United States Court of Appeals for the Federal Circuit

CONVOLVE, INC.,
Plaintiff-Appellant

THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Plaintiff

v.

COMPAQ COMPUTER CORP.,
Defendant-Appellee

SEAGATE TECHNOLOGY, INC.,
Defendant

SEAGATE TECHNOLOGY, LLC,
Defendant-Appellee

2014-1732

Appeal from the United States District Court for the Southern District of New York in No. 1:00-CV-05141, Judge George B. Daniels.

Decided: February 10, 2016

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appellant. Also represented by GREGORY A. MARKEL, KEVIN J. MCNAMEE, ROBERT MACAULAY POLLARO.

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Before DYK, TARANTO, and HUGHES, *Circuit Judges.*

HUGHES, *Circuit Judge*.

This case returns to us after a remand to the Southern District of New York. In the first appeal, we reversed the district court's summary judgment ruling that no accused products met the patent's "selected unwanted frequencies" limitation and remanded for further proceedings. On remand, the district court granted summary judgment on alternative grounds. Because we agree with the district court that Seagate's disk drives do not possess a user interface, but conclude that the district court erred by importing limitations into the "command" steps and in granting summary judgment based on intervening rights, we again affirm-in-part, vacate-in-part, reverse-in-part, and remand for further proceedings.

I

As we explained in the first appeal, the technology at issue relates to improvements in computer hard drives described in U.S. Patent No. 6,314,473. *Convolve, Inc. v. Compaq Comput. Corp.*, 527 F. App'x 910, 913 (Fed. Cir. 2013) (*Convolve I*). Hard drives store data as magnetized

spots on the surface of disks or "platters" inside the drive. These spots are arranged in concentric circles, called tracks, on the surface of the platters. The hard drive also contains an arm that "seeks" between different "tracks" to read or write information on those tracks. As relevant to this appeal, hard drives ordinarily employ two motors to read and write data: (1) a spindle motor that spins circular platters, "allowing the head to cover the platters' area while traversing over a line or arc;" and (2) "the voice coil motor . . . that moves the arm across the spinning platters." *Id.* The process of moving the arm across the platters, called "seeking," generates vibrations in the arm and the attached read/write head, which generates acoustic noise audible to the user. The specification describes the inverse relationship between the seek time and the acoustic noise: the shorter the seek time, the greater the vibration and the greater the acoustic noise. Although acoustic noise can be generated from both the spindle motor and the seek process, the '473 patent focuses on methods and apparatuses for improving hard drives by reducing acoustic noise generated by the movement of the disk drive's arm and read/write head, i.e., the seek process. The patent describes a technique to minimize the vibrations of the head as it moves over the rotating hard disk that requires a "user interface" to control the speed at which the seek arm operates such that a user could select a quiet mode, which may have a slower read/write time but generates less noise.

Claim 10 is representative, and is reproduced below. The words added during reexamination are italicized and the words deleted are in brackets:

> Method for controlling operation of a data storage device, comprising:
>
> > providing a user interface for controlling one of a seek time of the data storage de-

> vice and [an] *a seek* acoustic noise level of the data storage device;
>
> operating the user interface so as to alter settings of one of the seek time and the *seek* acoustic noise level of the data storage device in inverse relation; and
>
> outputting commands to the data storage device causing the data storage device to alter seek trajectory shape by shaping input signals to the data storage device to reduce selected unwanted frequencies from a plurality of frequencies in accordance with the altered settings.

'473C1 patent col. 2 ll. 23–35 (reexamined claim 10).

