

United States Court of Appeals for the Federal Circuit

2007-1399

SCANNER TECHNOLOGIES CORPORATION,

Plaintiff-Appellant,

v.

ICOS VISION SYSTEMS CORPORATION N.V.,

Defendant-Appellee.

2008-1081

SCANNER TECHNOLOGIES CORPORATION,

Plaintiff-Appellant,

v.

ICOS VISION SYSTEMS CORPORATION N.V.,

Defendant-Appellee.

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Appealed from: United States District Court for the Southern District of New York

Judge Denny Chin

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Appeals from the United States District Court for the Southern District of New York
in case no. 00-CV-4992, Judge Denny Chin

DECIDED: June 19, 2008

Before MICHEL, Chief Judge, CLEVINGER, Senior Circuit Judge, and GAJARSA,
Circuit Judge.

CLEVINGER, Senior Circuit Judge.

This is an appeal from the United States District Court for the Southern District of New York in a patent infringement action that Scanner Technologies Corp. ("Scanner") brought against ICOS Vision Systems Corp. ("ICOS") in July 2000. ICOS denied

infringement and counterclaimed seeking a declaratory judgment of noninfringement, invalidity, and unenforceability. After this court reviewed the district court's Markman ruling in a 2004 interlocutory appeal, Scanner Technologies Corp. v. ICOS Vision Systems Corp., N.V., 365 F.3d 1299, 1300 (Fed. Cir. 2004) ("Scanner I"), the district court, on remand, held a bench trial on infringement, validity and enforceability in March 2005. The district court rendered its findings of fact and conclusions of law in a May 22, 2007 opinion. Scanner Techs. Corp. v. Icos Vision Sys. Corp., N.V., 486 F. Supp. 2d 330 (S.D.N.Y. 2007) ("Scanner II"). The district court entered final judgment on June 1, 2007, finding the asserted patents unenforceable, invalid for obviousness, and not infringed. The final judgment also included a provision that rendered related patents, derived from the same common parent application, unenforceable. Scanner appeals the district court's final judgment. For the reasons stated below, we affirm in part, reverse in part, and vacate in part.

I

This case involves semiconductor technology and specifically processes to inspect electronic components, including ball array devices, ball grid arrays, chip scale packages, and bump on wafers (collectively "BGAs"). BGAs are mounted on circuit boards that can be found in various electronic devices, and are used to conduct electrical impulses in such devices. The BGAs are comprised of an array of solder balls on a plane or substrate that conduct electrical impulses. As noted in this court's opinion in Scanner I, 365 F.3d at 1300, it is important that the solder balls are positioned precisely at the same height. "Even a minute difference in height could render the BGA, and thus the device, useless." Id.

Inventors Elwin M. Beaty ("Beaty") and David P. Mork ("Mork") discovered an apparatus and method for the three-dimensional inspection of ball array devices in mid-1997 and filed a patent application, U.S. Appl. No. 09/321,805, on the apparatus and method in January 1998. This January 1998 application is the "common parent application" to which the district court refers in its final judgment. From this common parent application, divisional applications that would become U.S. Patent Nos. 6,064,756 ("the '756 patent") and 6,064,757 ("the '757 patent") (collectively, "the patents in suit") were filed on May 28, 1999. Scanner displayed its first embodiment of the method and apparatus—an inspection module called the Ultra Vim Plus ("UV+")—in July 1998 at the Semicon West trade show in San Jose, California, and again in December 1998 at the Semicon Japan trade show.

ICOS representatives were attendees of these trade shows, and interacted with Scanner representatives on at least one occasion. Based at least in part on what ICOS observed at the trade shows, ICOS engaged Scanner in preliminary discussions regarding ICOS's interest in licensing or acquiring Scanner's BGA technology. ICOS eventually abandoned those pursuits in light of its own progress in developing a 3D BGA inspection system. In January 1999, ICOS announced its CyberSTEREO 3D BGA inspection product. The CyberSTEREO was an outgrowth and replacement of ICOS's older BGA inspection product, the ICOS Projector. The Projector had been on the market since 1996, and used a two-camera system with a structured light from a projector to inspect BGAs. Literature for the Projector system explained the use of a triangulation principle to perform three-dimensional measurements, including the use of Z calibration and bilinear interpolation. Whereas the Projector system measured the

absolute value of the top of the balls of the BGAs, the CyberSTEREO eliminated the projector and implemented a two-camera system to measure coplanarity, i.e., whether the balls were lying in the same plane. To accomplish this measurement, the CyberSTEREO measures a point inside the ball rather than the top of the ball.

By February 1999, Scanner learned that ICOS had launched the competing CyberSTEREO 3D BGA inspection product. In Scanner's view, ICOS's new product infringed the proposed claims of Scanner's patent applications. Consequently, while the applications were pending, Scanner submitted a petition to make special to the Commissioner of Patents and Trademarks at the United States Patent and Trademark Office ("PTO"). The purpose of such a petition is to seek accelerated review of the pending application.¹ In its petition, Scanner's patent attorney, George A. Leone ("Leone") submitted that the application was entitled to special handling status because of actual infringement. The petition contained all the prerequisites that the PTO requires, including Leone's statement that a "rigid comparison" of the alleged infringing method with the claims of the application had been made, and that in Leone's opinion,

¹ Petitions to make special are governed by Section 708.02 of the Manual of Patent Examining Procedure (MPEP), which provides that an application may be made special because of actual, but not prospective, infringement upon payment of the fee and the filing of a petition accompanied by a statement by the applicant, assignee, or an attorney/agent alleging the following:

- (A) That there is an infringing device or product actually on the market or method in use;
- (B) That a rigid comparison of the alleged infringing device, product, or method with the claims of the application has been made, and that, in his or her opinion, some of the claims are unquestionably infringed; and
- (C) That he or she has made or caused to be made a careful and thorough search of the prior art or has a good knowledge of the pertinent prior art.

