

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

ACTIVISION PUBLISHING, INC.,
Plaintiff,
v.
GIBSON GUITAR CORP.,
Defendant.

Case No. CV 08-1653-MRP (SHx)
**Order DENYING Gibson’s Motion
for Reconsideration of the Claim
Construction Order, SUSTAINING
Activision’s Objections to Evidence,
and GRANTING Activision’s Motion
for Summary Judgment**

In this action for declaratory relief, Plaintiff Activision Publishing, Inc. (“Activision”) seeks judgment that its “Guitar Hero” video games and associated peripherals (collectively, “Guitar Hero”) do not infringe U.S. Patent No. 5,990,405 (“the ’405 Patent”). The ’405 Patent is assigned to Defendant Gibson Guitar Corp. (“Gibson”).

Presently before the Court are (1) Gibson’s motion to reconsider the Court’s previous claim construction; (2) Activision’s objections to evidence proffered at the summary judgment hearing; and (3) Activision’s motion for summary judgment of noninfringement.

(1) Gibson’s reconsideration request is DENIED. In explaining its reasons for denial, the Court makes brief statements that clarify, but do not alter, its prior claim construction.¹

¹ In the course of its summary judgment discussion, however, the Court does alter its prior construction of “instrument audio signal,” a term not addressed by Gibson’s motion for reconsideration.

1 (2) Activision’s evidentiary objection to the proffered YouTube video is
2 SUSTAINED.

3 (3) Activision’s summary judgment motion is GRANTED for the reasons
4 explained below. In addition, the motion is GRANTED on the facts stated in (a)
5 Activision’s Statement of Undisputed Facts and Conclusions of Law for Its Motion
6 for Summary Judgment, together with the reasoning stated in (b) Activision’s Brief
7 In Support of Its Motion for Summary Judgment of Noninfringement; (c)
8 Activision’s Reply Brief in Further Support of Its Motion for Summary Judgment
9 of Noninfringement; and (d) Activision’s Response to Gibson’s Amended
10 Statement of Genuine Issues of Material Fact.

11 **I.**

12 **PROCEDURAL HISTORY**

13 In November 2006, Gibson licensed Activision to use Gibson trademarks
14 and trade dress in connection with Guitar Hero’s “custom guitar-controller
15 peripheral.” Second Amended Compl. Exh F. In exchange for those rights,
16 Activision paid Gibson a one-time, fixed license fee to cover the agreement’s term.
17 *Id.* Gibson, in turn, agreed to help promote Guitar Hero. *Id.* The agreement does
18 not refer to patent rights. *Id. See also* Exh. C (Letter to Mary A. Tuck noting the
19 same).

20 On January 7, 2008, Gibson sent a letter requesting that “Activision obtain a
21 license under Gibson’s ’405 patent or halt sales of any version of the Guitar Hero
22 game software . . . and . . . instrument controllers.” *Id.* Exh. B (Letter to Greg
23 Deutch). When Activision requested additional information, Gibson replied on
24 February 18, 2008 with a “Preliminary Claim Chart” comparing the claims of the
25 patent and Guitar Hero, and requesting that Activision respond by February 22,
26 2008. *Id.* at Exh. C (Letter to Mary A. Tuck). Activision sought additional time to
27 respond; and, on March 10, 2008, Activision denied Gibson’s request on ground of
28 noninfringement of any valid claim and noted that “Gibson knew about the Guitar

1 Hero games for nearly three years, but did not raise its patent until it became clear
2 that Activision was not interested in renewing the License and Marketing Support
3 Agreement.” *Id.* at Exh. D (Letter to F. Leslie Bessenger III).

4 On March 11, 2008, Activision filed this action. The operative complaint
5 requests declaratory judgment that (1) Guitar Hero does not infringe the ‘405
6 Patent; (2) that the ‘405 Patent is invalid; (3) Gibson is barred from alleging
7 infringement by an implied license and the doctrines of equitable estoppel and
8 laches; and (4) Activision has not breached its agreement with Gibson. *Id.* ¶¶ 18-
9 60.