Convolve, Inc. (Convolve) filed suit against Seagate Technology, LLC and Seagate Technology, Inc. (Seagate) and Compaq Computer Corp. (Compaq) in July 2000, alleging, among other things, infringement of the '473 patent. *See Convolve I*, 527 F. App'x at 916. Seagate's accused products are disk drives with an on-board controller that interfaces with a host computer. The controller uses an industry standard interface, either ATA or SCSI, and the parties group these together for purposes of this appeal. The ATA/SCSI interface accepts commands from the host computer processor to switch between a "quiet" and a "performance" mode, and translates those commands for the hard drive, instructing it to change seek speed according to the selected mode. Compaq's accused products are computers that contain the F10 BIOS user interface in combination with a Seagate hard drive. The F10 BIOS is a graphical user interface that allows a user to select certain hardware settings, including the seek speed and acoustic noise of a Seagate hard drive, but does not itself issue commands that directly change the seek speed of the disk drives.

In March 2005, the district court issued a claim construction order, which served the basis for its 2011 order granting summary judgment. The district court held that no accused products met the patent's "selected unwanted frequencies" limitation. We reversed, finding that issues of fact precluded summary judgment of no direct or indirect infringement. On remand, at the defendants' request, the district court granted summary judgment on three grounds: (1) Seagate's ATA and SCSI interfaces do not meet the "user interface" limitation because they merely facilitate "[d]evice-to-device communications involved in the subsequent execution of a user's selected mode," J.A. 36; (2) Compaq's computers do not meet the "commands" limitation because the processor generating the user interface does not itself generate the claimed "commands," J.A. 38–43; and, in the alternative, (3) "patent infringement liability is precluded by intervening rights arising from [a] December 2, 2008 substantive amendment to the asserted claims," J.A. 43. Convolve appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

II

This court reviews a district court's decision concerning summary judgment under the law of the regional circuit. *Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1344 (Fed. Cir. 2012). The Second Circuit reviews the grant or denial of summary judgment de novo. *Major League Baseball Props., Inc. v. Salvino*, *Inc.*, 542 F.3d 290, 309 (2d Cir. 2008). "To prove literal infringement, the patentee must show that the accused device contains each and every limitation of the asserted claims." *Ericsson, Inc. v. D-Link Sys., Inc.*, 773 F.3d 1201, 1215 (Fed. Cir. 2014). When determining whether a patent is infringed, the court must first "'determine[ ] the scope and meaning of the patent claims asserted,' and then compare[ ] the claims 'to the allegedly infringing devices.'" *Grober*, 686 F.3d at 1344 (quoting *Cybor Corp. v. FAS Techs., Inc.*, 138

F.3d 1448, 1454 (Fed. Cir. 1998)). To the extent review of the district court's claim construction is necessary, we review the ultimate determination as to claim meaning de novo, while giving deference to the district court's factual findings as to the claim scope. *Teva Pharm. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 836–38 (2015).

A

The district court did not err in granting summary judgment of no direct infringement to Seagate because Seagate's ATA/SCSI disk drives do not meet the "user interface" limitation present in the asserted claims.

In its 2005 *Markman* order, the district court construed "user interface" as "software, hardware, firmware, or a combination thereof that allows a person, directly or indirectly, to alter parameters." J.A. 96. In construing the term, the court determined that a "user interface" is not limited to a graphical user interface or mechanical switches, which were both disclosed in the specification. The court rejected a broader construction that would have stated that the "user interface" "may be accessed via other software or hardware, e.g., as a jumper, protocol, software program, keyboard or mouse." *See* J.A. 31 n.11. In rejecting that construction, the district court explained that such an interpretation "fails to give meaning to the adjective 'user,' which distinguishes the interface from other types of interfaces used in the computing field," such as "an advanced programming interface (API) which allows one software program to 'interface' with another." J.A. 81. For the district court, "[t]he plain meaning of 'user interface' requires a user . . . ." *Id.* By including the word "indirectly," the district court intended to avoid "pedantic arguments" that a graphical user interface is not a "user interface" because the user must "position[ ] the cursor on the screen using a mouse," such that the "user is interfacing with the mouse, and the mouse is interfacing with the computer." J.A. 81.