Manual of Patent Examining Procedure § 708.02 (8th ed. 2006).

some of the claims are "unquestionably infringed." The petition was accompanied by a statement from the applicant and assignee, Beaty, describing the claimed invention, his role in the invention, certain interactions between Scanner and ICOS, and ICOS's competing system. The PTO granted Scanner's petition and advanced the application process. Literature describing the Projector system was considered by the PTO Examiner as prior art to the patents in suit, and the claims were considered patentable over the system as described in the literature.

The PTO issued the patents in suit on May 16, 2000. The '756 patent is entitled "Apparatus for three dimensional inspection of electronic components." As the patent's Abstract provides, the '756 patent covers a three dimensional inspection apparatus for ball array devices, where the ball array device is positioned in a fixed optical system. An illumination apparatus is positioned for illuminating the ball array device. A first camera is disposed in a fixed focus position relative to the ball array device for taking a first image of the ball array device to obtain a characteristic circular doughnut shape image from a ball. A second camera is disposed in a fixed focus position relative to the ball array device for taking a second image of the ball array device to obtain a side view image of the ball. A processor applies triangulation calculations on related measurements of the first image and the second image to calculate a three dimensional position of the ball with reference to a pre-calculated calibration plane. '756 patent, Abstract. Claim 1 of the '756 patent reads:

1. A three dimensional inspection apparatus for ball array devices having a plurality of balls, wherein the ball array device is positioned in a fixed optical system, the apparatus comprising:
 - a) an illumination apparatus positioned for illuminating the ball array device;

- b) a first camera disposed in a fixed focus position relative to the ball array device for taking a first image of the ball array device to obtain a characteristic circular doughnut shape image from at least one ball;
- c) a second camera disposed in a fixed focus position relative to the ball array device for taking a second image of the ball array device to obtain a side view image of the at least one ball; and
- d) a processor, coupled to receive the first image and the second image, that applies triangulation calculations on related measurements of the first image and the second image to calculate a three dimensional position of the at least one ball with reference to a pre-calculated calibration plane.

'756 patent, col. 18, ll. 34-53.

The '757 patent is entitled "Process for three dimensional inspection of electronic components." Corresponding to the '756 patented apparatus, the '757 patent covers a three dimensional inspection process for ball array devices positioned in a fixed optical system. In the claimed process of the '757 patent, the ball array device is illuminated and a first image of the ball array device is taken with a first camera disposed in a fixed focus position relative to the ball array device to obtain a characteristic circular doughnut shape image from a ball. A second image of the ball array device is taken with a second camera disposed in a fixed focus position relative to the ball array device to obtain a side view image of the ball. The first image and the second image are processed using a triangulation method to calculate a three dimensional position of the ball with reference to a pre-calculated calibration plane. '757 patent, Abstract.

Mork assigned his rights in the patents to Beaty—the CEO and majority shareholder of Scanner. Scanner holds an exclusive license to the patents in suit from Beaty, and the license includes the right to sue for infringement.

II

Scanner filed suit against ICOS on July 7, 2000, accusing ICOS's CyberSTEREO ball grid array inspection system of infringing the patents in suit. ICOS filed an answer denying the substantive allegations contained in the complaint. In its counterclaim, ICOS sought damages for unfair competition under the Lanham Act, common law unfair competition and trade disparagement, and tortious interference with advantageous business relations. ICOS also asked the court to declare Scanner's '756 and '757 patents invalid, unenforceable, and not infringed by ICOS. The parties agreed that the case would rise and fall on claim 1 of the '756 patent.

In an interlocutory appeal in 2004, Scanner challenged the methodology employed by the district court in construing the terms "an illumination apparatus" and "illuminating," and its substantive constructions of those terms. Scanner I, 365 F.3d at 1302. Scanner further challenged the district court's entry of summary judgment of non-infringement as based upon erroneous claim constructions. Id. In that case, this court agreed with Scanner that the district court erred in limiting "an illumination apparatus," and thus "illuminating," to an apparatus containing only a single illumination source. Id. at 1304. We held that "an illumination apparatus" is properly construed to encompass one or more illumination sources because the patentee had not evinced a clear intent to limit the article "an" to a single illumination source in either the claims or specification of the '756 patent. Id. Because the district court's entry of summary judgment of non-infringement was premised upon an incorrect construction of these terms, we vacated the judgment and remanded the case for further proceedings. Id. at 1306.

III

The case is now back before us following proceedings on remand in which the district court conducted a bench trial on the issues of infringement, validity, and enforceability.

A

Regarding inequitable conduct, the district court took issue with Leone's statement in the petition that he had made a "rigid comparison" of the CyberSTEREO system with the claims of the application, when the district court found, based on Leone's deposition testimony, that Leone "had not actually seen the ICOS device, as suggested." Scanner II, 486 F. Supp. 2d at 346. Leone's statements were not the only basis for the court's finding of inequitable conduct; the district court also found Beaty's statements in connection with the petition to make special to be problematic. The district court stated:

The UV+ was not on "open display" at the December 1998 trade show, at least not in the sense that Beaty tried to convey, for the system was in a black sealed box and an inspection of the module would not have revealed how the calculations were performed. DeProft [ICOS's Vice President] did not visit the Scanner booth at the July 1998 trade show, as Beaty stated. Contradicting what he wrote in his declaration, Beaty acknowledged at trial that he could not recall "anything specific" with respect to DeProft at that show. (Tr. 205). DeProft did not take "copious notes" or make any diagrams or drawings of the UV+ at the Japan trade show, as Beaty alleged as well.