10 Thereafter, on March 17 and March 20, 2008, Gibson filed actions in the
11 District Court for the Middle District of Tennessee that also allege infringement of
12 the ‘405 Patent. *Gibson Guitar Corp. v. Wal-Mart Stores, Inc. et al.*, No. 3:08-CV-
13 279; *Gibson Guitar Corp. v. Harmonix Music Systems, Inc. et al.*, No 3:08-CV-294.
14 The Tennessee actions name Guitar Hero retailers. They also allege that “Rock
15 Band,” a Guitar Hero competitor, infringes the ‘405 Patent. The Tennessee actions
16 are presently stayed in favor of this case.

17 Gibson’s previous firm, Stroock & Stroock & Lavan LLP (“Stroock”),
18 litigated this case through claim construction. Anticipating Activision’s summary
19 judgment motion, Stroock requested post-claim construction discovery to protect
20 Gibson’s interests. The Court allowed discovery. Activision complied, providing
21 Gibson information about Guitar Hero, as well as Guitar Hero-related information
22 proprietary to third-party system providers. Tel. Stat. Conf. Tr. (Oct. 8, 2008); Stip.
23 and Order on Sched. for Disc. and Briefing in Conn. with Motion for Summ. J.
24 (Oct. 15, 2008).

25 Stroock’s client, Gibson, then ceased responding to Stroock’s requests for
26 information. Due to Gibson’s lack of cooperation, Activision could not obtain all
27 the discovery it sought to prepare for its summary judgment motion. Tel. Stat.
28 Conf. Tr. (Dec. 2, 2008); Sched. Conf. Hearing Tr. at 5-7 (Jan. 5, 2009).

1 Finding good cause shown in papers filed under seal to protect the attorney-
2 client privilege, the Court subsequently allowed Stroock to withdraw as counsel for
3 Gibson. Withdrawal Hearing Tr. (Dec. 15, 2009).

4 Before allowing withdrawal, the Court itself attempted—on several
5 occasions—to contact Gibson’s then-interim general counsel. The Court also
6 instructed Stroock to make additional efforts to ensure its client would comply
7 with the duties imposed by this litigation. Stroock represented that it did so. Tel.
8 Stat. Conf. Tr. (Dec. 2, 2008); Tel. Stat. Conf. Minutes (Dec. 2, 2008) (noting the
9 name of Gibson’s general counsel); Withdrawal Hearing Tr. at 4:19-5:5, 7:18-22
10 (Dec. 15, 2009) (Stroock attorney explaining his repeated efforts to contact
11 Gibson).²

12 Activision did not oppose the withdrawal so long as the summary judgment
13 schedule was not altered. The Court agreed that altering the schedule would
14 unfairly delay the proceedings and prejudice Activision. Therefore, Activision filed
15 its summary judgment motion while Gibson still remained unresponsive. Tel. Stat.
16 Conf. Minutes (Dec. 2, 2008); Summ. J. Mot. (Dec. 10, 2008); Withdrawal
17 Hearing Tr. (Dec. 15, 2008); Sched. Conf. Hearing Tr. at 10:20-11:-12:7 (counsel
18 for Activision discussing the difficult position in which Gibson’s lack of
19 cooperation put Activision).

20 New counsel for Gibson entered this litigation shortly thereafter. Gibson
21 then requested additional discovery from Activision. Gibson used Activision’s

22
23 ² Instead of timely contacting Stroock or the Court, Gibson’s general counsel—the
24 same counsel that was previously interim had been hired permanently—left a
25 voicemail for the Court’s clerk. That voicemail represented that Gibson had a
26 misunderstanding about the withdrawal hearing time, despite efforts by the Court
27 and Stroock. *See* Tel. Stat. Conf. Tr. (Dec. 2, 2008); Withdrawal Hearing Tr. (Dec.
28 15, 2008). This voicemail was left shortly before the Clerk of the Court returned to
her office following Stroock’s withdrawal hearing. Sched. Conf. Tr. at 8:2-9:6
(Jan. 5, 2009) (Clerk of the Court reading summary of communications into
record).