Convolve takes issue with how the district court applied its construction in the summary judgment proceeding. In the summary judgment order, the district court stayed true to its construction, and rejected Convolve's attempt to "expand the 'user' aspect of the term to the point of obsolescence." J.A. 34. The court explained "[t]he proper interpretation of this Court's 'user interface' construction limits the application of 'indirectly' to the manner in which a user alters disk drive parameters by communicating a command to the computer (through some combination of software, hardware, and firmware), and the manner in which the user's command—once received by the user interface—is executed." J.A. 35. In other words, "'indirectly' preserves nothing more than the true relationship between the user and his *actual act of selection*." J.A. 36.

We find that both the district court's construction of the term "user interface" and its application of that construction were proper. The language of the claims supports the district court's construction of "user interface" as "the site at which a user actually selects an operating mode." J.A. 36. The claim term is "user interface," not just "interface." The word "user" therefore must distinguish between different kinds of interfaces. In the claimed method, the only action that a user takes is selecting an operating mode. The "user interface" is thus the interface that the user interacts with to select an operating mode—not subsequent interfaces or components that merely execute the user's selection. As the district court found, a construction of "user interface" that includes a subsequent device-to-device interface involved in the execution of a mode selection "effectively reads the term 'user' out of the claim language." J.A. 32.

The specification confirms this reading. The specification discloses several embodiments of a "user interface," all of which the user interacts with directly to select an operation mode. The specification discloses five graphical

user interfaces, shown in the figures as computer screen images with arrows or a sliding bar that a person manipulates with a mouse to select seek speed. It also describes a mechanical switch on the hard drive itself that a user physically pushes to change the operation mode. Although the claims are not limited to these particular embodiments, the nature of these embodiments confirms that a "user interface" must be the site at which the user actually selects an operation mode.

Convolve argues that the prosecution history shows that it specifically broadened the asserted claims to include Seagate's hard drives. According to the file history, the original claims recited a "graphical user interface" or a "controller," and Convolve amended this term to read "user interface." J.A. 1930–42. While these amendments may be broadening in some sense (including not just graphical user interfaces but mechanical interfaces, and not just controllers but software interfaces), they do not necessarily include the on-board interfaces on Seagate's hard drives. The only evidence that these amendments were meant to encompass Seagate's product is a declaration by one of the inventors submitted in this litigation. J.A. 1096, ¶ 96. This post-hoc explanation is not enough to overcome the language of the claims and the disclosures in the specification.

Moreover, the district court's clarified construction is consistent with its reasoning in the 2005 *Markman* order. The district court could not have intended "indirectly" to bring post-selection interfaces within the scope of "user interface." Under this reading, the term "user interface" would include an interface that facilitates purely device-to-device communication—such as the ATA/SCSI interface on Seagate's hard drives. But the district court specifically excluded device-to-device interfaces when it declined to adopt Convolve's proposed construction of "user" as "a person or device that uses the user interface." J.A. 81.

Turning to the application of the district court's construction to the facts of this case, we are not persuaded that the district court erred in finding that Convolve failed to raise an issue of material fact. ATA and SCSI are both device-to-device interfaces that connect the disk drive with the host computer processor. *See, e.g.*, J.A. 2176 ¶ 25; J.A. 4686 (ATA and SCSI are interfaces "between host system and storage devices"). Indeed, Convolve's expert conceded that he could not change a Seagate disk drive's mode without "install[ing] it in a computer" and using "some other tool that would facilitate [him] or facilitate [his] communication with the drive to alter settings." J.A. 4181–82; J.A. 2176 ¶ 29. While it is true that the user can interact through a series of intermediaries, that is not the "pedantic-type" argument ruled out by the district court's original claim construction. Convolve's arguments on appeal collapse into a challenge of the district court's claim construction, and fail to identify an error in the court's application of its correct construction to the facts of the case.[1]

