 44:2–47:12). The resulting "Fresnel polarizer," which was Mr. Dolgoff's own invention and never existed before, allowed substantially *all* of the light from a randomly polarized source to be converted into the desired polarization without the losses inherent in earlier polarizers. In the words of his '347 Patent, Mr. Dolgoff's Fresnel polarizer also, "eliminates the cost and weight of the prisms in a MacNeille polarizer, which

become heavier and more expensive as the beam to be polarized increases in size." (Appx208, 44:27–30).

2. Reducing Beam Shape Loses

Solving the polarization problem was, however, only one of the tasks Mr. Dolgoff faced. Again, a significant source of light loss is that the beam of light from the source is circular in shape, while the image forming element or IFE (along with the shape of the viewing screen) is rectangular. Simply illuminating the Image Forming Element with a circular beam wastes all the light that falls outside of the rectangle. (Appx205-206, 38:57 – 38:67; Appx1703-1711, ¶¶20-29).

To address this source of light loss, Mr. Dolgoff faced the problem of how to convert a circular beam of light to a rectangular beam having the same relative dimensions or "aspect ratio" as the image forming element.

To solve this problem, Mr, Dolgoff created a lens shaped as a rectangle matching the aspect ratio of the image forming element. To capture all of the light of the circular source beam, the rectangular lens had to be larger than the source beam. To direct the resulting beam to the image forming element, the lens needed to focus the light as it traveled toward the image forming element. However, merely using a rectangular focusing lens would simply illuminate the image forming element with an image of the circular light source and result in uneven illumination of the image forming element. This would create an image that was brighter toward

the center and dimmer toward the edges – a result Mr. Dolgoff sought *not* to achieve but, rather, to *avoid*. (Appx205-206, 38:57 – 38:67; Appx1703-1711, ¶¶20-29).

To achieve his goal of creating a rectangular light beam matching the size and shape of the image forming element and illuminate the image forming element uniformly, Mr. Dolgoff hit on the idea of forming his rectangular lens using an array of smaller lenses or "lenslets" arranged into a rectangular matrix. Each of the lenslets making up the array was rectangularly shaped with the same aspect ratio as the image forming element and was arranged so that, with the addition of carefully designed and placed prisms, whatever light from the source that fell on it was directed toward the image forming element. He then added a second similar lens array such that each lenslet of the second lens array focused a magnified image of a single rectangular lenslet from the first lens array (rather than of the round light source) onto the Image Forming Element, with just the right magnification to completely fill it. One key benefit of this approach was that, because each of the lenslets directed whatever light that fell on it toward the *entire* image forming element, rather than only a part of the image forming element, the overall light falling onto the image forming element was averaged so that the overall illumination of the image forming element was uniform over its entire surface. In this manner, Mr. Dolgoff was able to achieve his goal of providing a rectangular light beam

providing uniform illumination without the resulting image appearing brighter at the center than at the edges. (Appx205-206, 38:57 – 38:67; Appx1703-1711, ¶¶20-29).

C. The '347 Patent Disclosure And Claims

The '347 Patent broadly discloses and claims the various ways in which Mr. Dolgoff solved the problems of making the most effective use of available light and uniformly illuminating the entire surface of an electronic image forming element. In this appeal, Claims 29, 30, 32, 33, 47, 48 and 69 of the '347 Patent are at issue.

Independent Claim 29 reads as follows:

> 29. A display system comprising: a light source; an element having pixels, said element being capable of having an image formed thereon; and means for focusing different segments of a light beam emanating from said light source onto said element at proper angles such that light is focused onto the pixels of said element, comprising at least one input lens array located between said light source and said element.

Claims 30, 32 and 33 depend from Claim 29 and read as follows:

> 30. The display system of claim 29, further comprising means for bringing light from different sections of the light beam emanating from said light source to foci.

> 32. The display system of claim 29, wherein the element has a size, wherein a focused image has the same size as said element.

> 33. The display system of claim 29, further comprising a

field lens located near said element.

Independent Claim 29 is directed to ensuring that the entire image forming element is uniformly illuminated by the light beam emanating from the light source. This is addressed principally by the claim element reading, "means for focusing different segments of a light beam emanating from said light source onto said element at proper angles such that light is focused onto the pixels of said element, comprising at least one input lens array located between said light source and said element." In the proceedings below, construction of this "means plus function" claim term under 35 U.S.C. §112 was a principal issue.

Independent Claim 47 reads as follows:

> 47. A display system comprising: a light source; an electronic image-forming element capable of having an image formed thereon, said electronic image-forming element having a predetermined shape; and means for enhancing brightness of an image by shaping a beam illuminating said electronic image-forming element such that the shape of the beam substantially matches the shape of said electronic image-forming element.

Claim 48 depends from Claim 47 and reads as follows:

> 48. The display system of claim 47, wherein said enhancing means also includes a Fresnel polarizer means.

Independent Claim 47 is directed to the concept of making maximum use of available light by shaping the light beam to match the shape of the image forming element. This is addressed principally by the claim element reading, "means for

enhancing brightness of an image by shaping a beam illuminating said electronic image-forming element such that the shape of the beam substantially matches the shape of said electronic image-forming element." In the proceedings below, construction of this "means plus function" claim term under 35 U.S.C. §112 was also a principal issue.

Dependent Claim 48 depends from Claim 47 and clarifies that the "enhancing means also includes a Fresnel polarizer means." Claim 48 thus expressly requires a "Fresnel polarizer" which, as has been previously noted, is itself an element that Mr. Dolgoff, himself, *invented and named.*

Finally, Independent Claim 69 reads as follows:

> 69. A display system comprising: a light source; an element capable of having an image formed thereon, said element having a predetermined shape; and means for enhancing brightness of an image by shaping a beam illuminating said image-forming element such that the shape of the beam substantially matches the shape of said image-forming element, wherein said enhancing means also includes a Fresnel polarizer means.

As with Claim 47, Independent Claim 69, too, is directed to Mr. Dolgoff's concept of making maximum use of available light by shaping the light beam to match the shape of the image forming element, and includes the claim element, "means for enhancing brightness of an image by shaping a beam illuminating said image-forming element such that the shape of the beam substantially matches the

shape of said image-forming element." As with Claim 48, Claim 69, too, specifies that the "enhancing means" further includes Mr. Dolgoff's "Fresnel polarizer means."

D. The Proceedings Below

Although this consolidated appeal follows two separate IPRs brought by two separate corporations, considerable overlap exists.

In both proceedings, the claims reviewed were the same with the sole exception that IPR2015-01846 (brought by Sony) included Claim 47, while IPR2015-01206 (brought by Epson) did not. Two of the Administrative Patent Judges served on both three-judge panels, and much of the prior art overlapped as well. Not surprisingly, many of the claim terms requiring construction were the same, (namely, "means for focusing," "means for enhancing brightness" and "Fresnel polarizer").

In the Epson proceeding, Epson introduced and relied on the opinion of its expert, Dr. Frederic J. Kahn, while Cascades relied on the opinion of its expert, Mr. William K. Bohannon. (Appx1692-1761).

In the Sony proceeding, Sony relied on the opinion of its expert, Dr. Alan E. Willner, while Cascades again relied on an opinion of its expert, Mr. Bohannon. (Appx4620-4711).

For purposes of this appeal, only the claim terms, "means for focusing," "means for enhancing brightness" and "Fresnel polarizer" require further review by this Court.

In the Epson proceeding, Cascades filed its Preliminary Response (Appx1103-1168), its Brief Regarding Expected Expiration Date of Patent (Appx1266-1278) and its Response Opposing Petition for Inter Partes Review. (Appx1361-1423).

In the Sony proceeding, Cascades filed its Preliminary Response (Appx3862-3902) and its Response Opposing Petition for Inter Partes Review. (Appx4129-4193).

1. Claim Construction

In the proceedings below, the PTAB construed various elements of the subject claims as follows:

(a) Construction of "Means for Focusing"

The claim element, "means for focusing" appears in Independent Claim 29 and Dependent Claims 30, 32 and 33.