1 anticipatory legal arguments about the doctrine of equivalents as a hook for
2 requesting additional fact discovery from Activision. Sched. Conf. Hearing Tr. at
3 20:8-22:13 (counsel for Gibson making this argument); Withdrawal Hearing Tr. at
4 8:13-9:23 (counsel for Activision explaining why the position in which Gibson put
5 Activision required anticipatory legal arguments). Gibson also used the post-claim
6 construction introduction of a new version of Guitar Hero—to which Gibson had
7 access even before it was introduced to the market—to seek further fact discovery,
8 notwithstanding Gibson’s earlier lack of discovery cooperation. *Id.* at 23:16-24:15;
9 *id.* at 25:14-19 (counsel for Activision explaining that Gibson had received a
10 version of the new game “even before . . . it was formally introduced to the market
11 because . . . we want to be upfront about it”).

12 Further, the discovery that Gibson—after the Court had assured Activision
13 that summary judgment proceedings would not be delayed by Stroock’s
14 withdrawal—would further prejudice Activision by requiring Activision to have its
15 third-party system providers available for depositions on extremely short notice.
16 The Court nevertheless allowed Gibson to depose Activision’s own employee(s).
17 Sched. Conf. Tr. at 7:2-11; *id.* at 47:2-9 (the Court advising Gibson that Activision
18 was ordered to make witnesses available for deposition; that Gibson could “ask
19 some questions outside of” what Activision had agreed to address, subject to any
20 objections by Activision; and reminding Gibson that it was “not in a position . . . to
21 start taking broad discovery because of what Gibson has done thus far”).

22 After this additional discovery, Gibson submitted an opposition to
23 Activision’s summary judgment motion. At the same time, Gibson requested that
24 the Court reconsider its claim construction. Gibson limited its request to the term
25 “musical instrument,” one of the two terms construed in the Court’s construction of
26 September 16, 2008.

27
28

1 The Court heard oral argument on Activision’s motion for summary
2 judgment on February 17, 2009. Oral argument was not heard on the motion to
3 reconsider claim construction.

4 **II.**

5 **RECONSIDERATION STANDARD**

6 Under the local rules, parties may request reconsideration of a prior ruling
7 upon “a manifest showing of a failure to consider material facts presented to the
8 Court before such decision.” L.R. 7-18. A reconsideration request shall not “in any
9 manner” repeat a prior argument. *Id.*

10 **III.**

11 **RECONSIDERATION DISCUSSION**

12 Gibson cannot meet the “manifest showing” standard. The Court allowed the
13 parties two rounds of briefing, held a technology tutorial, and had a hearing. *See*
14 Cl. Const. at 1. The Court considered all arguments and materials presented by the
15 parties. The Court’s claim construction was carefully considered and detailed. *See*
16 *also* Sched. Conf. Tr. at 49:24-50:2 (the Court reminding counsel for Gibson that
17 “quite an extensive argument [was had] at the *Markman* hearing . . . very
18 extensive”).

19 Gibson also violates the rule against repeating prior arguments. For example,
20 the reconsideration arguments that Gibson’s new counsel makes about “bypass
21 mode” were addressed to this Court by Gibson’s prior counsel. Gibson’s new
22 counsel revives the arguments by applying them to its own unwarranted
23 construction of “musical sounds”—a term which the Court has not yet construed.
24 *See* Reconsid. Req. at 7; Cl. Const. at 8 n.7, 10 n.10, 16-17, 18, 19.

25 Nevertheless, because Gibson’s present counsel did not have the benefit of
26 participation in the prior proceedings, the Court clarifies some basic points that
27 Gibson contends are in error.