Lastly, our decision in *Convolve I* does not preclude the district court's construction of "user interface." As an initial matter, Convolve waived this argument by not raising it below. *See Golden Bridge Tech., Inc. v. Nokia, Inc.*, 527 F.3d 1318, 1322 (Fed. Cir. 2008). To the extent that the argument was implicitly raised below, we interpret our own mandate de novo, *Retractable Tech., Inc. v. Becton Dickinson & Co.*, 757 F.3d 1366, 1369 (Fed. Cir 2014), and conclude that the prior mandate does not control the claim construction at issue here. In *Convolve I*, this court vacated summary judgment of non-

[1] A jury determination in a parallel proceeding in the Eastern District of Texas applying a different claim construction does not compel a different result. Cf. J.A. 5051–52; J.A. 5063–65.

infringement under an inducement theory, because contrary to the district court's conclusion, the panel found some evidence that Compaq and Seagate's customers operated their products in an infringing manner. Specifically, there was evidence that Compaq and Seagate provided "specific tools, with attendant instructions, on how to use the drives in an infringing way." *Convolve I*, 527 F. App'x at 929. Convolve argues that the panel essentially held that Seagate's devices could meet the "user interface" limitation by finding they could directly infringe. But the panel did not address this precise question. Moreover, it construed only one claim term, and specified that "[n]o other claim construction is relevant to the district court's ruling on the claims of the '473 patent." *Id.* at 926. This court's opinion in *Convolve I* is not controlling of the claim construction and summary judgment issues here.

B

The district court erred by granting summary judgment that Compaq's F10 BIOS interface does not meet the "commands" limitation of the asserted claim. In its summary judgment ruling, the district court treated all asserted claims as having the same scope, and concluded that the recited "commands" must be "shaped when issued from the processor in order to satisfy the claim limitation[s]," J.A. 42, and therefore Compaq's F10 BIOS interface cannot infringe because it itself does not issue shaped commands. Implicit in this ruling is a claim interpretation that requires a singular processor associated with the user interface that issues commands, and excludes the existence of a second processor capable of issuing those commands, such as one integrated into the data storage device. This overlooks the differences among the asserted claims.

The parties agree that the accused Compaq F10 BIOS interface issues generic commands, not "shaped com-

mands" as required by the claims. Neither party contested, at the district court or on appeal, the district court's 2005 construction of "data storage device" as including a device that "receives shaped commands from processor which may be integrated into the drive." J.A. 85. Likewise, neither party contests the district court's construction of the term "outputting commands to the data storage device" to encompass a situation where the command originates from the device itself. J.A. 86. Consistent with the specification's disclosure of an embodiment where the actuator seeks "in accordance with control signals received from processor **73**," which may be a "'separate controller' dedicated to the disk drive," '473 patent col. 10 ll. 6–14, these constructions together cover a disk drive that receives the required "shaped commands" from an on-board interface, rather than a separate computer processor.

Turning to the specifics of the claims, we look to three groups. Claims 7, 8, and 10–14 do not plainly require the "user interface" to perform the "outputting commands" function. These claims require three core steps: "providing" a user interface, "operating" the user interface, and "outputting commands." *See, e.g.*, '473C1 patent col. 2 ll. 23–35 (reexamined claim 10). Although a user interface component is the object of the first two steps, the third step simply recites "outputting commands to the data storage device," without tying that outputting to a particular processor or to the antecedent user interface. *See id.* The language of these claims does not, as the district court assumed, require the user interface to issue the "shaped commands" recited in the claims. This is consistent with the court's interpretation of the other claim elements, and with the specification, which discloses an embodiment where the shaped command originates from the device itself, J.A. 86. Thus, it was error for the district court to grant summary judgment for these claims.