Scanner II, 486 F. Supp. 2d at 346-347.

The district court considered the trial testimony of Beaty and DeProft, and concluded that Beaty's statements² in the declaration accompanying the petition to

² As the district court observed, Beaty's statement alleged that: the UV+ was on "open display" at the December 1998 trade show; DeProft approached Beaty for

make special suggested, and "were intended to mislead the PTO into believing," that ICOS copied the Scanner device, when the court found that ICOS developed the CyberSTEREO from the Projector system on its own. Id. at 347.

B

With regard to obviousness, the district court enumerated what it accepted to be well known principles in the prior art, including illumination in camera-based systems, two-camera systems where one camera is disposed at an angle to another, use of triangulation calculations to make measurements, triangulation calculations utilized with a two-camera system, use of stereo vision, and the idea of calibrating cameras. In view of those prior art principles, the district court concluded that ICOS's Projector system rendered Scanner's claims obvious.

The district court explained that the Projector system contained a first and second camera, an illumination apparatus, and a processor coupled to the cameras to receive first and second images to find the three-dimensional position of at least one ball. Scanner II, 486 F. Supp. 2d at 347. The court further concluded that one skilled in the art would have found it obvious at the time of the Scanner invention to employ the elements of the claims to alter the Projector system by removing the structured light source and employing triangulation calculations to locate the three-dimensional position

a two-hour private meeting; DeProft had previously inspected the UV+ at the July 1998 trade show in California; DeProft "took copious notes, diagrams, and drawings" of the UV+ at the Japan trade show; other ICOS personnel "also rigorously studied the [Scanner] display" at the Japan trade show; according to a former ICOS employee, after the July 1998 trade show it was suggested at an ICOS meeting that a third party buy the UV+ so that ICOS could see how it worked; ICOS contacted Scanner in December 1998 about obtaining rights to the UV+; and on January 26, 1999, ICOS announced the introduction of its CyberSTEREO system, which Beaty described as being "substantially identical" to the UV+.

of balls. Id. Based on these findings, the district court entered final judgment that the claims of both patents in suit were invalid.

C

On infringement, the only element of Claim 1 of the '756 patent in dispute was element d, as the parties agreed that the ICOS products comprise the preamble and elements a, b, and c. The district court observed that element d requires the use of triangulation calculations while the ICOS products rely on bilinear interpolation, which is the process of transferring the location of a ball from the 3D camera into the 2D camera and then computing a translation offset. Bilinear interpolation involves the measurement of the position of a ball in the 3D camera, the relocation of that position in the 2D or top camera using a camera-to-camera transfer process, and a comparison of that position to the location of the ball as observed in the 2D camera. The difference in the two positions is proportional to the height of the ball. As the district court observed, bilinear interpolation is different from triangulation, as it is an algebraic operation rather than a trigonometric one. In its use of bilinear interpolation, the ICOS system does not solve for unknown properties of a triangle and does not measure the height of the balls.

Element d of claim 1 also requires the calculation of a three-dimensional position of at least one ball with reference to a pre-calculated calibration plane. The district court understood the ICOS system to locate a reference point inside the ball as opposed to locating the X, Y, and Z values for the top of a ball. Because the ICOS products rely on coplanarity—the relative variations of each ball from a plane, the district court found that ICOS's systems did not need to measure the height of the ball nor do they make calculations with reference to a pre-calculated calibration plane. Absent the application

of triangulation calculations on related measurements of the first image and the second image to calculate a three dimensional position with reference to a pre-calculated calibration plane, the district court concluded that the accused device did not infringe claim 1 of the '756 patent.

IV

A

Scanner contends that the district court abused its discretion by ruling that the patents in suit are unenforceable due to inequitable conduct because the court "misapplied the law relating to materiality by incorrectly concluding that any statement in a petition to make special is per se material if the petition is granted."

Scanner argues that the statements adjudged to be misrepresentations were neither material to patentability nor to the grant of expedited review. Further, Scanner submits that neither Beaty nor Leone made false or misleading statements. Scanner contends that the record and the district court's opinion are devoid of any evidence and discussion of the required intent to deceive necessary to sustain a charge of inequitable conduct.

The ultimate question of inequitable conduct is committed to the discretion of the district court and we review the court's determination that the patentee engaged in inequitable conduct for abuse of discretion. Modine Mfg. Co. v. Allen Group, Inc., 917 F.2d 538, 541 (Fed. Cir. 1990), cert. denied, 500 U.S. 918 (1991). An abuse of discretion occurs when (1) the court's decision is clearly unreasonable, arbitrary, or fanciful, (2) the court's decision is based on an erroneous construction of the law, (3) the court's factual findings are clearly erroneous, or (4) the record contains no evidence

upon which the court rationally could have based its decision. Nilssen v. Osram Sylvania, Inc., 504 F.3d 1223, 1229 (Fed. Cir. 2007).