In Epson, the PTAB looked to Figure 65 of the '347 patent to determine the "corresponding structure." In the words of the Board, "we determined that the structure corresponding to the claim 29 "means for focusing" consists of focusing lenses 6560 ('347 patent Fig. 65) and the unnumbered prisms near foci 6550." (Appx10). Recognizing that, "The claim further requires that the 'means for focusing' includes the structural element of at least one input lens array located

between the light source and the element having pixels (e.g., input lens array 6580 as depicted in Figure 65)," the Board held that, "The 'at least one input lens array' is exemplified by the lens array(s) 6580 as depicted in Figure 65, but is not limited to that particular structure and equivalents thereof." (Appx11). Thus the Board agreed that the required "at least one input lens array" need *not* be lens array 6580.

In Sony, the Board, over Cascades' objection, looked to Figure 69 (not Figure 65 as in Epson) to determine the "corresponding structure." (Appx42-44). In Sony, the Board ignored Cascades' arguments against relying on Figure 69 with a casual, "we are not persuaded" dismissal. (Appx42). Relying on Figure 69, the Board then "determined that the structure corresponding to the claim 29 'means for focusing' requirement is input lens array 6930 shown in Figure 69 of the '347 patent." (Appx44).

As a result of the holdings in Epson and Sony, the structure corresponding to the "means for focusing" can (according to the Board) be *either* (1) the "focusing lenses 6560 ('347 patent Fig. 65) and the unnumbered prisms near foci 6550" along with, "input lens array 6580 as depicted in Figure 65," *or* (2) the "input lens array 6930 shown in Figure 69 of the '347 patent."

Cascades challenged this construction adopted by the Board noting that the "at least one input lens array" is *not* the lens array 6580 shown in Figure 65, but, rather, is the lens array 6570 shown in that Figure. Cascades also challenged the

Sony Board's reliance on Figure 69, rather than Figure 65 of the '347 patent, as showing the proper corresponding structure.

(b) Construction of "Means for Enhancing Brightness."

The element, "means for enhancing brightness" appears in Independent Claims 47 and 69, as well as Dependent Claim 48. "Means for enhancing brightness" was construed in both the Epson and the Sony IPRs. The parties were in general agreement that the corresponding structure for this claim element was shown in Figure 65 and included all the structure shown in that Figure with the exception of the input lens array 6580. However, the Board rejected Cascades' argument that the *way* in which brightness enhancement is achieved includes the use of prisms.

(c) Construction of "Fresnel Polarizer"

It is primarily in its construction of "Fresnel Polarizer" that the Board in both Epson and Sony committed clear error. To reach the construction it did, the Board discounted the clear testimony of both Epson's *and* Cascades' experts and instead relied on a distinction (a) that neither expert made and (b) that directly contradicts what the '347 Patent actually says.

The Board correctly noted that 'Fresnel polarizer" is not a "means plus function" element and, thus, is "not a limitation to be construed in accordance with 35 U.S.C. § 112, sixth paragraph." Accordingly, the Board properly looked to the '347 Patent disclosure for guidance in construing this claim term. (Appx13).

Epson argued that "Fresnel polarizer" should be construed as "a polarizer constructed with stepped, sawtooth-like elements so as to have the optical properties of a much thicker polarizer." In arguing for its proposed construction of "Fresnel polarizer," Epson pointed to a technical dictionary which defined a "Fresnel lens" as a "thin lens constructed with stepped setbacks so as to have the optical properties of a much thicker lens." (Appx13). The Board in Epson placed heavy reliance on this definition of "Fresnel lens," even though the actual claim term in question was "Fresnel polarizer," an altogether different structure, and, indeed, one created by Mr. Dolgoff himself.

Cascades, in turn, argued that "Fresnel polarizer" should be construed as a:

> polarizer constructed with stepped, sawtooth-like elements so as to have the optical properties of a much thicker polarizer, with an optical coating layer where two sawtooth-like elements touch, and with polarization conversion of reflected incident light through a wave plate in a manner to cause nearly all incident light to exit with primarily one polarization.

Cascades' argument for this construction was properly based on the actual language of the '347 patent itself, supported by the opinion of its expert, Mr. Bohannon and the deposition testimony of Epson's expert, Dr. Kahn. In particular, Cascades pointed out that both experts agreed that, "an essential feature of a Fresnel polarizer, as described by the '347 patent, is an *optical coating* at the boundary where two subparts touch." The Board sidestepped this inconvenient testimony by

claiming that Cascades failed to "[question] the witness...concerning [an] alternative hologram embodiment." (Appx15). In so doing, the Board failed to appreciate that the referenced "alternative hologram embodiment" is *itself* a type of optical coating.

In Sony, the Board again rejected Cascades' argument that a Fresnel polarizer requires an optical coating and instead adopted the flawed reasoning that because "the terms 'Fresnel' and 'polarizer' have customary meanings in the art, as [Sony] asserts." "a person of ordinary skill familiar with Fresnel lenses and polarizers would understand the term Fresnel polarizer as a polarizer constructed with stepped, sawtooth-like elements so as to have the optical properties of a much thicker polarizer." (Appx53). In short, the Board reasoned that, simply because "Fresnel lenses" and "polarizers" existed separately in the art, one of ordinary skill would understand the coined term, "Fresnel polarizer" to mean something *different* from what the actual inventor, Mr. Dolgoff, actually said in his own '347 Patent. Again, to reach this distorted and inaccurate conclusion, the Board, in its apparent zeal to invalidate the subject claims of the '347 Patent, ignored the testimony of the experts and the clear language of the '347 Patent.

2. The Asserted Prior Art

After construing relevant limitations of the subject claims, the PTAB in Epson and Sony then proceeded to assess the validity of the claims in light of the following prior art:

(a) Brandt

U.S. Patent No. 5,098,184 (Brandt) discloses an "Optical Illumination System and Projection Apparatus Comprising Such a System." (Appx772-796). Significantly, Brandt nowhere discloses the use of prisms as does the '347 patent. Furthermore, Brandt takes an entirely different approach than does Mr. Dolgoff in his '347 Patent in that Brandt wastes significant light whereas Mr. Dolgoff makes maximum use of available light. While Mr. Dolgoff, in his '347 patent, captures the entirety of a circular beam of light and converts that entire circular beam to a rectangular beam, Brandt, on the other hand, captures only the rectangular portion of light within a circular beam and wastes the light falling outside that circle. (Appx 1394-1401).

Importantly, Brandt actually teaches away from Mr. Dolgoff's goal of providing uniform illumination of the rectangular IFE. Again, Mr. Dolgoff's primary goal was to have the same level of illumination at the edges as at the center of the image. Brandt, on the other hand, not only does not seek to achieve this, but expressly states, "It is then preferably [sic] for the illumination intensity to decrease to a slight extent from the center towards the edges of the display panel," (Appx792; 17:31-33) and that, "This results in a total radiation spot having an illumination intensity decreasing from the center." (Appx792; 17:64-65). By the express and

clear language of Brandt himself, Brandt achieves the very *opposite* of what Mr. Dolgoff seeks and achieves.

(b) Uchiyama

Japanese Published Patent Application No. JP-A-5-45724 ("Uchiyama") relates to a projection-type liquid crystal display apparatus and discloses a simple system wherein a circular lens collects light from a circular source and focuses the light onto a rectangular liquid crystal display element. (Appx797-816). Unlike the '347 patent, Uchiyama makes no attempt to avoid the light waste that occurs when a circular light beam overlaps a rectangular space contained within the circle. (Appx 1401-1403). Furthermore, Uchiyama makes no attempt to achieve uniform brightness across the entirety of the rectangular image forming element and instead exacerbates it. One skilled in the art seeking to solve the problems Mr. Dolgoff solved would not, therefore, reasonably look to Uchiyama for guidance.

(c) EP '630

European Patent Application No. 0 509 630 ("EP '630") is directed to a high efficiency light valve projection system that was, in fact, invented by Mr. Dolgoff himself. (Appx855-926). In Epson below, EP'630 was only relevant to the extent it shows a "field lens," which in turn is a limitation that appears only in Claim 33, which depends directly from claim 29.