Claims 9 and 15 pose a greater challenge, however, because they recite an apparatus comprising "a processor" that executes certain process steps "to generate a user interface," "to alter settings in the user interface," and "to output commands to the data storage device." *See, e.g.*, '473C1 patent col 2 ll. 7–22 (reexamined claim 9). This court has "repeatedly emphasized that an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising.'" *KCJ Corp. v. Kinetic Concepts, Inc.,* 223 F.3d 1351, 1356 (Fed. Cir. 2000). The exceptions to this rule are "extremely limited: a patentee must 'evince [ ] a clear intent' to limit 'a' or 'an' to 'one.'" *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). Thus, absent a clear intent in the claims themselves, the specification, or the prosecution history, we interpret "a processor" as "one or more processors."

Here, we find no such evidence clearly limiting "a processor" to a singular processor. While it is true that the patentee recited other claim terms in the plural, e.g., "output commands," "alter settings," or "input signals," this does not compel a departure from our general rule that "a" means "one or more" when following the open-ended term "comprising." Such a conclusion is bolstered by the specification's plain disclosure of an embodiment where "seeks" are controlled by a "separate controller dedicated to the disk drive." '473 patent col. 10 ll. 6–14. Thus, it was error for the district court to grant summary judgment for these claims.

Claims 1, 3, and 5, likewise, recite "a processor," but do so in the context of reciting the function of the "user interface." Specifically, claim 1 recites a "[u]ser interface for . . . working with a processor . . . comprising:" a means for controlling seek time on a data storage device, and a "means for causing the processor to output commands to the data storage device." '473C1 patent col. 1 ll. 22–37

(reexamined claim 1). Here, unlike claims 9 and 15, the language and structure of claim 1 demonstrate a clear intent to tie the processor that "output[s] commands to the data storage device" to the "user interface." Specifically, claim 1 recites "a processor" in the preamble before recitation of "comprising," and the claim body uses the definite article "the" to refer to the "processor." This reference to "the processor," referring back to the "a processor" recited in preamble, supports a conclusion that the recited user interface is "operatively working with" the same processor to perform all of the recited steps. In other words, the claim language requires a processor associated with the user interface to issue the shaped commands of the claims. Given this claim language, which contrasts with the claims described above that allow for multiple processors, we conclude that claims 1, 3, and 5 require the user interface to work with a single processor in performing all of the claim steps. Under this construction, the Compaq computers do not meet each limitation of the claims, because the "user interface" processor does not send shaped commands to the hard drive.

On appeal, Compaq argues that in a 2008 reexamination, Convolve disclaimed a system in which a processor other than the "user interface" processor performs the "outputting commands" function. According to Compaq, Convolve traversed an anticipation rejection based on the "Ray Thesis" by arguing that, unlike the claimed invention, "the commands of Ray did not originate from a host computer user interface." J.A. 4218–19. We disagree. The prosecution history does not clearly disclaim a system in which a processor other than the "user interface" processor issues the shaped commands. In the face of an anticipation rejection based on the Ray Thesis, the patentee argued that the prior art does not disclose a host processor at all, J.A. 5020, or a user interface that is in any way involved in the "outputting commands" step—not

that the Ray method lacks a user interface that itself issues "outputting commands," *see* J.A. 5021. And the examiner agreed that "Ray does not disclose a host processor running a user interface . . . ." J.A. 4219.

To the extent the examiner suggested in a later office action that "the user interface runs on the processor of the host computer, but not on the processor of the disk drive," the applicant objected and argued that the '473 patent discloses that "the user interface can run (i) on the processor of the host computer, (ii) on the processor of the disk drive, (iii) or both." J.A. 5046. The examiner subsequently allowed the claims. Although there is some evidence that the examiner also understood the claims to require that all functions occur on a user interface "running on the processor external to the data storage device," J.A. 4218–19, it is not clear from the record that allowance was based on this understanding, or that the patentee disclaimed this claim scope. Thus, we conclude that the district court did not err in granting summary judgment that Compaq's F10 BIOS does not meet the "commands" limitation in claims 1, 3, and 5. But, we find the district court erred by interpreting the remaining asserted claims as requiring the processor associated with the user interface to also generate the claimed commands.