28

1 **A. The claim construction does not exclude the preferred embodiment.**

2 Gibson agrees with the Court’s basic construction of the term “musical
3 instrument”: “an instrument that is capable of making musical sounds, and either
4 directly, or indirectly through an interface device, producing an instrument audio
5 signal representative of those sounds.” Instead, Gibson objects to what it
6 characterizes as “additional” limitations it purports to find in the Court’s exposition
7 of its reasoning. Cl. Const. Order at 7; Reconsid. Req. at 1.

8 Gibson’s new position—perhaps in contravention of its previous position,
9 Cl. Const. at 9 n.9³—is that an unamplified electric guitar does not make “musical
10 sounds.” Reconsid. Req. at 5. It is true that, since an electric guitar is the preferred
11 embodiment, a construction of “musical sounds” that excludes the preferred
12 embodiment is likely to be incorrect. The Court did not violate this principle.

13 First, the Court never purported to construe “musical sounds,” a term that
14 appears in both the claims and the specification. ’405 Patent cl.1; *id.* at col.2:1

15
16 ³ Gibson’s Gembar Decl.—Gembar is one of the named inventors on the ’405
17 Patent—declared for claim construction that an electric guitar’s pickup captures
18 the actual waves made by the vibrations of an electric guitar’s strings, and merely
19 “amplifies” them to be “converted” by a speaker. The declaration does note that
20 the speaker’s ultimate output differs in quality from sounds amplified by a
21 microphone alone. Gembar Decl. at ¶ 10. To say that the end result—generated by
22 capturing the actual waves, amplifying them, and converting them—can be
23 “musical,” but the original sounds are not “musical,” strains the imagination.

24 Further, there is an obvious tension—if not irreconcilable conflict—between
25 Gibson’s representation that an electric guitar’s unamplified sounds are not
26 musical and its position, explained below, that every sound is potentially musical.
27 *Compare* Reconsid. Req. at 5 (“Contrary to the Order, an electric guitar does not,
28 by itself, generate “musical sounds” as that term is used in the ’405 Patent.”) *with*
Summ. J. Hearing Tr. at 56:25-57:23 (counsel for Gibson representing that any
sound can be musical depending on context).

 Moreover, the patent itself refers to the “musical sounds that would be made . . .
by a specific musical instrument”—which is not the same as musical sounds that
are made by a system only after processing an arbitrary signal from a musical
instrument. *See* ’405 Patent at col. 2:1-2.

1 (“[M]usical sounds that would be made during the pre-recorded concert by a
2 specific musical instrument.”). In illustrating a different point, the Court did
3 suggest that the clicking of the “play” button on a stereo would probably not be
4 “musical” within the meaning of the ’405 Patent. Cl. Const. at 11 n.11. The Court
5 also observed that both parties appeared to concede that the sound of an
6 unamplified electric guitar is a “musical sound.” *Id.* at 9 n.9. But nowhere did the
7 Court ever purport to construe “musical sounds.” Indeed, the term was not before
8 the Court. Cl. Const. at 1.

9 Second, Gibson’s arguments misread the Court’s “musical instrument”
10 construction, which comes from the specification. Cl. Const. at 9. The construction
11 and specification treat as separate requirements (1) that a musical instrument be at
12 least “capable of making musical sounds” and (2) that a musical instrument meet
13 the additional “instrument audio signal” limitations. A musical instrument must
14 both be capable of making musical sounds—whatever a musical sound may be—
15 and produce an instrument audio signal that is representative of those sounds—that
16 is, the sounds the instrument is capable of making.⁴

17 Indeed, the electric guitar is the prototypical musical instrument under this
18 Court’s construction. According to Gibson’s new expert, proffered in opposition to
19 summary judgment, an electric guitar’s strings create sound waves that are the
20 sound made by the musical instrument. Freeman Decl. at 5 ¶ 25. A “pickup” then
21 captures those sound waves and transmits them, through a signal representative of
22 those sounds. *Id.* at ¶¶ 24-25. The expert opines that the actual acoustic sounds are
23 “tinny,” *id.* at ¶¶ 17, 25—but that does not change the fact that those waves
24 constitute the actual sounds, made by the electric guitar, and those sounds are

26 ⁴ It may be that musical instrument need not actually make those precise sounds, so
27 long as it is capable of making them under some circumstances and some actual
28 sound is made and represented. The Court’s claim construction may not
necessarily foreclose this possibility. *See* Cl. Const. at 10 n.10, 10-12.