(d) Sato

U.S. Patent No. 5,042,921 ("Sato") discloses a liquid crystal display apparatus. (Appx817-854). Epson points to Sato as disclosing a Fresnel polarizer. Epson's expert, Dr. Kahn, agreed, however, that Sato fails to disclose the use of an optical coating where the sawtooth-like elements in Sato touch. (Appx. 1405). Furthermore, and as pointed out by Cascades' expert, Mr. Bohannon, Sato relies on passing the available light several times through the optical elements of his system, which results in the eventual loss of more than 50% of the available light. (Appx1745-1746, ¶80). Again, this is directly contrary and inimical to Mr. Dolgoff's goal and achievement of retaining and making effective use of virtually *all* the available light.

Not only does Sato fail to disclose a "Fresnel polarizer" as that claim term should be properly construed, Sato, by wasting 50% of the light that reaches his device, actually teaches away from Mr. Dolgoff's goal of making maximum use of all available light.

(e) Fushimi

U.S. Patent No. 5,689,315 ("Fushimi") discloses a light valve apparatus in which a first lens array, a second lens array and a light valve are arranged sequentially. (Appx3155-3193). Fushimi is addressed only in Sony and is addressed only in connection with Figure 69 of the '347 patent. Cascades argued that under a proper construction of "means for focusing," Fushimi does not disclose the claimed

structure and, therefore, has no probative value with respect to the validity of claims 29, 30, 32, and 33 of the '347 patent. The Board dismissed Cascades' arguments with the explanations that, (1) "We adopt Petitioner's analysis and find that each limitation of these claims is met by Fushimi" (Appx56) and that, (2) "For the reasons discussed above, we adopted Petitioner's claim construction, not Patent Owner's." (Appx56-57).

(f) Goldenberg

U.S. Patent No. 4,912,614 ("Goldenberg") discloses a display system with an illumination system that uses a light collector in the form of a non-imaging reflector having a rectangular output aperture. (Appx3194-3202). Goldenberg appears only in the Sony proceeding and is addressed only in connection with Claims 47, 48 and 69 of the '347 Patent. Sony relied on Goldenberg as purportedly disclosing the limitation (appearing in Claims 47, 48 and 69) of "enhancing brightness of an image by shaping a beam illuminating said electronic image-forming element such that the shape of the beam substantially matches the shape of said electronic image-forming element."

Cascades argued that the corresponding structure for this element is a "light tunnel" and that such a light tunnel "is a tube with inner reflective surfaces; it has an entrance through which light is shined into the tunnel, and it has an exit on the other end of the tunnel." (Appx4181). Significantly, Cascades pointed out that, not only

does Goldenberg *not* disclose a light tunnel, what Goldenberg *does* disclose is something that (a) would *not* work in Mr. Dogloff's invention, (b) would likely not work *anywhere* and (c) has certainly never been successfully implemented in any commercial device. (Appx4680-4681, ¶88). Cascades established that Goldenberg contemplates placing an electric arc lamp – a source of extreme heat – inside the closed end of an aluminum, rectangular sectioned tube. As pointed out by Cascades and its expert, Mr. Bohannon, placing the light source *inside* the reflector is nowhere disclosed or required by the claims of the '347 patent. More importantly, placing an electric arc lamp inside an aluminum tube as directed by Goldenberg would melt the aluminum tube and destroy the device. (Appx4684-4685, ¶¶93,94). The Board dismissed these valid concerns by simply adopting Sony's arguments and speculations concerning what someone skilled in the art *might* do, and ignoring what Goldenberg *actually teaches*.

(g) Mitsutake

U.S. Patent No. 5,566,367 ("Mitsutake") discloses a "a plate-like polarizing element for converting light into polarized light." (Appx3203-3221). Mitsutake is also addressed only in the Sony proceeding and is addressed only in connection with Claims 48 and 69 of the '347 Patent. In particular, Sony argued that Mitsutake discloses a "Fresnel polarizer" as called for by Claims 48 and 69 and relied primarily on Figures 2 and 10 of the Mitsutake patent in making its argument.

Cascades argued that Mitsutake would be understood by a person of ordinary skill in the art to teach a structure that does not pass essentially all incident light as polarized. (Appx4174-4176.) In particular, Mitsutake discloses what he refers to as a "quarter wave plate," identified by reference numeral 23_1 in Figure 2 of his patent. Cascades, through its expert, argued that one of skill in the art would recognize that the structure disclosed by Mitsutake would not, in fact, convert all of the incident light into the desired polarization, but, instead, would trap approximately half the light within the system and not let it out. (Appx. 4176). Obviously, this is inimical to Mr. Dolgoff's goal of making maximum use of available light. Indeed, Mr. Dolgoff's express goal in creating his "Fresnel polarizer" was to make effective use of substantially *all* the light reaching it, not waste half of it. Given that the purportedly equivalent device in Mitsutake performs no such function, Mitsutake does not disclose any form of "Fresnel polarizer" as that element exists when properly construed.

The Board, with little explanation, rejected Cascades' arguments and accepted Sony's arguments wholesale, adopting the same construction of "Fresnel polarizer" that it did in Epson. (Appx53).

Significantly, the Board in Sony affirmed its construction of "Fresnel polarizer" by "agreeing" with Sony, "that the record shows the terms 'Fresnel' and 'polarizer' have customary meanings in the art" and then simply combining those

meanings without regard for what Mr. Dolgoff actually says about his own invented structure.

Ultimately, the Board improperly held that Mitsutake discloses a "Fresnel polarizer" and, on that basis, concluded, "that claims 48 and 69 would have been obvious over Goldenberg and either Mitsutake or Sato." (Appx66). Again, this conclusion is based squarely on the Board's flawed construction of "Fresnel polarizer."

3. The Validity Analysis

In assessing the '347 Patent claims in view of the prior art, the Board in both Epson and Sony found all of the reviewed claims invalid.

Epson

In Epson, the Board found the following claims invalid for the reasons stated:

(a) Claims 29, 30, and 32 — Brandt and Uchiyama

Relying on its flawed construction of "means for focusing" and, in particular, the opinion of Dr. Kahn, the Board held that Claims 29, 30 and 32 of the '347 patent were obvious in light of the teachings of Brandt and Uchiyama. While expressly noting that "Brandt's Figure 2 apparatus lacks the prisms or other optical elements to change the beam size in the manner shown in Figure 65 of the '347 patent," the Board nevertheless found it, "obvious to add to Brandt's structure [such] prisms." (Appx19).

(b) Claim 33 — Brandt and EP '630

Again, relying on its flawed construction of "means for focusing," the Board held dependent Claim 33 invalid as being obvious in light of Brandt and EP '630. (Appx23-26). In particular, the Board discounted Cascades' argument that neither Brandt nor EP '630 discloses prisms (a necessary component of "means for focusing" when properly construed) and held that, "We are persuaded that claim 33 does not require 'prism' structures, but may be met by 'mirror' structures." (Appx26).

(c) Claims 48 and 69 — Brandt and Sato

Relying on its flawed construction of "Fresnel polarizer," the Board held Claims 48 and 69 invalid as being obvious in light of Brandt and Sato. (Appx26-29). Indeed the Board expressly stated, "on this record we construe 'Fresnel polarizer means' as recited in claims 48 and 69 as a polarizer constructed with stepped, sawtooth-like elements so as to have the optical properties of a much thicker polarizer." (Appx26).

Sony

In Sony, the Board found the claims invalid for reasons as follows:

(d) Claims 29, 30, 32, and 33 — Fushimi

Relying on a flawed construction of "means for focusing," the Board held that Claims 29, 30 and 32 of the '347 patent were anticipated by Fushimi. (Appx54-59). Again, the Board dismissed Cascades' argument that the Board adopted an incorrect

construction of "means for focusing" with the statements that, "We are, therefore, not persuaded by this argument" and that, "Testimony from Dr. Willner supports Petitioner's assertion that the 'focusing means' limitation is met by Fushimi." (Appx57). Without comment or analysis, the Board dismissed the opposing view of Cascades' expert, Mr. Bohannon.