III

Having concluded that the district court erred in granting summary judgment of non-infringement with respect to the "commands" limitation, we turn to the intervening rights inquiry. "A patentee of a patent that survives reexamination is only entitled to infringement damages for the time period between the date of issuance of the original claims and the date of the reexamined claims if the original and the reexamined claims are 'substantially identical.'" *R & L Carriers, Inc. v. Qualcomm, Inc.*, 801 F.3d 1346, 1351 (Fed. Cir. 2015) (quoting 35 U.S.C. § 252 (2012)). "[I]t is the scope of the claim that

must be identical, not that identical words must be used." *Slimfold Mfg. Co., Inc. v. Kinkead Indus., Inc.*, 810 F.2d 1113, 1116 (Fed. Cir. 1987). As a result, amendments made during reexamination do not necessarily compel a conclusion that the scope of the claims has been substantively changed. *See, e.g.*, *Bloom Eng'g Co.*, 129 F.3d at 1250 ("There is no absolute rule for determining whether an amended claim is legally identical to an original claim."). This is true even where the claims at issue were amended during reexamination after a rejection based on prior art. *Laitram Corp. v. NEC Corp.*, 952 F.2d 1357, 1362–63 (Fed. Cir. 1991) (*"Laitram I*"); *see also R&L Carriers,* 801 F.3d at 1350–51 (emphasizing that the reasoning for the amendment does not matter; the focus is on the scope of the claims). Rather, "[t]o determine whether a claim change is substantive it is necessary to analyze the claims of the original and the reexamined patents in light of the particular facts, including the prior art, the prosecution history, other claims, and any other pertinent information." *Laitram I*, 952 F.2d at 1362–63.

In determining the scope of the claims, we apply the traditional claim construction principles of *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), paying particular attention to the "examiner's focus in allowing the claims" after amendment. *R & L Carriers*, 801 F.3d at 1351; *see also Laitram Corp. v. NEC Corp.*, 163 F.3d 1342, 1348 (Fed. Cir. 1998) (*Laitram IV)* (When an amendment is made during the reexamination proceedings to overcome a prior art rejection, that is a "highly influential piece of prosecution history."). On appeal, we "review the district court's subsidiary factual findings on the scope of the reexamined and original claims for clear error, but the ultimate conclusion regarding the scope of the claims de novo." *R & L Carriers*, 801 F.3d at 1350 (citing *Teva*, 135 S. Ct. at 841–42).

In this case, the patentee added the modifier "seek" in front of "acoustic noise" during the 2008 reexamination

proceedings after a prior art rejection. Our task, therefore, is to determine whether the pre-2008 reexamination claims are limited to "seek acoustic noise" or whether the original claims cover both seek and spindle acoustic noise. Applying the *Phillips* framework, we conclude that the claims were originally limited to seek acoustic noise, and the addition of the word "seek" did not alter the scope of the claims.

A

The proper claim construction is "the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips*, 415 F.3d at 1313. The specification "is the single best guide to the meaning of a disputed term" and is usually "dispositive." *Id.* at 1315 (citation omitted). On their face, the original claims recite only "acoustic noise," which could encompass any manner of acoustic noise, including that generated from the spindle. But when read in conjunction with the remaining claim limitations and in light of the specification and prosecution history, a person of ordinary skill in the art would understand the claims to be limited to seek acoustic noise.

The specification does not use the term "seek acoustic noise" or expressly exclude acoustic noise generated by spindle rotation, and, at some points, it teaches that acoustic noise can arise from more than one type of vibration. *See, e.g.*, '473 patent col. 2 ll. 5–10; *id.* at col. 9 ll. 60–67. However, the focus of the specification is on the seek process and the noise it generates. For example, the specification states that "the present invention" is directed to employing a "dynamic system" to "reduc[e] unwanted vibrations, which, if unchecked, could lead to disk read/write errors or excessive noise." *Id.* at col. 1 ll. 15–20. And the only vibrations and noise described in the Background section are those caused by the move-

ment of the disk drive's seek arm—nowhere in the Background or elsewhere in the specification is mention made of noise caused by spindle motor operation or any other form of acoustic noise. *See, e.g.*, '473 patent col. 1 ll. 28–36; *id.* at col. 19 ll. 6–32 (describing vibration and acoustic noise caused by movement of the seek arm).