In order to establish inequitable conduct, the party challenging the patent is required to establish by clear and convincing evidence that the patent applicant "(1) either made an affirmative misrepresentation of material fact, failed to disclose material information, or submitted false material information, and (2) intended to deceive the U.S. Patent and Trademark Office." Symantec Corp. v. Computer Assoc. Int'l, Inc., 522 F.3d 1279, 1296 (Fed. Cir. 2008) (quoting Cargill, Inc. v. Canbra Foods, Ltd., 476 F.3d 1359, 1363 (Fed. Cir. 2007)). Both intent and materiality are questions of fact, and must be proven by clear and convincing evidence. Young v. Lumenis, Inc., 492 F.3d 1336, 1344 (Fed. Cir. 2007). We review a district court's findings on the threshold issues of materiality and intent for clear error. Pfizer, Inc. v. Teva Pharms. USA, Inc., 518 F.3d 1353, 1366 (Fed. Cir. 2008). Under the clear error standard, the court's findings will not be overturned in the absence of a "definite and firm conviction" that a mistake has been made. Id. "Once threshold findings of materiality and intent are established, the district court must weigh them to determine whether the equities warrant a conclusion that inequitable conduct occurred." Flex-Rest, LLC v. Steelcase, Inc., 455 F.3d 1351, 1363 (Fed. Cir. 2006) (quoting Purdue Pharma, 438 F.3d at 1128).

Scanner argues that the district court erred in failing to assess materiality to patentability, and instead applied what it considers broad dicta in this court's decision in General Electro Music Corp. v. Samick Music Corp., 19 F.3d 1405, 1411 (Fed. Cir. 1994). In General Electro, we stated "as a matter of law that a false statement in a Petition to Make Special is material if . . . it succeeds in prompting expedited

consideration of the application." Id. at 1411. Scanner argues that in cases involving inequitable conduct since General Electro, the Federal Circuit has emphasized that a misrepresentation or omission must be material to patentability to support a charge of inequitable conduct.

It is true that many of our cases, before and after General Electro, examine materiality in the context of whether the alleged inequitable conduct bore directly on patentability of the claims in suit. That fact does not undercut the continuing force of the test for materiality in the setting of a petition to make special, or in other settings where an alleged misrepresentation to the Patent Office resulted in some action other than issuance of a patent. For example, this court affirmed a district court's decision finding that all of the patents in suit were unenforceable due to inequitable conduct for improperly claiming small entity status. Nilssen v. Osram Sylvania, Inc., 504 F.3d 1223, 1231 (Fed. Cir. 2007) (stating that "it is not beyond the authority of a district court to hold a patent unenforceable for inequitable conduct in misrepresenting one's status as justifying small entity maintenance payments"). Nilssen relied on Ulead Systems, Inc. v. Lex Computer & Management Corp., 351 F.3d 1139 (Fed. Cir. 2003). In Ulead, this court stated:

Historically issues of unenforceability have arisen in cases involving inequitable conduct occurring in the prosecution of patents. But, we see no reason why the doctrine should not extend into other contexts, like the present one, where the allegation is that inequitable conduct has occurred after the patent has issued and during the course of establishing and paying the appropriate maintenance fee. In this context, it is equally important that the PTO receive accurate information from those who practice before it.

Id. at 1144 (internal citations omitted). Given the precedent cited above, we must reject Scanner's view that inequitable conduct cannot be shown absent a misrepresentation

that bears on the patentability of the claims in the application. When the setting involves a petition to make special, as is the case here, we reaffirm that a false statement that succeeds in expediting the application is, as a matter of law, material for purposes of assessing the issue of inequitable conduct.³

In this setting, the first question to address is whether the statements in question are false. If not, materiality is lacking and there is no need to consider the intent prong of inequitable conduct. Scanner argues that the district court failed to take the statements in Scanner's application to make special at face value in assessing their veracity, and instead drew unwarranted inferences from the statements, and deemed such inferences untrue.

In Akron Polymer Container Corp. v. Exxel Container, Inc., 148 F.3d 1380 (Fed. Cir. 1998), we reviewed a holding of inequitable conduct that was based on a patentee's failure to disclose codependency of related applications to one examiner when the other examiner had been apprised. The district court had found that "only inferences of deceitful intent can be drawn from the joint prosecution of both applications by the same attorney." Id. at 1382. In that case, we found clear error because the district court failed to give due weight to evidence of good faith that would call for inferences contrary to a finding of deceit.

The rule of Akron Polymer is as clear as it is necessary. Whenever evidence proffered to show either materiality or intent is susceptible of multiple reasonable

³ We note that not all false statements or misrepresentations contained in a petition to make special are necessarily material even if the applicant succeeded in receiving expedited treatment for his or her application. Rather, in evaluating whether a false statement or misrepresentation in a petition to make special is material, a court

inferences, a district court clearly errs in overlooking one inference in favor of another equally reasonable inference. All reasonable inferences must be drawn from the evidence, and a judgment then rendered on the evidence as informed by the range of reasonable inferences.⁴ Where the rule is breached, no inequitable conduct may be found. The rule is necessary, for without it findings of inequitable conduct, with the punishment of unenforceability of the entire patent, could wrongly stand.

In this case, a full review of the record shows that the district court failed to draw all reasonable inferences on the factual findings relied upon by the district court to show materiality. We will consider those findings in turn.

1

The district court first addressed Leone's statement that he made a "rigid comparison" of the CyberSTEREO "system" with the claims of the application. The court inferred that this statement "suggested" that Leone had actually seen the device, when in fact, he had not. Hence, the district court deemed Leone to have made a false statement to the PTO.

While it is not unreasonable to infer or expect that a rigid comparison could call for a physical inspection, a contrary inference of intended compliance with the PTO's regulation can just as easily be drawn. The petition was accompanied with claims charts that referenced the specific source for Leone's beliefs as to each claimed element. Most of Leone's citations were to ICOS's CyberSTEREO product literature—

must determine whether the false statement was likely a but-for cause of the grant of the petition. If not, a threshold level of materiality has not been established.