(e) Claim 47 – Goldenberg

The Board held that Claim 47 of the '347 patent was anticipated by Goldenberg. (Appx59-63). As in Epson, the Board dismissed Cascades' arguments that the proper corresponding structure for Claim 47 is a light tunnel, and that the structure actually taught by Goldenberg could not be built or operated in the real world. As in Epson, rather than look to what Goldenberg actually discloses, the Board instead adopted Sony's speculations as to what modifications a person skilled in the art *might* make to what is actually disclosed. (Appx62). In the words of the Board, "those of ordinary skill would have known that other light sources besides metal halide arc lamps could be used with Goldenberg's reflector in an LCD projector." (Appx62-63).

(f) Claims 48 and 69 — Goldenberg and Mitsutake or Sato

Finally, as in Epson, the Board adopted a flawed construction of "Fresnel polarizer" and found that Claims 48 and 69 of the '347 patent, "would have been obvious over Goldenberg and either Mitsutake or Sato." (Appx63-66). Referring specifically to Cascades' proposed, proper construction of "Fresnel polarizer," the

Board expressly stated, "Because we do not adopt [Cascades'] construction for Fresnel polarizer requiring 'polarization conversion . . . in a manner to cause nearly all incident light to exit with primarily one polarization,'... these assertions, even if true, are not persuasive." (Appx64).

VI. SUMMARY OF THE ARGUMENT

The Board erred in its construction of three key claim terms, namely, "Fresnel polarizer," "means for enhancing brightness" and "means for focusing."

With respect to "Fresnel polarizer," the Board improperly held that an "optical coating" is *not* part of such a structure. In so doing, the Board discounted (1) that "Fresnel polarizer" is a coined term and, (2) that every disclosed "Fresnel polarizer in the subject '347 Patent includes an "optical coating" and (3) that a hologram, which the Board viewed as a form of "Fresnel polarizer without a coating, is *itself* an optical coating. Indeed, Epson's own expert did not dispute that a "Fresnel polarizer" requires an "optical coating."

With respect to "means for enhancing brightness," the Board mistakenly construed this term too broadly. The '347 Patent discloses "corresponding structure" that, in all cases, includes a "light tunnel" or similar structure wherein *externally applied* light is processed. The Board, however, interpreted this claim element to include a structure wherein an *internal* source of light (namely an electric arc lamp)

is used. In so doing, the Board erred in its analysis of the "way" in which the recited means function is carried out.

With respect to "means for focusing," the Board (1) mistakenly identified what structure corresponds to the "input lens array" specified as part of such means and (2) in the case of the Sony proceeding, incorrectly relied on Figure 69 of the '347 Patent rather than the proper Figure 65.

As a result of these errors in construing the relevant claim elements, the Board mistakenly adopted an overly broad interpretation of the claims and, as a result, mistakenly found the relevant claims invalid over the prior art.

Additionally, the Board improperly attributed an early effective filing date to the '347 Patent. The filing date issue is presently the subject of a pending Petition currently under review in the United States Patent and Trademark Office and, therefore, is not yet ripe for review.

Finally, for reasons stated in Cascades' previously filed request for en banc hearing, inter partes patent reviews, such as those conducted here, violate the Separation of Powers and Due Process requirements of the United States Constitution and, therefore, are unconstitutional.

VII. ARGUMENT

A. Governing Law

1. Standard of Review

As a general rule, this Court reviews the Board's conclusions of law de novo and its findings of fact for substantial evidence. *See In re Gartside,* 203 F.3d 1305, 1316 (Fed.Cir.2000); *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015).

On an appeal from the PTAB, this Court employs a substantial evidence standard of review for questions of fact. *Dickinson v. Zurko,* 527 U.S. 150, 162 (1999). When considering whether a PTAB finding meets the substantial evidence standard, the Court considers whether a reasonable fact finder could have arrived at the decision. *Id.* The Court reverses when a PTAB factual finding about the disclosures of the prior art is not based on substantial evidence. See *Institut Pasteur v. Focarino,* 738 F.3d 1337, 1345 (Fed. Cir. 2013).

During its review, the PTAB concluded over Cascades' arguments that the '347 Patent was subject to an effective filing date of February 21, 1991 and, therefore, would expire before the completion of review. Accordingly, for purposes of claim construction, the PTAB stated, "for claims of an expired patent, the Board's claim interpretation is similar to that of a district court" and applied the standard set out in *In re Rambus*, *Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012).

In general, because the ultimate question of proper claim construction of a patent is a question of law, this Court reviews claim construction de novo. *Teva Pharms. USA Inc. v. Sandoz Inc.*, 135 S. Ct. 831, 837, 841 (2015). Furthermore, claim terms are given their ordinary and customary meanings, as would be understood by a person of ordinary skill in the art at the time of the invention, having considered the language of the claims, the specification, and the prosecution history of record. *Phillips v. AWH Corp.,* 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under this standard, this Court reverses when the PTAB's construction is unreasonable, for example by contradicting the specification or prosecution history, or, as here, the *agreed* testimony of the respective experts. *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015).

B. The PTAB Erred In Its Construction Of Key Claim Terms

Ultimately, in both Epson and Sony, the PTAB erred in construing three key claim elements, namely, "Fresnel polarizer," "means for enhancing brightness" and "means for focusing." As a slight misalignment in a building's foundation often goes on to create problems in its upper stories, these errors in claim construction tainted the entire validity analysis in both Epson and Sony.

It is elementary that the Board is bound by law and precedent in construing claims: "The protocol of giving claims their broadest reasonable interpretation . . . does not include giving claims a legally incorrect interpretation." *In re Skvorecz,* 580

F.3d 1262, 1267 (Fed. Cir. 2009). Instead, "claims should always be read in light of the specification and teachings in the underlying patent," *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010). Furthermore, the Board "should also consult the patent's prosecution history in proceedings in which the patent has been brought back to the agency for a second review," *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d at 1298.

The Board may not "construe claims during IPR so broadly that its constructions are unreasonable under general claim construction principles." *Id.* "[C]laims should always be read in light of the specification and teachings in the underlying patent." *Suitco,* 603 F.3d at 1260.

1. The Board's Erroneous Construction Of "Fresnel Polarizer"

The Board's erroneous construction of "Fresnel polarizer" is both unmistakable and undeniable. To adopt the erroneous construction that it did, the Board not only discounted the expert testimony of Cascades' expert, *the Board discounted the testimony of Epson's expert as well.* In doing so, the Board also ignored the express teaching of the '347 patent. In its apparent zeal to invalidate the '347 Patent, the Board ultimately adopted a construction (a) that neither expert agreed with, (b) that contradicts the express teaching of the '347 patent, and (c) that simply cannot be supported by the evidence of record. For these reasons alone, this

Court can and should reinstate Claims 48 and 69 where the "Fresnel polarizer" element expressly appears.

(a) "Fresnel polarizer" is A Coined Term, Created By Mr. Dolgoff Himself

Prior to the efforts of Mr. Dolgoff, there was no such thing as a "Fresnel polarizer." Mr. Dolgoff, himself, invented the "Fresnel polarizer" as part of his effort to make use of all available light without waste.

The "Fresnel polarizer" is described in detail in the '347 Patent at Cols. 44-47, (Appx136-220, '347 Patent, 44:01-47-11) and is clearly identified as something Mr. Dolgoff invented himself:

> Applicant has devised a "Fresnel MacNeille prism," which functions as a MacNeille prism beam splitter but has, at the outer surfaces of the plates, a multiplicity Of [sic] tiny saw-tooth surfaces, each behaving as a normal prism. This device weighs much less than a prism, consumes less space, operates over the entire visible spectrum, and costs less to produce.

(Appx208, '347 Patent, 44:02-44:08) ("Fresnel MacNeille prism" and "Fresnel polarizer" are synonymous, as is made clear at several points in the '347 Patent, e.g., "Another way to reduce the size, weight, and cost of the MacNeille *or Fresnel polarizer* is with the use of holograms or simple diffraction gratings.") (Appx209, 46:21-46:23 emphasis supplied).

Given the '347 Patent's clear language and unambiguous assertion that Mr. Dolgoff "devised" the "Fresnel polarizer" the Board in both Epson and Sony

committed clear error by ignoring what the '347 Patent actually says and, instead, construing this claim term by reference to technical dictionaries. Rather than actually read the '347 Patent, the Board in both Epson and Sony construed the claim term "Fresnel polarizer" as something *other* than what Mr. Dolgoff actually disclosed and claimed in his '347 Patent.