This understanding is reinforced by other claim limitations. For example, the claims expressly tie "acoustic noise" to "seek time" by reciting settings for "seek time" and "acoustic noise" "in inverse relation." *See, e.g.*, J.A. 154 (claim 10). Although not explicit in the claims, the specification makes clear that changes in "seek time" result only from increasing or decreasing the speed at which the arm in the hard drive moves from track-to-track. *See* '473 patent col. 1 ll. 39–43 ("The drive's seek time comprises the time it takes for the drive's head to come to rest at a position where the head can perform a read/write operation on a particular track."); *see also id.* at col. 6 l. 65–col. 7 l. 3 ("Disk drive noise level and seek time vary inversely along the continuum, meaning that, as the noise level of the disk drive progressively increases, the seek time of the disk drive progressively decreases. Likewise, as the noise level of the disk drive progressively decreases, the seek time of the disk drive progressively increases."); *id.* at col. 7 ll. 31–35 ("[T]here is an effective trade-off between seek time and noise level, meaning that as seek time increases, noise level decreases and vice versa."). To be sure, changes in spindle rotation speed, which generate acoustic noise, may affect the time needed to read the storage device. But read time is a separate concept from seek time. There is no evidence in the record from which we can conclude that a reduction in spindle speed is in any way connected to seek speed. Seagate thus cannot show that there is any relation between "seek time" and acoustic noise other than the noise generated by the movement of the seek arm.

Lastly, the "outputting commands" step of the claimed method further suggests that the claims are limited to seek acoustic noise. This step requires outputting commands that "alter seek trajectory shape . . . to reduce unwanted frequencies . . . in accordance with the altered settings." In other words, one means of reducing the claimed "acoustic noise" is specifically directed to the seek process (seek trajectory shape) and the "unwanted frequencies" associated with that process.

B

While the specification, in and of itself, may not require the "seek acoustic noise" construction, the prosecution history of the '473 patent before the 2008 reexamination demonstrates that acoustic noise is limited to "seek" acoustic noise. In an office action dated March 26, 2001, the Patent Office rejected several of the claims as anticipated or obvious in light of two prior art references: Rowan and Koizumi. The Patent Office determined that Rowan teaches a mechanism for controlling seek time and both electrical noise and acoustic noise from the spindle motor, J.A. 1893, and that Koizumi teaches "reduc[ing] the spindle speed to achieve the quiet mode," J.A. 1896. In response, on April 2, 2001, the patentee amended the claims "to state explicitly that the noise to be controlled is acoustic noise as opposed to electrical noise." J.A. 1909. In explaining the reasoning for the amendment, the applicant went further and made clear that the acoustic noise problems addressed by the claims and the specification are limited to those generated by the seek function, not the spindle motor. *See* J.A. 1910 (explaining that "as now claimed, it is the acoustic noise level of the data storage device that is controlled by changing seek trajectory shape to reduce unwanted frequencies by shaping input signals to the data storage device"). The applicant also emphasized that "the acoustic noise reduction taught by Rowan deals only with control of the spindle motor, not with control of seek." J.A. 1910. As for the

combination of Rowan and Koizumi, the applicant argued that the combination fails to render obvious the claimed invention because "the acoustic noise reduction technique of Rowan . . . involves altering control of only the spindle motor to reduce acoustic noise." J.A. 1911. And there would be no motivation to combine Koizumi, which "reduced the spindle speed to achieve the quiet mode," "with a reference that modifies the seek operation as opposed to spindle speed to reduce noise." J.A. 1912.