⁴ Of course, a district court need not make explicit findings as to the range of reasonable inferences in every case, but must do so only where it draws an inference from a statement that is also subject to an equally plausible contrary inference.

also submitted to the PTO as Exhibit C to the petition. Ordinary dictionary definitions⁵ of "rigid" do not connote that the term is synonymous to a physical inspection.

Moreover, a physical inspection should not be an implied requirement for use of the phrase "rigid comparison" in a petition to make special in that, depending on the technology, and whether the claims are directed to an apparatus or a method, a physical inspection may not provide any more information than what can be ascertained from review of product literature. In some cases, a review of source code may be the only way to make a comparison of an accused device to proposed patent claims, which cannot be accomplished by physical observation of a "black box" enclosing the hardware that stores the application generated by such source code. The district court seemed to recognize as much when, in criticizing Beaty's use of the term "open display" to describe Scanner's system at a trade show, the court stated "the system was in a black sealed box and an inspection of the module would not have revealed how the calculations were performed." Scanner II, 486 F. Supp. 2d at 347.

Furthermore, the district court did not credit the fact that the "rigid comparison" words are not of Leone's creation. The PTO's rules for the contents of a petition to make special require recitation of those words. In sum, the district court's inference that Leone misleadingly suggested he saw the ICOS device, when weighed against an equally reasonable inference of good faith that the plain words of his statement and

⁵ See, e.g., Merriam-Webster's Online Dictionary (defining "rigid" as 1a: deficient in or devoid of flexibility <rigid price controls> <a rigid bar of metal>; b: appearing stiff and unyielding <his face rigid with pain>; 2 a: inflexibly set in opinion; b: strictly observed <adheres to a rigid schedule>; 3: firmly inflexible rather than lax or indulgent <a rigid disciplinarian>; 4: precise and accurate in procedure <rigid control of the manufacturing process>; 5 of an airship : having the outer shape maintained by a fixed framework).

supporting material engenders, does not support the conclusion that the attorney's statement is misleading or false under the clear and convincing evidentiary standard.

2

The district court also found that the UV+ was not on "open display" at the December 1998 trade show, "at least not in the sense that Beaty tried to convey." Scanner II, 486 F. Supp. 2d at 339. The court apparently inferred from Beaty's statement that Scanner implied that its display of the UV+ revealed how calculations were performed. As discussed above, however, even an unsealed and physically opened black box would not have necessarily revealed how Scanner performed those aspects of the process that utilized a processor. One can just as reasonably infer from Beaty's statement that by use of the phrase "open display," Scanner was communicating that the product could be viewed and demonstrated openly by visitors to the booth, as opposed to a private setting or one that might require non-disclosure agreements. Beaty testified that when he said Scanner's device was on "open display," such was to distinguish ICOS's closed method of display, which was to "keep their modules in locked cases where people could not get to them." Trial Tr. at 225, lines 5-6.

Beaty further testified, regarding the open display, that "[w]e had ours completely open so people could move around it and see it and observe it." Id. at 225, lines 7-8. In light of the requirement that inequitable conduct be found by clear and convincing evidence, the district court erred when it adopted an unfavorable inference regarding "open display," over an equally reasonable favorable inference.

As a further example of a false statement to the PTO by Beaty, the district court found that DeProft did not visit the Scanner booth at the July 1998 trade show, as the district court held that Beaty had suggested. On this issue, Beaty testified that he had no specific recollection of which ICOS personnel visited the Scanner booth, but he affirmed his honest belief that DeProft had visited the booth. DeProft testified that he absolutely recalled attending the July trade show. He could not recall speaking with Beaty or anyone else representing Scanner at the July show. When asked if he had "any memory of seeing anything or learning of anything about Scanner at that trade show in July of 1998," he replied "No. I do not. In fact, I'm not sure whether Scanner had the booth there or had a system on display there. I just don't—I cannot recall that." Although DeProft was sure he attended the July show, he was unsure whether or not he visited the Scanner booth.

The testimony before the district court on the issue of whether DeProft visited the Scanner booth at the July trade show is susceptible of at least two possibilities: either DeProft did visit the booth or he did not. The memory of both witnesses was at best vague.⁶ Since it is uncontested that several ICOS employees visited the trade show, whether DeProft did or did not seems inconsequential. But in any event, as with the alleged false statements examined above, here too the testimony is not one-sided. The district court chose to infer from DeProft's testimony that he had not visited the booth.

⁶ An email sent shortly after the show from one ICOS employee to other ICOS employees, including DeProft, who did attend that show, stated that "[at] SemiCon West we all noticed a potential 3D BGA competitor, Scanner Technologies." This statement by an ICOS employee attributes to DeProft, as well as other ICOS employees, at least some awareness of Scanner's presence at the trade show.

But given the vague nature of the testimony, it would have been equally reasonable to infer that he had in fact visited it. In the face of the clear and convincing evidence standard, the district court clearly erred in favoring DeProft's vague memory over Beaty's.