(b) A "Fresnel polarizer" *Requires* A "Coating"

An actual reading of the '347 Patent makes clear that a "Fresnel polarizer" requires a coating and does not simply comprise "a polarizer constructed with stepped, sawtooth-like elements so as to have the optical properties of a much thicker polarizer."

At Col. 44, lines 9-12, the '347 Patent states, "FIG. 78 depicts [a Fresnel polarizer]. *A multi-layer dielectric coating 7800 is deposited* on the flat surfaces of a saw-tooth component 7810 which is made, preferably, of a plastic such as polycarbonate." (Appx208, '347 Patent, 44:09 – 44:12, emphasis supplied)

At Col. 44, lines 51-55, the '347 Patent states, "This configuration can be modified for easy mass-production by injection molding, for instance, components 6435 and 6415. These components can be glued together *after the appropriate dielectric coating is deposited* on either surface at interface 6425." (Appx208, '347 Patent, 44:51 – 44:55, emphasis supplied)

At Col. 45, lines 20-24, the '347 Patent states, "*Coated onto at least all of the slanted surfaces that slant upwards from left to right is a dielectric coating 7960* of different index materials such as SI02 and TI02 deposited in alternating layers, as is known in the art, to make a MacNeille polarizer." (Appx209, '347 Patent, 45:20 – 45:24, emphasis supplied)

At Col. 45, lines 52-59, the '347 Patent states, "A preferred variation of this arrangement is depicted in FIG. 81. In this variation, component 8150 has half as many saw-teeth as 8170... *After deposition of an appropriate coating on 8160,* the two components 8150 and 8170 are glued together as before." (Appx208, '347 Patent, 45:52 – 45:59, emphasis supplied).

At Col. 46, lines 10-14, the '347 Patent states, "These beams illuminate structure 8530 at normal incidence, which can be made, for instance, from two injection-molded parts 8540 and 8550. These parts are glued together *after being coated with the appropriate multi-layer coating on slanted surfaces 8560.*" (Appx209, '347 Patent, 46:10 – 46:14, emphasis supplied).

Indeed, there is no example in the '347 Patent of a "Fresnel polarizer" that *does not* have some form of coating. A person having skill in the art reading the '347 Patent would clearly understand that an optical coating of some form is an essential element of a "Fresnel polarizer." The Board's conclusion to the contrary flies in the face of what the '347 Patent actually says.

(c) The Experts *Agreed* That A "Fresnel polarizer" Requires A Coating

The experts below agreed, as they must, that, under a fair reading of the '347 Patent, a "Fresnel polarizer" requires some form of coating.

Cascades' expert testified that a coating is required in a "Fresnel polarizer." In the words of Mr. Bohannon, "The Fresnel polarizer contains a lens array 8510 that provides parallel light beams 8520; a polarizing structure 8530 (composed of parts 8540 and8550); *optically-coated, slanted surfaces 8560*; and half-wave plates 8570." (Appx1712-1713, Bohannon Declaration, ¶31, emphasis supplied).

Mr. Bohannon further testified that the optical coating performs essential functions in a "Fresnel polarizer":

> When a light beam 8520 strikes a corresponding slanted surface 8560, a portion of the light beam 8520 passes directly through the slanted surface 8560...*The optical coating reflects the s-polarized light to the right, so that the portion of the light passing through the slanted surface 8560 is composed primarily of p-polarized light.*

(Appx1713, Bohannon Declaration, ¶32, emphasis supplied).

Mr. Bohannon also testified that the optical coating is a feature of every embodiment disclosed in the '347 Patent: "Concerning the optical coating, the '347 Patent confirms that this is a feature in *every* embodiment disclosed to be a "Fresnel polarizer".

(Appx1714, Bohannon Declaration, ¶33, emphasis in original).

At his deposition, Epson's expert, Dr. Kahn, *agreed* that an optical coating is a necessary part of a "Fresnel polarizer." In particular, Dr. Kahn testified as follows:

> Q. So someone of skill in the art in 1994 reviewing Mr. Dolgoff's discussion of Fresnel polarizers would perceive that his newly-coined term must imply or suggest a device that has the multilayer dielectric coatings; right?
>
> A. Correct.

(Appx1497, Kahn Deposition, p. 74).

(d) The Board's Purported Ground For Adopting The Construction It Did is Without Basis And Contradicts The Express Teaching Of The '347 Patent

Despite the clear language of the '347 Patent and expert testimony, the Board in both Epson and Sony held that an optical coating is *not* a part of a "Fresnel polarizer." In their words, "We are not persuaded that the Specification provides a clear definition of 'Fresnel polarizer' such that it is limited to having 'an optical coating layer where two sawtooth-like elements touch.'" To justify ignoring the actual language of the '347 Patent and expert testimony, the Board seized upon language appearing at Column 46, lines 34-54 of the '347 Patent that disclose the use of holograms in a "Fresnel polarizer." (Appx209, '347 Patent, 46:34-46:54). The Board mistakenly held that the "hologram" embodiments disclosed in the '347 Patent are a form of "Fresnel polarizer" lacking an optical coating. The Board's

mistake in this regard stemmed from its failure to recognize that a "hologram" as used in the '347 Patent is, *itself*, an optical coating.

A fair reading of Column 46, lines 34-54 demonstrates that a hologram is a type of optical coating and that the use of a hologram does not altogether dispense with an optical coating.

At lines 34-36, the '347 Patent states, "All previously described MacNeille polarizers and Fresnel polarizers have utilized multi-layer dielectric coatings which must be applied with vacuum deposition." (Appx209, '347 Patent, 46:34-46:36). By its plain language, this portion of the '347 Patent refers to "multi-layer dielectric coatings that must be applied by vacuum deposition," not simply to optical coatings in general.

Continuing, the '347 Patent further states, "This is somewhat expensive and time consuming." (Appx209, '347 Patent, 46:36-46:37). Again, a fair reading of this language makes clear that the '347 Patent is referring to "multi-layer dielectric coatings that must be applied by vacuum deposition," not simply to optical coatings in general.

Continuing still further, the '347 Patent states, "A hologram, which can be recorded with a single exposure, provides an alternative *to such a multi-layer coating* at a lower cost in much less time." (Appx209, '347 Patent, 46:37-46:39, emphasis supplied). Again, this language clearly and simply means that a hologram, "which

can be recorded with a single exposure" can be used in place of the more complicated, expensive and time consuming "multi-layer" coating otherwise disclosed.

Nowhere does the '347 Patent state or imply that a hologram is not itself a form of optical coating. On the contrary, the '347 Patent clearly states:

> This can be accomplished by making a volume hologram in which the angle between the interfering beams is greater than 90 degrees. The standing-wave pattern set-up within the emulsion provides alternating layers of high and low indices with a single quick exposure. *This "stack" is similar in form and function to the multi-layer stack conventionally created by vacuum deposition.*

(Appx209, '347 Patent, 46:42-46:46, emphasis supplied). The inescapable conclusion is that the "hologram" referred to in this section of the '347 Patent is simply a more easily and economically implemented form of optical coating, not, as the Board apparently believed, a way of avoiding an optical coating altogether. The Board's conclusion to the contrary requires a strained, unfair reading of the '347 Patent that even Epson's own expert, Dr. Kahn, to his credit, never expressed.

2. The Board's Erroneous Construction Of "Means For Enhancing Brightness"

Similarly, the Board in Epson and Sony erred in its construction of "means for enhancing brightness."