1 represented by an outgoing signal—no matter whether those sounds are what
2 listeners hear. *See also* Reconsid. Req. at 8 (quoting Activision’s expert on a
3 similar point); ’405 Patent at col. 2:64-67 (“A musical instrument, such as a guitar .
4 . . . having one or more pick-ups or other transducers that will generate electrical
5 audio signals, when the guitar is played, at an instrument audio output”).

6 **B. The claim construction properly finds disavowal.**

7 Gibson mistakenly states that the Court was confused about the prior art
8 ’129 Patent. It was not. The Court found that the ’405 patent “disavows certain
9 types of devices that have been used in the ’129 Patent and other virtual reality
10 systems.” Cl. Const. Order at 14 (emphasis added). The ’405 Patent specification
11 distinguishes the ’129 Patent and other virtual reality systems, such as the prior art
12 discussed in the ’129 Patent, because they did not involve the “actual operation of
13 a musical instrument.” Cl. Const. at 15-16. The disavowals were clear and included
14 criticism of the prior art that lacked the relevant features of the ’405 Patent. *Id.* at
15 14 (citing *AstraZeneca AB v. Mut. Pharm. Co.*, 384 F.3d 1333, 1339-40 (Fed. Cir.
16 2004)).

17 The relevant points are that the ’405 Patent disavows systems that either (1)
18 lack “actual operation of a musical instrument” or (2) use virtual reality-type
19 control devices.⁵ *See also* Reconsid. Opp. at 17-20 (elaborating on the Court’s
20 reasons for finding disavowal).

21 **IV.**

22 **SUMMARY JUDGMENT STANDARD**

23 Summary judgment is appropriate “if the pleadings, the discovery and
24 disclosure materials on file, and any affidavits show that there is no genuine issue
25 as to any material fact, and that the movant is entitled to judgment as a matter of
26

27 ⁵ Gibson also asserts that the ’129 Patent is distinguished because it does not
28 discuss controlling music. This representation is, as Activision bluntly states,
“blatantly false.” Activision Opp. to Reconsid. at 15-17.

1 law.” Fed. R. Civ. P. 56(c). Conversely, in order for the nonmoving party to
2 prevail, there must be evidence sufficient to allow a reasonable jury to return a
3 verdict in favor of the nonmoving party. *Anderson v. Liberty Lobby, Inc.*, 477 U.S.
4 242, 248 (1986). “The evidence of the nonmovant is to be believed, and all
5 justifiable inferences are to be drawn in his favor.” *Id.* at 255.

6 However, where the nonmoving party bears the burden of proof at trial, the
7 burden of the moving party is to show initially the absence of a genuine issue
8 concerning any material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986).
9 The nonmoving party then must “go beyond the pleadings” and identify specific
10 facts showing that there is a genuine issue for trial. *Id.* at 324.

11 V.

12 SUMMARY JUDGMENT DISCUSSION

13 A. Introduction.

14 As a general observation, no reasonable person of ordinary skill in the
15 relevant arts would interpret the ’405 Patent as covering interactive video games.
16 In the ’405 Patent, playback of a prerecorded concert is “controlled” by an
17 “instrument audio signal . . . representative of” the “musical sounds” of an “actual
18 musical instrument” and feeding data about those sounds into the system through
19 an “instrument audio signal.” One goal of the claimed invention was to sell guitars
20 by setting up in-store stations where “professional and amateur musicians alike”
21 could handle a real electric guitar and strum the strings. ’405 Patent at col. 1. The
22 strings’ soundwaves could then control the playback of a prerecorded concert—for
23 example, strumming faster could increase the speed of playback. The claimed
24 invention simulates how, with practice, one could play the guitar independent of
25 the ’405 Patent’s system. Cl. Const. at 7-8; *Markman* Hearing Tr. at 49:18-50:20
26 (prior counsel for Gibson explaining a preferred embodiment from the ’405
27 Patent).

