

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**SMITH & NEPHEW, INC., COVIDIEN LP,**  
*Appellants*

v.

**HOLOGIC, INC.,**  
*Appellee*

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2017-1008

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. 95/001,933.

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Decided: January 30, 2018

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BRADLEY THOMAS LENNIE, Pepper Hamilton LLP,  
Washington, DC, argued for appellants. Appellant Smith  
& Nephew, Inc. also represented by MAIA H. HARRIS,  
Boston, MA.

NAVEEN MODI, Paul Hastings LLP, Washington, DC,  
for appellant Covidien LP.

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Before NEWMAN, HUGHES, and STOLL, *Circuit Judges*.

HUGHES, *Circuit Judge*.

The Patent Trial and Appeal Board affirmed the rejection of claims 1–16, 19–22, and 25–33 of U.S. Patent No. 7,226,459 as anticipated or obvious in light of the prior art. Because the Board erred in concluding that the Galloway reference is analogous art but did not err as to the remaining rejections, we affirm-in-part, reverse-in-part, and remand.

## I

Smith & Nephew owns the '459 patent, entitled “Reciprocating Rotary Arthroscopic Surgical Instrument.” J.A. 48. The specification describes a surgical instrument with a cutting member for cutting semi-rigid tissue. “The cutting edge of conventional arthroscopic surgical instruments . . . tend to bounce away from [semi-rigid] tissue.” J.A. 64 at 2:16–19. In this invention, a drive coupled to a cutting member causes the cutting member to simultaneously rotate, translate, and reciprocate. This enables the surgical instrument to efficiently cut into large volumes of semi-rigid tissue.

Claim 1 recites:

A surgical instrument, comprising:

a cutting member including an implement for cutting tissue; and

a drive coupled to the cutting member to *simultaneously rotate, translate, and reciprocate* the cutting member in response to only a rotational force applied to the drive in a single direction and to cut tissue during simultaneous rotation and translation of the cutting member;

wherein the drive includes a drive member attached to the cutting member, the drive member including a helical groove, and the drive includes a translation piece disposed in the groove such that rotary driving of the drive member results in simultaneous reciprocation of the drive member relative to the translation piece.

J.A. 66 at 5:56–6:2 (emphasis added).

During inter partes reexamination, the Examiner issued ten rejections covering claims 1–16, 19–22, and 25–33. The Board found all claims at issue unpatentable, but did not address Rejections 6–7 and 9 because they covered claims that had “been rejected in at least one other rejection discussed and affirmed above.” J.A. 46. Smith & Nephew appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A) (2012).

## II

We review the Board’s legal conclusions de novo and its factual findings for substantial evidence. *Rambus Inc. v. Rea*, 731 F.3d 1248, 1251 (Fed. Cir. 2013). Obviousness is a legal question based on underlying factual determinations. *Id.* at 1251–52. “[W]e review the Board’s ultimate claim constructions de novo and its underlying factual determinations involving extrinsic evidence for substantial evidence.” *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1297 (Fed. Cir. 2015).

## A

Smith & Nephew first challenges the Board’s construction of “simultaneously rotate, translate, and reciprocate.” The Board relied on this construction to affirm the Examiner’s rejection of claims 32 and 33 as anticipated by Middle<sup>1</sup> (Rejection 1). For an unexpired patent, the

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<sup>1</sup> U.S. Patent No. 5,490,860.

Board must construe claim terms according to their broadest reasonable interpretation. *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144 (2016).

The Board concluded that “[t]ranslation speaks for movement from one place (e.g., point A) to another (e.g., point B)” and “[r]eciprocation means ‘to move forward and backward alternately.’” J.A. 5. Smith & Nephew acknowledges that “the ordinary meaning of ‘reciprocate’ includes a translating motion.” Appellant’s Opening Br. 24. Nevertheless, Smith & Nephew argues that in the context of the ’459 patent, “reciprocation” and “translation” must describe distinct motions. Therefore, Smith & Nephew argues that the Board’s construction renders important claim limitations superfluous.

We disagree. The Board properly applied the plain meanings of both terms. Although it is true that the claims require both translation and reciprocation, we do not find that the Board’s construction renders claim terms superfluous. The Board reasoned that “these terms are not mutually exclusive of one another, and are not redundant to each other.” J.A. 26. Rather, “translation occurs when the cutting member moves in a linear direction either forward or backward,” and “[t]he cutting member reciprocates because this forward and backward linear translation alternates as long as the drive is rotating.” *Id.* (emphasis omitted). We find no error in the Board’s analysis. We also note that the Board’s construction clarifies that it is the *translating* motion that reciprocates, rather than the rotating motion.