In Epson, the parties agreed that the "corresponding structure" to "means for enhancing brightness" was shown in Figure 65 of the '347 Patent and included all the structure shown in that Figure except for "input lens array 6580." (Appx1390-1391). Cascades expressly pointed out that, "the 'way' the beam is shaped by the Figure 65 components is with prisms, to superimpose all beam segments into the shape of the IFE," that, "The 'way' brightness is enhanced is to capture essentially all of the light at the first lens array," and that, "the 'result' of the Figure 65 structures is to be able to use all of the source light while still achieving uniformity by lighting corners and edges." (Appx1391)

In Sony, the parties were in general agreement that the "corresponding structure" for "means for enhancing brightness" is shown in Figures 66 and 68 of the '347 Patent and comprises "the combination of light tunnel 6610 and lens 6620 in Figure 66 and concentrator 6830 and lens 6840 in Figure 68." (Appx50). However, and even though the "light tunnel 6610" is clearly part of the "corresponding structure," the Board, over Cascades' objections, held that, for purposes of prior art, the "means for enhancing brightness" could be shown by a structure other than a light tunnel, and, in particular, by the arc lamp enclosed within an aluminum tube shown by Goldenberg. In so doing, the Board in Sony failed to credit that the prisms shown in Figure 65, and the light tunnels shown in Figures 66 and 68 operate in a fundamentally different manner than the structure proposed by

Goldenberg. In particular, neither prisms nor light tunnels contain a light source themselves. On the contrary, they receive and process light that is *externally* applied. This is directly and distinctly different from the structure proposed by Goldenberg wherein a light source (namely an electric arc lamp) is clearly and completely contained within an aluminum tube. Accordingly, the Board erred when it concluded that the structure proposed by Goldenberg functions in the same "way" as the "means for enhancing brightness" claimed in the '347 Patent.

3. The Board's Erroneous Construction Of "Means For Focusing"

Finally, the Board in Epson and Sony erred in its construction of "means for focusing."

(a) The Board In Epson Erred In Its Identification Of The "Input Lens Array"

Both Cascades and Epson agreed that the structure shown in Figure 65 of the '347 Patent "corresponds" to the "means for focusing" element of the subject claims. The parties disagreed, however, as to which structures shown in Figure 65 make up the "corresponding" structure.

Over Cascades' objections, the Board concluded that the "input lens array" making up part of the "means for focusing" comprises the lenses 6580 in Figure 65. The Board erred in making that determination. In particular, the Board erred in failing to understand (indeed in apparently making light of) Cascades' argument that there is a material difference between focusing light "onto" a pixel and focusing light

"into" a pixel. The Board further erred in apparently failing to appreciate that prisms and lenses operate in fundamentally different ways, and, therefore, the "way" in which the focusing is achieved in the actual '347 Patent disclosure (namely through use of prisms) is different from the unsupported "way" (i.e., use of lenses) implied by the claim construction ultimately adopted by the Board.

As explained by Mr. Bohannon, lens array 6580 shown in Figure 65 is not properly the "input lens array" making up an input lens array located between the light source and IFE of the "means for focusing." (Appx1717, Bohannon Declaration, ¶37). This follows because the lens array 6580 performs a different function than the lens arrays 6570 and 6560 and the unnumbered prisms shown in Figure 65. (Appx1717, Bohannon Declaration, ¶37). As explained by Mr. Bohannon, the function of lens arrays 6570 and 6560 and the unnumbered prisms is to direct light uniformly onto the pixels. (Appx1717, Bohannon Declaration, ¶37). In other words, these lens arrays and prisms function to take substantially all of the light from the source and direct it uniformly onto the array of pixels.

As further explained by Mr. Bohannon, once the light is directed onto the array of pixels, the function of the lenses 6580 is to take light falling onto the pixels and direct it *into* the operative portion of the pixel. (Appx1717, Bohannon Declaration, ¶37). Indeed, the lenses 6580 are a staple component of standard image forming

elements and neither reflect an inventive step on Mr. Dolgoff's part nor reflect a necessary element of the '347 Patent claims.

Mr. Bohannon supported his opinion with direct references to the '347 Patent itself:

> The error involves the mention of 'e.g., input lens 6580.' This excess item (num. 6580) is described in the '347 patent...with the following words: '...while illuminating the IFE 6530 at the proper angles to be focused by input lens array(s) 6580 into pixel holes...'.

> The '347 patent...further states, 'A major loss of efficiency is especially noticeable in an active matrix light valve occurs because there are spaces between pixels which do not transmit light.... To get around this problem, light must be crammed into the pixel holes, being made to miss the opaque areas between pixels. *The preferred technique to do this utilizes lenses to focus light coming from the condenser system down into the pixel holes.*'

(Appx1717, Bohannon Declaration, ¶37 emphasis supplied).

Although the Board apparently considers that there is little or no difference between directing light "onto" or "into" a pixel, the '347 Patent nevertheless does. Again in the words of Mr. Bohannon:

> Clearly the '347 patent's description describes a significant difference between the lens array 6580 and the other lens arrays, 6570 and 6560. As described in the '347 patent, lens array 6580 is used to 'cram' light into the pixel holes, being made to miss the opaque areas between pixels. Instead, lens arrays 6570 and 6560 work together to uniformly illuminate the IFE, thus focusing light onto the IFE's pixels.The claim 29

> function is recited using the 'onto' language (implicating and clearly linking 6560 and 6570), not the 'into' language (what 6580 involves).

(Appx1717, Bohannon Declaration, ¶37).

Based on the clear testimony of Mr. Bohannon, the lens array 6580 is not needed in order to achieve the function claimed by the "means for focusing," namely, "focusing different segments of a light beam...*onto* said element at proper angles such that light is focused *onto* the pixels of said element." By insisting that "onto" means "into," and ignoring the actual language of the '347 Patent, the Board incorrectly concluded that lens array 6580 is the "input lens array located between said light source and said element" called for by the "means for focusing" element of the subject claims.

(b) The Board's Construction Of "Means For Focusing" Is Inconsistent With The Disclosed "Way" In Which "Focusing" Is Actually Achieved In The '347 Patent

Unlike the Board, Mr. Bohannon gave proper credence to the *way* in which focusing is achieved in the '347 Patent. In particular, Mr. Bohannon testified that the "way" in which focusing is achieved is through the use of prisms, not lenses. (Appx1718-1719, Bohannon Declaration, ¶¶38,39).

In the words of Mr. Bohannon, "[T]he *'way'* that multiple light segments impinge on the IFE at 'proper angles' *is through the use of the prisms.* Like all prisms, these prisms neither converge nor diverge a light beam. Instead, they deflect

(or 'steer') a light beam segment." (Appx1718, Bohannon Declaration, ¶38, emphasis supplied). In contrast to lenses, "[P]risms do not converge or diverge the beam size. *All they can do is deflect or steer.*" (Appx1719, Bohannon Declaration, ¶39, emphasis supplied). Mr. Bohannon explained that "the 'way' prisms operate in Fig. 65 is to steer individual beam segments." (Appx1719, Bohannon Declaration, ¶40).

Finally, Mr. Bohannon explained that, "The 'result' of this corresponding structure (which includes both prisms and lens arrays) is to achieve uniform illumination without any dark corners or off-axis fall-off. – i.e., to place a uniform field of light of the right size and shape on the IFE, without wasting light." (Appx1719, Bohannon Declaration, ¶41). Referring specifically to the actual language of the '347 Patent, Mr. Bohannon noted that, "The specification description of Figure 65 confirms that this is the contemplated result of this structure, which "provides even illumination of the IFE 6530 with no spillover light . . . " (Appx1719, Bohannon Declaration, ¶41, Appx205, '347 Patent col. 38, ll. 65-67).

(c) Mr. Bohannon's Construction Is Consistent With The '347 Patent File History

Although ridiculed by the Board, the distinction between focusing light "onto" the pixels rather than "into" the pixel holes is material as is made clear by the '347 Patent file history.

On December 11, 2007, Mr. Dolgoff amended what later became Claim 29 of the '347 Patent by changing language in the "means for focusing" clause from, "such that light is focused *into pixel holes* of said element" to, "such that light is focused *onto the pixels* of said element." (Appx592, emphasis supplied). In the "Remarks" section of his December 11, 2007 amendment, Mr. Dolgoff made clear that, "This amendment provides antecedent basis for the recitation that light is focused onto the pixels of the element, and omits the recitation that the pixels have 'holes.'" (Appx601). This amendment and associated comment make clear that the words "onto the pixels" and "into pixel holes" are *not* synonymous and were deliberately chosen by Mr. Dolgoff to precisely define his invention. The Board's casual disregard of this distinction is contrary to the facts and file history of the '347 Patent.

(d) Epson's Own Expert Agrees That Prisms Operate Differently From Lenses

Epson's expert, Dr. Kahn, testified at deposition that, unlike lenses, prisms are light deflecting devices and do not, by themselves, change beam size:

A: Well, my understanding is that is what prisms do, they deflect light.