To the extent the specification alone does not limit the claims to seek acoustic noise, these prosecution history statements show a clear intent to limit the scope of the claims to seek acoustic noise—i.e., acoustic noise generated by the movement of the drive's arm and read/write head during the seek process. We note further that the appellees themselves submitted a proposed construction for the term "acoustic noise level of the data storage device" that expressly excluded "audible noise emanating from the spindle motor of the 'data storage device.'" J.A. 656.

C

The prosecution history of the 2008 reexamination—a "highly influential" piece of evidence in the intervening rights inquiry, *Laitram IV*, 163 F.3d at 1348—does not compel a different result. Applying the broadest reasonable interpretation, the examiner focused exclusively on the language of the claims at the expense of the clear language in the specification and prior examination history. Indeed, the examiner stated that under the broadest reasonable interpretation standard "limitations are not read into the claims" and expressly rejected the patentee's attempt to interpret the claims in light of the specification. *See, e.g.*, J.A. 4932 ("In summary, the examiner submits that Patent owners have set forth narrow arguments, and relying largely on elements found

only in the '473 specification, that are more specific than required by the broad limitations of the claims.").

In the intervening rights analysis, our task is to interpret the scope of the claims per the *Phillips* standard, *see Laitram IV*, 163 F.3d at 1346–47, and under the correct standard, the specification "is the single best guide to the meaning of the disputed term," and is usually dispositive, *Phillips*, 415 F.3d at 1313. "In addition to consulting the specification, we have held that a court should also consider the patent's prosecution history, if it is in evidence." *Id.* at 1317 (citations and internal quotation marks omitted). Thus, the examiner's finding under the broadest reasonable interpretation that the claims are not limited to "seek acoustic noise" cannot be dispositive. To the extent that the district court adopted this reasoning wholesale without accounting for the differences between the broadest reasonable interpretation standard and *Phillips*, the court erred.

In sum, we conclude that the addition of the term "seek" before "acoustic noise" did not alter the scope of the claim. In so concluding, we decline to give significant weight to the patentee's and the examiner's use of the term "clarify" or "clarifying" in describing the amendment in prosecution. The inquiry must focus on a case-by-case analysis of the scope of the claims before and after claim amendment, which gives rise to the intervening rights challenge. *See Laitram I*, 952 F.2d at 1360–61 (rejecting a per se rule and emphasizing that each case is decided on its facts). Here, the language of the claims, read in light of the specification and prosecution history, especially the applicant's 2001 remarks and amendment, compel a conclusion that the claims as originally drafted were limited to seek acoustic noise despite the lack of an express recitation in the claims.

IV

In *Convolve I,* Compaq argued that the accused products do not maintain an inverse relationship between seek time and acoustic noise for all seeks, regardless of length, as required by the claims. We declined to reach that argument and left "those questions . . . to the trial court in the first instance." *Convolve I*, 527 F. App'x at 932. Compaq again raised the argument below, and again the district court declined to reach it. J.A. 24–25. And again on appeal, Compaq asks this court to rule in the first instance on its "inverse relationship" argument. But for the same reasons articulated in *Convolve I*, we decline to do so. The district court may consider this issue on remand.

V

For the reasons discussed above, we affirm the district court's grant of summary judgment that Seagate's ATA/SCSI hard drives do not infringe the asserted claims because they do not meet the user interface limitation of the claims. Likewise, we affirm the district court's grant of summary judgment of non-infringement by Compaq's accused products as to claims 1, 3, and 5 because Compaq's F10 BIOS does not meet the "commands" limitation of those claims. But we vacate the court's grant of summary judgment of non-infringement by Compaq's accused products as to claims 7–15 because the F10 BIOS does meet the "commands" limitation. Finally, because the addition of the term "seek" in reexamination did not alter the scope of the claims, we reverse the district court's grant of summary judgment of non-infringement based on its determination that liability is precluded by intervening rights.

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

No costs.