Moreover, Smith & Nephew’s proposed construction is not the broadest reasonable interpretation. Smith & Nephew requests a construction of “reciprocation” that “restricts the reciprocation motion to the deceleration and acceleration phases that occur when the cutting member is in the act of changing direction.” Appellant’s Opening Br. 24. “Translation,” in its view, “should be construed as

a motion separate and distinct from the reciprocation motion, where the cutting member moves from one point to another along the longitudinal axis.” *Id.* “To act as its own lexicographer, a patentee must ‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning.” *Thorner v. Sony Comput. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citations omitted). The patent does not provide any specialized definition of the terms that would require a departure from the plain meaning.

Indeed, the patent specification supports the Board’s construction, not Smith & Nephew’s. Smith & Nephew requests limitations that are not found anywhere in the intrinsic record. The specification does not mention the acceleration or deceleration phases of the cutting member. Instead, the specification describes a method of cutting tissue by “simultaneously rotating and translating the inner member to cut the tissue,” in which “[t]he translating is reciprocating.” J.A. 64 at 1:64–2:3. The specification discloses another embodiment for cutting tissue in which the cutting member “undergo[es] simultaneous rotation and translation. The method may include that the translation is reciprocation.” *Id.* at 2:13–15. The specification also describes the “simultaneous rotating and reciprocating inner member of the surgical instrument” as the key to overcoming difficulties with cutting large volumes of semi-rigid tissue. *Id.* at 2:24–27. These embodiments indicate that translation and reciprocation are closely related actions, consistent with the Board’s claim construction. We therefore affirm the Board’s construction of “simultaneously rotate, translate, and reciprocate.”

Other than its claim construction argument, Smith & Nephew does not argue the Board’s anticipation finding is not supported by substantial evidence. Therefore, we affirm the determination that Middle anticipates claims 32 and 33.

## B

Smith & Nephew next argues that the Board erred in determining that claims 1–2, 4–16, 19, 25, and 27–31 would have been obvious. In Rejections 3–4 and 10, the Examiner rejected these claims as obvious over Middle in view of Kaplan,<sup>2</sup> Saadat,<sup>3</sup> or Spear.<sup>4</sup>

The Board found that Middle discloses most of the limitations of claims 1–16, 19, and 25–31, but does not disclose a “drive member including a helical groove.” Middle instead discloses a cam groove “which bends towards one end . . . , such as a continuous sine wave.” J.A. 364 at 2:53–58. Middle explains that the shape of the cam groove can be modified to vary the number of reciprocations per rotation of the drive piston. J.A. 367 at 7:26–30. The groove depicted in Middle provides more than one reciprocation per rotation of the piston. Kaplan, Saadat, and Spear all disclose a helical groove. The Board found that a person of ordinary skill in the art would have been motivated to modify Middle’s device to use the helical groove in Kaplan, Saadat, or Spear, because this would achieve less than one reciprocation per rotation.

The Board’s conclusions are supported by substantial evidence. Smith & Nephew argues there is no motivation to combine Middle with Kaplan, Saadat, or Spear. According to Smith & Nephew, Middle does not disclose or suggest less than one reciprocation per rotation, and there is no reason a skilled artisan would desire to have less than one reciprocation per rotation. To the contrary, obviousness does not require the prior art to specifically disclose less than one reciprocation per rotation. Middle

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<sup>2</sup> U.S. Patent No. 6,402,701 B1.

<sup>3</sup> U.S. Patent No. 5,899,915.

<sup>4</sup> U.S. Patent Application Pub. No. 2001/0039963.

teaches the shape of the cam groove affects the number of reciprocations per rotation. This supports the Board's finding "that such a ratio was one variable that would have been considered in the normal course of designing such medical tools." J.A. 35. The Board also relied on the testimony from Hologic's expert, Mr. Walbrink, to conclude that using less than one reciprocation per rotation would have been an obvious design choice at the time of the invention. J.A. 36–37; *see* J.A. 1239. Smith & Nephew has not demonstrated that the prior art teaches away from using less than one reciprocation per rotation. Mr. Walbrink further testified that modifying Middle to include a helical groove "would require only routine engineering from one of skill in the art." J.A. 1967. Substantial evidence therefore supports the Board's conclusion that "such a substitution would have been a predictable variation that was within the skill of those in the art, which would have yielded predictable results, and thus would have been obvious to one of ordinary skill in the art." J.A. 35. Accordingly, we affirm the Board's conclusion that claims 1–2, 4–16, 19, 25, and 27–31 would have been obvious.

### C

The Board affirmed Rejection 2, in which the Examiner rejected claims 1–14, 19, 25, and 27–31 as obvious over Kaplan in view of the knowledge of a skilled artisan. Each of these claims other than claim 3 was also rejected as obvious in Rejections 3–4 and 10, discussed above. Claim 3 and the claims from which it depends require simultaneous rotation, translation, and reciprocation of the cutting member, and the use of a helical groove on a drive member to impart reciprocation in response to a rotating drive member.