Q: But prisms do not change the beam size of a beam of light incident on them; right?

A: By themselves, they do not -- well, they may change it a little, but this is probably a second order effect to the change in beam size that you're thinking about.

* * *

Q: Okay. But one thing is for sure, the prism will not converge or diverge the rays of light from a light beam; right?

A: By itself, I don't think it does.

(Appx1478-1479).

Thus, Mr. Bohannon expressly, and Dr. Kahn, implicitly, agreed that, under the "way" interpretation of "means for focusing," it is the unnumbered prisms, not the lenses 6580, that achieve the function and result of focusing light, "onto the pixels of said element" as called for by Claim 29 and the claims dependent thereon. Given that the lenses, 6580 *do not* contribute, either by "way" or "result" to the express function of the "means for focusing," the "input lens array located between said light source and said element" specified by Claim 29 must be something *other* than the lens array 6580 mistakenly found by the Board.

What, then, is the proper "input lens array located between said light source and said element" called for by Claim 29? As determined by Mr. Bohannon, it is the

input lens array 6570 which is located after the light source 6510 as depicted in Fig. 65. (Appx1718). Such a construction, which was rejected by the Board, is, unlike the Board's construction, fully consistent with the language of the '347 Patent, its file history, and the clear testimony of the experts.

(e) The Sony Board Erred In Looking To Figure 69 Of The '347 Patent

The Board in Sony mistakenly selected Figure 69 of the '347 Patent (rather than Figure 65 as in Epson) as showing the "corresponding structure" to the "means for focusing" element of Claim 29.

Figure 69 of the '347 Patent does not depict structure for focusing light "*onto* the pixels of [an image forming] element" as actually called for by Claim 29 but, rather, is concerned with focusing light *into* such pixels – something Claim 29 never says. Again, although casually dismissed by the Board, the distinction is important and confirmed by the '347 Patent file history. (Appx592, Appx601).

Regarding Figure 69, the '347 patent makes clear that, at this point in his disclosure, Mr. Dolgoff was no longer concentrating on focusing light "onto" pixels, but, rather, was addressing the altogether different problem of reducing necessary glass thickness when a far-away light source is used. As stated by the '347 Patent:

> Due to the *glass thickness* of typical active matrix LCDs, for instance, and the size of a typical pixel hole, the fastest light cone that could be produced by a lens array placed against the outside of the LCD would be about F6…Aberrations could

> limit the value of further decreases in F number. Short of using these methods, which require a new light valve design, and utilizing the LCDs that are available today, the *preferred method* of increasing the light throughput through the image-forming element is based on *using two input lens arrays wherein the first lens array creates an image of the light source in space the size of the pixel hole...The second lens array performs a one to one imaging of that aerial image of the source into the pixel hole,* thereby making the *thickness* of the image-forming element glass irrelevant. *This is depicted in FIG. 69...* where 6910 is the first input lens array element, 6920 is the aerial image of the source….
>
> Making the image of the source at 6920 as small as the pixel hole increases the angles of light emanating from it so that the light is directed toward multiple lens array elements in the second lens array and is thereby focused into multiple pixels... All light goes through pixel holes and none is focused onto spaces between pixels.

(Appx211-212, '347 Patent, 50:46-51:12, emphasis supplied).

Immediately apparent to one of skill in the art is that, when discussing Figure 69, Mr. Dolgoff never uses terminology about different parts or segments of a light beam, never uses terminology about light hitting at "proper angles," never talks about item 6930 focusing a beam (or part thereof) from a source (instead focusing a beam from an "image" of a source), and never uses terminology about focusing "onto" an image forming element.

The simple fact is that Figure 69 does not depict any of the structures specified by the "means for focusing" element of Claim 29, and it was error for the Board to rely on Figure 69 in construing such means.

C. The Errors In Claim Construction Tainted The Validity Analysis

For anticipation, unless a reference discloses within its four corners not only all of the limitations claimed, but also all of the limitations arranged, combined, or cooperating in the same way as recited in the claim, it cannot anticipate under 35 U.S.C. § 102. *Synqor, Inc. v. Artesyn Techs., Inc.,* 709 F.3d 1365, 1375 (Fed. Cir. 2013); *Net MoneyIn, Inc. v. Verisign, Inc.,* 545 F.3d 1359, 1371 (Fed. Cir. 2008). Accordingly, if a cited reference fails to disclose one or more limitations of any of the claims, or discloses them in a way differently from how the claim arranges them, then the PTAB's decision should be reversed.

Obviousness under 35 U.S.C. § 103(a) can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so. To find obviousness, there must have been a reason for a person of ordinary skill in the art, at the time of the invention, to have combined the various teachings of the prior art to arrive at the patent claim. *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1366 (Fed. Cir. 2012); *see also Leo Pharma. Prods., Ltd. v. Rea,* 726 F.3d 1346, 1353 (Fed. Cir. 2013). If the combined disclosures of the prior art lack and do not suggest a claim limitation, then those

disclosures do not render obvious that patent claim. *See, e.g., Fresenius USA, Inc. v. Baxter Int'l, Inc.,* 582 F.3d 1288, 1301-1302 (Fed. Cir. 2009); *CFMT, Inc. v. Yieldup Int'l Corp.,* 349 F.3d 1333, 1342 (Fed. Cir. 2003); *see also KSR Int'l v. Teleflex Inc.,* 127 S. Ct. 1727 (2007).

Because the Board in both Epson and Sony improperly construed "means for focusing," "means for enhancing brightness" and "Fresnel polarizer," the subsequent findings of invalidity are tainted and not based on sound fact and law.

With respect to the finding that Claim 29, 30, 32 and 33 are obvious and/or anticipated in view of various combinations of Brandt, Uchiyama, EP '630 and Fushimi, the Board's failure to properly construe "means for focusing" led directly to an improper finding of invalidity. The Board's failure to understand that the proper "result" of a correct claim construction – namely uniform illumination over the entire image forming element – led it to discount the fact that Brandt teaches away from Mr. Dolgoff's goal of achieving uniform illumination. The Board improperly dismissed this with the explanation that "uniform illumination" is not part of Claim 29. However, uniform illumination becomes part of the claim when it is understood that, under the proper "function-way-result" claim construction approach, the "result" – namely uniform illumination – does indeed become part of the claim. Accordingly, there is no incentive to combine the teachings of Brandt and Uchiyama. Indeed, given Brandt's teaching that it is preferred to make the image

brighter at the center, there is a material *disincentive* to make the combination. Based on the Board's improper construction of "means for focusing," this finding of obviousness is in error and should be vacated.

Similarly, with respect to the finding that Claim 33 is obvious in light of Brandt and EP '630, the Board's incorrect construction of "means for focusing" renders this finding flawed as well. In particular, the Board mistakenly believed that, "the ['347] patent makes clear that 'prisms or mirrors' may serve interchangeably." In reality the '347 Patent does no such thing. Nowhere in the '347 Patent is any embodiment showing mirrors, rather than prisms, disclosed. Furthermore, given the extremely close quarters shown in Figure 65 where the prisms are located, it is difficult to envision where such mirrors can be effectively positioned. Neither Mr. Dolgoff nor any of the cited references makes such a disclosure or otherwise shows how mirrors can be so used. Because the Board failed to appreciate that, when properly construed, "means for focusing" requires prisms, not mirrors, the Board erroneously concluded that the substitution of mirrors would be trivial and "obvious." Such is not the case, and the finding of invalidity with respect to Claim 33 should be vacated.

With respect to the Board's finding that Claims 29, 30, 32 and 33 are anticipated by Fushimi, this is directly based on an express *rejection* of Cascades' proposed construction of "means for focusing." ("[Cascades] responds by arguing

that Petitioner 'uses the wrong' claim construction," referring back to the 'means for focusing' argument...we adopted Petitioner's claim construction, not [Cascades']...We are, therefore, not persuaded by this argument.") (Appx56-57). What appears *nowhere* in the Board's decision is any explanation whatsoever of how or why these claims would still be anticipated by Fushimi even under the claim construction offered by Cascades. Because the Board erred in its construction of "means for focusing," its analysis under Fushimi is, therefore, necessarily flawed, and the finding that Claims 29, 30, 32 and 33 are anticipated by Fushimi should be vacated.