4

The district court also concluded, as a matter of fact, that DeProft did not take "copious notes" or make any diagrams or drawings of the UV+ at the Japan trade show, as Beaty stated in his declaration. The district court credited DeProft's testimony over Beaty's in this regard. The Supreme Court has instructed that, "[W]hen a trial judge's finding is based on his decision to credit the testimony of one of two or more witnesses, each of whom has told a coherent and facially plausible story that is not contradicted by extrinsic evidence, that finding, if not internally inconsistent, can virtually never be clear error." Honeywell Int'l, Inc. v. Hamilton Sundstrand Corp., 523 F.3d 1304, 1314 (Fed. Cir. 2008) (quoting Anderson v. City of Bessemer City, 470 U.S. 564, 575 (1985) (emphasis added). As Scanner points out, there is some inconsistency in the district court's assessment of the conflicting testimony because DeProft was forced to acknowledge on cross-examination that he had taken some notes—at least enough to have commented about Scanner's system in ICOS's internal correspondence. Thus, the falsity or misleading nature of Beaty's statements and corresponding trial testimony comes down to whether the notes taken by DeProft were indeed "copious." What constitutes "copious" note-taking is a relative determination, from which subjective inferences, both favorable and unfavorable, can be deduced. To the extent that the district court found that Beaty made a false statement based on an unfavorable

inference presumed from the adjective he used to describe the amount of notes that were taken, the district court plainly erred. We fail to see how such an inference constitutes the clear and convincing evidence necessary to support a finding of inequitable conduct.

5

Taking Beaty's statements, analyzed above, as a whole, the district court held that those statements "were intended to mislead the PTO into believing that ICOS had copied the Scanner invention based on what it saw at the trade shows." Scanner II, 486 F. Supp. 2d at 346. When the individual facts are properly assessed, with all reasonable inferences being drawn, there is no clear and convincing evidence that Scanner told the PTO that ICOS had copied its invention. To be sure, Beaty's declaration stated that he believed that ICOS's product met the limitations of the claims in his application. But such a belief leaves room for nothing more than the bare assertion of infringement. The limitations of the claims can be met by slavish copying, or equally met by independent development of the accused products. The record, when properly analyzed, reveals Scanner telling the PTO that it believed ICOS to infringe. Under the clear error standard, Scanner cannot be held to have told the PTO that ICOS came by infringement by way of copying.

When the record evidence in this case on the issue of whether Scanner made false statements to the PTO in its petition to make special is measured by the rule of Akron Polymer, the grounds supporting the district court's ultimate finding of materiality dissolves. Because we hold that the district court clearly erred in its finding of materiality, the issue of intent to deceive the PTO is moot. Consequently, we reverse

the district court's determination that the patents in suit are unenforceable for inequitable conduct.⁷

B

Scanner contends that the district court abused its discretion in awarding attorneys' fees and costs to ICOS because the court based its finding of an exceptional case on an erroneous finding of inequitable conduct. We agree.

Whether a case is exceptional under section 285 is a factual question reviewed for clear error. Cybor Corp. v. FAS Techs., 138 F.3d 1448, 1460 (Fed. Cir. 1998) (en banc). The district court's decision to award attorney fees after finding a case exceptional is reviewed for abuse of discretion. Id. As discussed above, the district court clearly erred in finding that Scanner submitted false material statements to the PTO. Because the district court's finding of inequitable conduct served as the essential foundation of its finding that this case was exceptional, the district court likewise erred in finding that this case was exceptional, and therefore abused its discretion in awarding attorney fees. See Molins PLC v. Textron, Inc., 48 F.3d 1172, 1186 (Fed. Cir. 1995).

C

We turn to the question of whether the district court correctly held that the claims in suit would have been obvious. Scanner argues that the district court erred by first, failing to consider the level of ordinary skill in the art and the evidence of objective indicia of nonobviousness, and second, concluding that claim 1 would have been

⁷ Scanner contends that the district court erred by declaring unenforceable numerous patents not in suit since it lacked jurisdiction and an evidentiary record to support such a ruling. Because we hold that the district court erred in holding the patents in suit unenforceable for inequitable conduct, we necessarily vacate the district court's judgment that the related patents not in suit are unenforceable.

obvious without making factual findings that could support a conclusion that the prior art disclosed or suggested the actual elements of claim 1.

Obviousness is a question of law based on underlying questions of fact. Daiichi Sankyo Co., Ltd. v. Apotex, Inc., 501 F.3d 1254, 1256 (Fed. Cir. 2007) (citing Winner Int'l Royalty Corp. v. Wang, 202 F.3d 1340, 1348 (Fed. Cir. 2000)). We therefore review the ultimate determination of obviousness by a district court de novo and the underlying factual inquiries for clear error. Id. The underlying factual determinations made by the district court that this court must review for clear error include (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) objective indicia of non-obviousness. Graham v. John Deere Co., 383 U.S. 1, 17 (1966).

Scanner's arguments regarding the level of ordinary skill in the art and evidence of objective indicia of nonobviousness ring hollow. We recognize that it is ICOS's burden to prove invalidity by clear and convincing evidence, and that that burden of proof never shifts to the patentee to prove validity. Pfizer, Inc. v. Apotex, Inc., 480 F.3d 1348, 1359 (Fed. Cir. 2007) (quoting Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1375 (Fed. Cir. 1986)). However, in this case, the record shows that ICOS adduced certain facts, which were unrebutted by Scanner and accepted by the district court as the fact finder. Pfizer, 480 F.3d at 1360 ("[O]nce a challenger has presented a prima facie case of invalidity, the patentee has the burden of going forward with rebuttal evidence.") (internal citations omitted); Cable Elec. Prods. Inc. v. Genmark, Inc., 770 F.2d 1015, 1022 (Fed. Cir. 1985) ("[I]f evidence is presented establishing a prima facie case of invalidity, the opponent of invalidity must come forward with

evidence to counter the prima facie challenge to the presumption of section 282."). The district court cannot be said to have erred by not discussing those unrebutted facts.