28

1 By eliding important limitations on the type of control device the '405
2 Patent covers, Gibson contends that the '405 Patent covers any system where a
3 user controls something “musical” with any device. Most important, by arguing
4 that any sound made by any controller can potentially be musical, Gibson would
5 have everything in the world—from the buttons of a DVD remote, see *infra* n.12,
6 to a pencil tapping a table—be an “actual musical instrument” within the '405
7 Patent. No reasonable person could think “actual musical instrument” covers every
8 conceivable device. No reasonable person could think the '405 Patent covers any
9 device that controls something that produces musical sounds. Nor could anyone
10 read the '405 Patent to enable the Guitar Hero controller.

11 What is “musical,” in the word’s broadest sense, is a matter of personal taste
12 and academic interest. It is probably true that anything may, to laypersons or
13 academics, be a musical instrument if used in a manner that generates sounds that
14 some audience considers “musical.” But, in the '405 Patent, “musical instrument”
15 can and does have a much narrower meaning. Cl. Const. Order at 9-10 (discussing
16 the specification and citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1321 (Fed. Cir.
17 2005) (en banc), *cert. denied*, 546 U.S. 1170 (2006), for the proposition that a
18 patentee may act as his own lexicographer).

19 Several independent grounds for summary judgment are briefly described
20 below in Sections V.C-G. Only one ground requires a working definition of
21 “musical sounds”; the other grounds for summary judgment remain valid even if
22 (1) all sounds are potentially “musical”; or (2) the “musical sounds” requirement of
23 “musical instrument” were replaced with “sounds.”

24 **B. Guitar Hero controllers must be considered independently of the**
25 **console system to which they are attached.**

26 Again, a “musical instrument” must meet two requirements: (1) it must be
27 capable of making musical sounds; and (2) it must produce an instrument audio
28

1 signal that is representative of those sounds—that is, the sounds the instrument is
2 capable of making.⁶

3 An important implication of the instrument audio signal requirement is that
4 whatever constitutes a “musical instrument” be located at or before the “instrument
5 audio output.” Cl. Const. at 11-12, 12 n.12. The claim language requires the
6 musical instrument “generate an instrument audio signal at an instrument audio
7 output” *Id.* at 12. Whatever generates the instrument audio signal must part of
8 the musical instrument. *Id.* at 11-12, 12 n.12. Therefore, as Activision observes,
9 “The claims on their face . . . exclude instruments that only produce musical
10 sounds by processing their instrument audio signals.” Reconsid. Opp. at 7.

11 It is undisputed that the Guitar Hero controllers send a signal from an output
12 on the controller. That signal contains data about what the user has done to the
13 controller. The game console to which the controller is connected—and the
14 television or other output device to which that console is connected in turn—
15 cannot be part of the “musical instrument” in the analysis. The “musical
16 instrument” of the ’405 Patent, if it reads on the accused infringing devices at all,
17 can only read on the Guitar Hero controllers and nothing from the console’s input
18 point onward.

19 **C. Guitar Hero controllers are not musical instruments because the**
20 **sounds they make are not “musical” within the ’405 Patent’s meaning.**

21 The Court has not previously construed “musical sounds.” It now construes
22 the term.

23
24
25 ⁶ Gibson’s submissions violate the claim construction and impermissibly broaden
26 the ’405 Patent by referring to the “musical sounds of the instrument being played
27 back,” see Summ. J. Opp. at 2, or what a listener at a concert might hear in final
28 clear that the relevant musical sounds are those the instrument is capable of
making, not whatever may be played for the user or intended audience.