With respect to the conclusion that Claim 47 is anticipated by Goldenberg, this finding is based, in part, on the Board's faulty construction of "means for enhancing brightness" and, in particular, in its mistaken belief that such means includes an arc lamp within an aluminum tube, rather than the light tunnel or prisms actually disclosed in the '347 Patent. This finding is also based on the Board's improper rejection of Cascades' correct and accurate observation that in actual practice, the structure proposed by Goldenberg – namely an extremely hot arc lamp confined within one end of a narrow aluminum tube – would not work and could not actually be practically built. The Board's dismissal of Cascades' accurate observations in this regard, supported by the testimony of its expert, is in error and should be vacated as well.

With respect to the conclusion that Claims 47, 48 and 69 are obvious in light of one or more of Brandt, Goldenberg, Mitsutake and Sato, these findings are based on an incorrect construction of the claim term, "Fresnel polarizer." In all instances, the '347 Patent defines a "Fresnel polarizer" as having an optical coating. Even Epson's expert agreed with this. Furthermore, the Board erred in viewing a hologram as something other than an optical coating and, therefore, adopted a clearly erroneous construction of this claim term. Having used a fundamentally flawed claim construction in its analysis, the Board's finding that Claims 48 and 69 are invalid should be vacated as well.

D. The Board Improperly Determined The Effective Filing Date Of The '347 Patent

The Board held, over Cascades' objection, that the '347 Patent had an effective filing date of February 21, 1991 and (taking into account a 2034 day patent term extension) therefore expired on September 16, 2016. Cascades argued and showed, however, that the initial claim to the February 21, 1991 filing date was made in error, that the correct priority date was, in fact, April 4, 1994, and that Mr. Dolgoff had taken prompt action to correct this error. (Appx1266-1278). In particular, Mr. Dolgoff, through counsel, filed two Office Action Responses, dated June 17 and December 15, 2008, respectively, wherein he expressly stated that the subject matter of the '347 Patent application was first disclosed April 4, 1994, and he was *not* claiming priority to any earlier application. After learning that the '347 Patent issued

with the claim to a February 21, 1991 priority date, Mr. Dolgoff's counsel, on November 19, 2015, filed a request for a Certificate of Correction. That request was denied on December 29, 2015. On February 5, 2016, Mr. Dolgoff, through counsel, filed a Petition for Review of that denial with the United States Patent and Trademark Office ("USPTO"). On October 19, 2016, the USPTO denied that Petition. On November 7, 2016, Mr. Dolgoff, through counsel, filed a Petition for Reconsideration and Final Agency Action with the USPTO, which, at present, remains pending.

The issue of what priority date applies to the '347 Patent is still before the USPTO and remains unsettled. The Boards' unilateral determination of the effective filing date before final action by the USPTO on that precise question comes before final administration agency action and, therefore, is premature. Accordingly, Cascades reserves all rights pending final determination of this question.

E. The Board's Actions Violate Separation Of Powers And Due Process Under The United States Constitution

Cascades earlier presented the constitutional infirmities of *inter partes* review to this Court within a request for initial hearing *en banc*. Two of the twelve active judges would have heard the issue *en banc* even before the panel phase of this case.

See Dkt. No. 55. A third would entertain *en banc* review of due process infirmities after panel consideration of the same. *See* Dkt. No. 55.

Approximately one month later, the Supreme Court granted *certiorari* in *Oil States Energy Services v. Greene's Energy Group*, No. 16-712, on the question of whether *inter partes* review violates Separation of Powers and the Seventh Amendment.

The grant of certiorari alters the jurisprudential landscape in this Court. While normally a prior panel's resolution of a question in a precedential opinion is binding on subsequent panels, this rule has exceptions, including where there is "a [later] decision of the Supreme Court." *Deckers Corp. v. United States*, 752 F.3d 949, 959 (Fed. Cir. 2014). Here, a prior panel decision foreclosed further panel consideration of the Separation of Powers constitutional objection (hence the initial *en banc* request). *See MCM Portfolio v. Hewlett-Packard*, 812 F.3d 1284 (Fed. Cir. 2015). However, the Supreme Court decision to review *Oil States* has triggered the exception, and the panel is free to rule on the question as it sees fit.

Cascades again respectfully puts the issue before this Court and panel. In their dissents, Judges O'Malley and Reyna gave compelling reasons why *inter partes* review violates Separation of Powers. Cascades urges the panel to review those reasons, and reach the same conclusion as Judges O'Malley and Reyna, namely that the *MCM* panel decision incorrectly distinguished *McCormick Harvesting Machine Co. v. Aultman*, 169 U.S. 606 (1898), which unambiguously held that the executive may not cancel or annul the original claims of an issued patent "for any reason whatever." *Id.* at 609. *See, also* Dkt. No. 55, dissenting opinion of Circuit Judge Reyna, at 19-24.

This leaves for consideration Judge Newman's suggestion that this Court at the panel phase must also consider the extent to which due process concerns also undermine the constitutionality of *inter partes* review. *See* Dkt. No. 55. While the procedural infirmities that unfairly undermine a patentee's rights before the Board are many, a clear, fundamental requirement of due process remains missing from *inter partes* review. Due process requires, at minimum, decision-making by an "adjudicator who is not in a situation which would offer a possible temptation to the average man as a judge which might lead him not to

hold the balance nice, clear and true." *Concrete Pipe & Prods. of Cal., Inc. v. Construction Laborers Pens. Trust for Southern Cal.*, 508 U.S. 602, 617-18 (1993). In other words, Board proceedings do not have sufficient constitutional safeguards of neutrality of decision making.

Constitutional concerns arise over neutrality not because of any actual bias by decision makers, but because of a probability or perceived possibility of bias. *Caperton v. A.T. Massey Coal Co.*, 556 U.S. 868, 872 (2009). Thus, it offends the Constitution for the same judge who has charged a person with perjury or contempt to preside over the trial of those offenses. *In re Murchison*, 349 U.S. 133, 136 (1955). This so-called "one-man grand jury" casts sufficient doubt on the fairness of future proceedings that a court must find the absence of due process protecting life, liberty or property interests. *Id.*

Here, the structure and operation of the Patent Trial and Appeal Board falls within these prohibited zones. First, like the forbidden "one-man grand jury," current procedures require the same panel of administrative patent judges to render both the institution decision and the final written decision. In cases where they institute review,

reasonable observers might well question whether an instituting panel could make a second look at the issues without being biased by having already instituted review. *See* Scott Moskowitz *et al*., "PTAB Reforms are Necessary to Restore Balance and Due Process" (May 24, 2017) (citing the psychological bias known as "anchoring.") (available at http://www.ipwatchdog.com/2017/05/24/ptab-procedural-reforms-necessary/id=83651/, last viewed June 17, 2017.

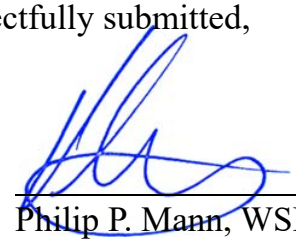
Likewise, Board judges are as prone to being perceived as biased in favor of institution and invalidation as any elected appellate judge receiving party-specific campaign contributions. If the Board were not currently invalidating patents at such a high rate, it would likely not receive as many petitions from the accused infringer community. A reasonable observer could well question the neutrality of a bureaucratic institution whose size, reach, staffing and revenues depend on adjudicating one type of outcome over another (i.e., invalidity over validity). This is not to impugn any administrative patent judge's integrity, or to suggest that any member of the Board is actually biased toward infringers. Rather, the famously, and undeniably high rate of

invalidation simply evidences that reasonable observers could reasonably question the neutrality of the Board as it currently exists.

VIII. CONCLUSION

For all the foregoing reasons, the decisions of the Board in Epson and Sony are in error. Accordingly, the finding that Claims 29, 30, 32, 33, 47, 48 and 69 of the subject '347 Patent are invalid should be vacated, and this matter should be remanded to the District Court for further action.

Dated: June 19, 2017. Respectfully submitted,



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