The district court has the responsibility to determine whether the challenger has met its burden by clear and convincing evidence by considering the totality of the evidence, including any rebuttal evidence presented by the patentee. Pfizer, Inc. v. Apotex, Inc., 480 F.3d at 1360 (quoting Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1534 (Fed. Cir. 1983)). The record shows that ICOS's expert, Dr. Mundy, testified to the level of ordinary skill in the art. Scanner points to no contrary evidence, and its brief does not even dispute the level of ordinary skill that Dr. Mundy described.

Further, the district court expressly considered the insinuation that ICOS copied, and explicitly rejected the idea. In criticizing the district court's failure to consider any other evidence introduced at trial demonstrating the existence of objective indicia of nonobviousness, Scanner cites in its brief to 1) press releases that caution the reader not to place undue reliance on forward-looking statements such as expected contributions of the new product, 2) an email referring to a non-specific press release, and 3) an excerpt from the trial testimony in which counsel for Scanner sought to admit exhibits into the record going to commercial success but declining to "have discussions to make it go more quickly." In point of fact, there simply was not much evidence of secondary indicia of obviousness for the court to consider and discuss. We therefore reject Scanner's argument that the district court erred by failing to consider the level of ordinary skill in the art and evidence of objective indicia of nonobviousness.

Scanner argues that the district court erred in concluding that the ICOS Projector system disclosed or suggested each limitation of claim 1 because the district court

issued no findings of fact capable of supporting its conclusion. In support of its argument, Scanner points to the fact that the Projector system was the only prior art the court considered in invalidating the patents, and that the system was before the PTO, which found the claims to be patentable over the Projector system. Specifically, Scanner argues that the district court did not find that the prior art disclosed or suggested the limitations of claim 1 as they actually appear, which would have required a finding that the Projector system or the knowledge of those of skill in the art contained or suggested calculation of a three-dimensional position of a ball with reference to a pre-calculated calibration plane.

Scanner further argues that prior to its invention, "common sense dictated that a 3D calibration object, not a calibration plane, was needed to calibrate a 3D camera." Scanner then states that the "Projector taught that separate calibration devices were required to calibrate the two cameras and taught away from using an XY calibration reticle to calibrate the 3D camera." Scanner submits that the district court also did not find that the Projector system or the knowledge of those of skill in the art contained or suggested applying triangulation calculations on related measurements of the first image and the second image, obtained by the first and second cameras respectively, as is required by claim 1. Therefore, according to Scanner, "[t]he record contains no evidence that anything in the prior art or in the knowledge of one of skill in the art would have suggested implementing stereo triangulation calculations on related images in the Projector system."

ICOS responds that the district court found that the Projector system used "Z calibration," a finding Scanner acknowledged. ICOS submits that Z calibration is

calibration with reference to a Z plane. The trial testimony supports this contention. ICOS's expert, Dr. Mundy, was asked whether the two cameras in the Projector system were calibrated using a single artifact. Dr. Mundy replied, "Yes, they were." Trial Tr. at 758. When asked how, Dr. Mundy explained, "They had a flat glass, a plate, which they called a caliber, something like that But basically it is a plane which they put under the field of view of both cameras and then carry out the calibration process that I just illustrated in my slides and in my analysis of the code." Id. (emphasis added).

Further, ICOS points to Dr. Mundy's testimony as establishing that the use of two cameras in a stereo-vision arrangement was not new at the time of the alleged invention. Specifically, Dr. Mundy testified that ". . . the use of triangulation to determine information from the two cameras, the side 3D camera and the top camera, is something that's well known, or was well known at that time. And actually stereo measurement of Sphinx had been done by the computer vision community perhaps a decade earlier." Dr. Mundy was then asked, "Based on that, at least in your opinion, to one skilled in the art, the concept of using stereo vision would be obvious with the existence of a projector system?" He responded, "Well, it would have been obvious in any system that had two cameras, one at an angle with respect to the other." Trial Tr. at 756.

With respect to Scanner's point that the district court does not identify the relational aspect of claim 1, we agree that one of ordinary skill in the art would understand that the relationship characteristic of triangulation is an ancient Greek discovery, and there can be no triangulation of mere unrelated measurements. As the Supreme Court reaffirmed in KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741

(2007), an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." We recognize that claim 1 requires triangulation of measurements using a first image from the first camera and a second image from the second camera whereas the Projector system performs triangulation calculations on related measurements from images of only one camera. However, the trial testimony shows that the relatively small logical gap between the prior art and the claim in this case is closed by a person of ordinary skill in the art "pursu[ing] known options within his or her technical grasp." See also In Re Translogic Tech., Inc., 504 F.3d 1249, 1262 (Fed. Cir. 2007).

Scanner's arguments regarding obviousness appear to take more issue with the crisp nature of the district court's opinion rather than the merits of the obviousness determination, which are supported by the trial testimony of Dr. Mundy. See Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1540 (Fed. Cir. 1983) ("We sit to review judgments, not opinions."). We agree with the district court's judgment and therefore affirm its conclusion that claim 1 of the '756 patent would have been obvious in light of the prior art and the knowledge of one skilled in the art.

D

Scanner argues that the district court erred in holding that the CyberSTEREO does not infringe any claim of the patents in suit. Infringement is a question of fact that, after a bench trial, we review for clear error. Alza Corp. v. Mylan Labs., Inc., 464 F.3d 1286, 1289 (Fed. Cir. 2006). Under the clear error standard, a reversal is permitted

only when this court is left with a definite and firm conviction that the district court was in error. Id. (citing Medichem, S.A. v. Rolabo, S.L., 437 F.3d 1157, 1164 (Fed. Cir. 2006)).