1 The '405 Patent never defines “musical sounds,” though that phrase appears
2 in both the specification and the first independent claim. '405 Patent cl.1; *id.* at
3 col.2:1. The '405 Patent does provide two examples of “musical instruments,”
4 which presumably make “musical sounds”: an electric guitar and an amplified
5 acoustic guitar. Notwithstanding these limited examples, the Court has rejected as
6 too vague and limiting Activision’s proposed requirement that a musical
7 instrument must be “traditional” to come within the '405 Patent’s scope. Cl. Const.
8 at 13. The Court appreciates Activision’s attempt at claim construction to propose
9 “traditional,” in an apparent attempt to summarize the result of a rough *ejusdem*
10 *generis* analysis. Activision’s claim construction *ejusdem generis* analysis was
11 incorrect. However, the thrust of Activision’s analysis at summary judgment is
12 correct: whatever is a musical sound, it must be more than what the accused
13 infringing products can make. Mot. for Summ. J. at 15.

14 Gibson argues that anything can produce “musical sounds,” depending on
15 the user’s intent and the situation’s overall context. Summ. J. Hearing Tr. at 46:2-4
16 (counsel for Gibson characterizing Gibson’s expert testimony), *id.* at 57:8-57:23
17 (counsel for Gibson acknowledging that their interpretation of “musical sounds”
18 requires looking at the context and the intent of the person purportedly playing
19 music); *id.* at 75:4-18 (counsel for Activision and the Court discussing implications
20 of Gibson’s argument).⁷

21 While this is probably true as a personal and academic matter, it is not and
22 cannot be a limiting principle for the '405 Patent. If infringement could turn on
23 users’ “intent” and the overall “context” of use, then a patent’s notice function
24 would come to nothing. *See Super. Fireplace Co. v. The Majestic Prods. Co.*, 270
25 F.3d 1358, 1371 (Fed. Cir. 2001) (discussing the importance of a patent’s notice
26 function). Indeed, inherently subjective terms are disallowed. *See Datamize, LLC*

27
28 ⁷ All cites to “Summ. J. Hearing Tr.” refer to the reporter’s “uncertified rough draft
for etransmission” prepared on February 24, 2009.

1 *v. Plumtree Software, Inc.*, 417 F.3d 1342 (Fed. Cir. 2005) (finding “aesthetically
2 pleasing” indefinite).

3 It is clear to any reasonable reader that the patent term “musical sounds” has
4 a narrower meaning than that proposed by Gibson’s expert. Electric guitars and
5 acoustic guitars are capable of producing some variety of sounds that are
6 distinguishable, without additional processing, to the naked human ear. Gibson’s
7 own expert admits that this is an important feature. Gibson’s expert also states that
8 musical sounds have identifiable qualities such as “timbre” and “pitch.” Indeed,
9 Gibson’s expert discusses at length various characteristics that “musical sounds”
10 might have. Freeman Depo. at 31-40.

11 Gibson concedes that the guitar-shaped controller does not literally produce
12 “musical sounds.” Gibson must concede the point because, for example and
13 without limitation, the clacking of buttons as they are struck are (1) insufficiently
14 varied or distinct; and (2) no reasonable person could say that any musical sounds
15 heard during standard operation of a Guitar Hero controller come from the
16 controller itself. *Cf.* Cl. Const. at 11 n.11 (discussing a hypothetical stereo button).