Figures 10 and 24 of Kaplan disclose a needle biopsy instrument that is configured for the needle to simultaneously rotate and reciprocate. J.A. 397 at 14:13–16; J.A.

398 at 15:65–16:3. The embodiments in Figures 10 and 24 do not use a helical groove to produce reciprocation. Figure 8 of Kaplan discloses using a helical groove to produce a translating, reciprocating motion, but in this embodiment a sleeve restrains the needle from also rotating. J.A. 377; J.A. 397 at 13:51–67. The Board found it would have been obvious to “substitut[e] the groove shown in Figure 10 of Kaplan for achieving reciprocation and translation from rotation with the helical groove shown in Figure 8 to achieve the same, predictable result.” J.A. 44.

Smith & Nephew argues that the Board erred in failing to explain “why a skilled artisan would choose to specifically modify Kaplan’s disclosure by combining Figure 8 with Figures 10 or 24 in a manner that includes a helical groove but also allows for simultaneous rotation, translation, and reciprocation of the biopsy needle.” Appellant’s Opening Br. 67 (emphasis omitted). We disagree. The Board’s decision cited the Examiner’s finding that helical grooves, such as those shown in Kaplan Figure 8 and ’459 patent Figure 3A, were well known in the art, and would provide an alternative mechanism for achieving the same reciprocation and translation as Kaplan’s Figures 10 or 24 with predictable results. Because the Kaplan patent itself supports the Examiner’s findings, we agree that a person of ordinary skill would have been motivated to implement this “predictable variation.” See *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Thus, we affirm the Board’s conclusion that claims 1–14, 19, 25, and 27–31 would have been obvious at the time of the invention.

#### D

Finally, we turn to Rejections 5 and 8, in which the Board affirmed the rejection of claims 1–2, 4–14, 19–22, 25, and 27–31 as obvious based on the combinations of



Galloway with Middle and Kaplan. Smith & Nephew argues that Galloway is not analogous art. We agree.

Galloway is titled, “Reciprocating Apparatus and Cam Follower for Winding a Package.” J.A. 878. “This invention relates to the production of glass fibers, and in particular, to winding a glass fiber strand to form packages.” *Id.* at 1:21–23. Galloway discloses a reciprocating apparatus with a helical groove. *Id.* at 2:19–21. The Board found that Galloway was relevant to solving the technical problem of converting rotational motion into simultaneous rotational, translational, and reciprocal motions. J.A. 40. Because Middle teaches that the shape of the cam groove can be modified to vary the number of reciprocations per rotation of the drive piston, the Board found that a person of skill in the art would seek out teachings regarding relevant cam grooves. *Id.* at 40–41.

To determine if a prior art reference is analogous, we consider “(1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.” *In re Clay*, 966 F.2d 656, 658 (Fed. Cir. 1992). “A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem.” *Id.* at 659.

The facts of *In re Clay* are illustrative. In that case, both the patented invention and the prior art reference related to the petroleum industry, and both taught using a gel. *Id.* at 657–58. We found that they were not directed to the same field of endeavor because the two inventions were used in very different environments (one, the extraction of crude petroleum, and the other, the

storage of refined liquid hydrocarbons). *Id.* at 659–60. We also found that the reference was not reasonably pertinent to the problem the inventor was trying to solve, because they explicitly were intended to solve different problems.

In this case, the Board erred by too narrowly construing the problem addressed by the '459 patent. The inventors of the '459 patent focused on solving the difficulty in cutting large amounts of semi-rigid tissue. Galloway, in contrast, is directed to winding glass fiber. Even though both ended up with similar *mechanical* solutions, it is beyond a stretch to say that Galloway “logically would have commended itself to an inventor’s attention in considering his problem.” *Id.* at 659. Because Galloway is not analogous prior art, the Board erred by affirming Rejections 5 and 8.

Most of the claims covered by Rejections 5 and 8 were also subject to other rejections. As noted above, substantial evidence supports the Board’s conclusion that claims 1–2, 4–14, 19, and 27–31 would have been obvious. As far as this appeal is concerned, the Board relied only on the Galloway reference to conclude that claims 20–22 would have been obvious. The Board did not, however, consider Rejections 6 or 9, in which the Examiner determined that claims 21 and 22 would have been obvious in light of the combination of Middle and Spear or Kaplan and Spear. Therefore, we reverse the Board’s conclusion that claim 20 would have been obvious, and remand for the Board to consider claims 21 and 22 under Rejections 6 and 9.

### III

Because substantial evidence does not support the Board’s conclusion that Galloway is analogous art, we reverse the Board’s conclusion that claim 20 would have been obvious and remand for the Board to reconsider the Examiner’s rejections of claims 21 and 22 under different

combinations. We affirm the Board's affirmance of the Examiner's rejection of claims 1–16, 19, and 25–33.

**AFFIRMED-IN-PART, REVERSED-IN PART, AND  
REMANDED**

No costs.