According to Scanner, the district court applied a different and incorrect construction of the term "triangulation calculation" in its infringement analysis to conclude that the CyberSTEREO is not making or using triangulation calculations. However, the record does support the conclusion that ICOS does not practice "triangulation" as the patents in suit use that term because ICOS relies on bilinear interpolation for measurement.

Scanner also argues that the district court applied an incorrect construction of the claim term "pre-calculated calibration plane" since the district court arrived at the conclusion that the CyberSTEREO determines the X and Y coordinates on the Z=0 world plane. The district court correctly applied the claim construction and properly determined that the coplanarity calculation in ICOS's system is different from the pre-calculated calibration plane in claim 1 of the '756 patent. Scanner identifies no basis for this court to disturb the district court's factual findings, most of which were based on crediting expert witness testimony. We therefore affirm the district court's judgment of noninfringement of claim 1.

E

Scanner also appeals the district court's ruling on the validity of unasserted claims of the patents in suit. Scanner further contends that the district court erred in concluding that no claim of either patent-in-suit is infringed based on its analysis of only claim 1 of the '756 patent.

Scanner first argues that the district court lacked jurisdiction to adjudicate the unasserted claims because no case or controversy existed to support subject matter jurisdiction. This argument is unpersuasive. ICOS responded to Scanner's lawsuit with a counterclaim that sought a declaratory judgment on the claims of the '756 and '757 patents. Def.'s Answer and Countercl. at 11 ("Count IV (Declaratory Judgment) . . . The '756 and '757 patents, and each of the claims thereof, are invalid and/or unenforceable for one or more of the reasons set forth in paragraphs (a) through (k) above."). Accordingly, the district court had subject matter jurisdiction to adjudicate claims that Scanner did not assert against ICOS.

Scanner also argues that the district court erred in ruling on the validity of claims as to which ICOS presented no evidence. ICOS responds that the case went to trial on claim 1 because the parties agreed to try the case on a representative claim upon which the entire case would stand or fall. ICOS cites to the parties' stipulation "that the case stands and falls on Claim 1 of the '756 Patent."

Scanner limits the import of the stipulation to claim construction. The record does not include the stipulation itself, only acknowledgement by both parties that the stipulation had been made. When asked at oral argument, neither party was aware of whether the stipulation was memorialized in writing or part of the record below.

An interpretation of the parties' pretrial stipulation, much like contract interpretation, is a legal issue that this court reviews de novo. Fuji Photo Film Co., Ltd. v. Jazz Photo Corp., 394 F.3d 1368, 1373 (Fed. Cir. 2005) (citing Kearns v. Chrysler Corp., 32 F.3d 1541, 1545 (Fed. Cir. 1994)). Despite the black letter law that a finding of invalidity of an independent claim does not determine the validity of claims

that depend from it, see 35 U.S.C. § 282 (1982), parties can stipulate to almost anything but jurisdiction. This court's decision in Shelcore, Inc. v. Durham Indus., Inc., 745 F.2d 621 (Fed. Cir. 1984), is instructive:

While the rule—that where the patentability of dependent claims is not argued separately from the independent claims from which they depend, the former stand or fall with the latter—has vitality prior to the issuance of a patent embodying those claims, that rule has no application in a district court proceeding to determine whether the claims of an issued patent are valid. While the above rule is not applicable as a rule of procedure in a district court, it has been applied on appeal from a district court judgment with respect to the claims of an issued patent as a matter of convenience. The presumption of validity does not guide our analysis on appeal. Rather, we review the findings and conclusions of a district court under the appropriate standards of review. That circumstance bears no relation, however, to the requirement at trial that a party challenging the validity of a claim, absent a pretrial agreement or stipulation, must submit evidence supporting a conclusion of invalidity of each claim the challenger seeks to destroy.

Id. at 624-25 (emphasis added). In this case, we have an unambiguously proposed finding of fact that stated simply "ICOS and Scanner have stipulated that the case stands and falls on Claim 1 of the '756 Patent," to which Scanner replied, "True." The pleadings represented that "the case" constituted allegations of infringement of both patents, and a declaratory judgment action seeking invalidity, noninfringement, and unenforceability of all the claims of the patent in suit. Scanner's response to ICOS's proposed finding of fact and conclusions of law provided no caveat to its unqualified agreement with the nature of the parties' stipulation. Finding no ambiguity in the parties' representation of the stipulation before the district court, we affirm the district court's judgment invalidating the claims of both patents in suit.

Notwithstanding its position regarding the stipulation as it relates to the validity of claims not tried before the district court, Scanner charges that the district court failed to

separately consider whether the CyberSTEREO performed "the triangulation method" disclosed in claims 24, 29, and 30 of the '756 patent and various asserted claims of the '757 patent. Even if the stipulation was not intended to be what it plainly represents—a representative claim on which the case rises or falls—the district court could not have erred in failing to consider infringement of Scanner's other claims in ruling those claims not infringed because Scanner failed to adduce facts to support a finding that ICOS infringed claims 24, 29, and 30 of the '756 patent. Accordingly, we affirm the district court's judgment of noninfringement.

V

For the reasons discussed above, we reverse the district court on its inequitable conduct finding, and its judgment that the related, unasserted patents are unenforceable. Consequently, we vacate the attorneys' fee award. We affirm the district court's judgment that claim 1 is invalid as it would have been obvious. We also affirm the district court's judgment invalidating all claims of the patents in suit given the stipulation between the parties that the case would be tried on a representative claim. We also affirm the district court's holding that the CyberSTEREO does not infringe any claim of the patents in suit generally, and the '756 patent specifically.

COSTS

Each party shall bear its own costs for this appeal.

AFFIRMED IN PART, REVERSED IN PART, AND VACATED IN PART.