17 Gibson’s concession on this point, however, is in tension with Gibson’s
18 position on the drum-shaped controller. Gibson contends that the surfaces of the
19 drum-shaped controller produce “musical sounds” even though they create, at
20 most, thuds little more distinct than those one could produce by tapping a pen on a
21 table. Summ. J. Hearing Tr. at 45:9-46:16, 56:22-57:6; Freeman Depo. at 40:15-
22 41:10. There is no principled distinction between the clacking of a button and the
23 dull thud produced when a plastic or rubberized drum-shaped controller is struck.
24 True, striking a table or drum-shaped controller at different locations will produce
25 somewhat different sound waves because the vibrations will differ based on where
26 on the controller’s surface the force originates. True also, the degree of force
27 should have some effect on the surface’s vibrations. But the same holds for striking

28

1 a button at one position on a controller’s handle versus a button at another position;
2 and for striking the same button at different velocities.

3 From the foregoing, the Court concludes that musical sounds must have
4 more articulable characteristics than a button’s clack or the thud produced from
5 striking a table, piece of rubber, or piece of plastic. A musical instrument must be
6 capable of making, without additional processing, some variety of distinct sounds
7 that can be sensibly described as having some or all the characteristics Gibson’s
8 own expert discusses in his deposition. The Court observes, but does not conclude,
9 that musical sounds may not need to be as complex as those the ’405 Patent’s only
10 examples—guitars—and that musical sounds may not need have every
11 characteristic discussed by Gibson’s expert, such as “timbre” and “pitch.”

12 There is no reasonable dispute of material fact that Guitar Hero controllers
13 do not themselves make musical sounds within the meaning of the patent. In fact,
14 Gibson concedes literal noninfringement on the guitar-shaped controller. Even the
15 recordings submitted by Gibson—where a player seems to exert some effort to
16 strike the drum-shaped controller at different velocities such that the volume will
17 correspond to features of the music the game console plays—cannot be musical
18 sounds within the meaning of the patent. Vosburg Exh. 4.

19 **D. Guitar Hero controllers are not musical instruments because the**
20 **signals they output are not “representative of the sounds” the**
21 **controllers make or are capable of making.**

22 The patent separately requires a musical instrument to output an instrument
23 audio signal that is representative of the sounds the musical instrument makes or is
24 capable of making. The accused infringing devices’ output cannot reasonably be
25 said to be an “instrument audio signal” within the meaning of the ’405 Patent.

26 It is undisputed that some Guitar Hero controllers send, at a maximum,
27 signals that (1) are mapped to standard console controller buttons and (2) data
28 about the velocity with which the user struck the controller. Velocity data may be

1 considered a rough surrogate for “volume”: the greater the velocity, the greater the
2 likely volume of sound waves produced when a controller is struck. *See* Reply in
3 Supp. Summ. J. at 2. It bears emphasis that correlation between velocity and
4 volume is likely but not necessary. Indeed, the Guitar Hero drum set has an upper
5 limit on the velocity data it sends. Freeman Depo. at 14-16; Guinchard Depo. at 58.

6 Further, Gibson’s own expert admits that the signals from a Guitar Hero
7 controller—on their own—do not represent the pitch, timbre, or any other
8 articulable characteristic of the sound made by the controller. Freeman Depo at
9 124-29. This accords with the specification of the ’405 Patent, which explains that
10 any musical instrument which outputs “electrical audio signals” such as the signals
11 from “an electric or amplified acoustic guitar” may be used in the system of the
12 ’405 Patent. *Id.* at col. 5:12-17. Such audio signals are produced by capturing
13 actual sound waves through “pick-ups or other transducers,” thereby representing
14 those characteristics identified by Gibson’s expert by virtue of representing the
15 actual sound waves. *Id.* at col.2:65.

16 As with “musical sounds,” the Court does not determine the minimum data
17 an instrument audio signal must include. The Court concludes only that data on
18 location-mapped signals and limited velocity data are not enough for any
19 reasonable person to conclude that signal dispatched from a Guitar Hero controller
20 to a game console is sufficiently representative of the actual sounds that are made
21 by the controller to come within the ’405 Patent. *Cf.* Cl. Const. at 11 n.11
22 (discussing a stereo button, which probably produces sound waves when pressed,
23 and how the signal from such a button cannot be “representative,” within the ’405
24 Patent’s meaning, of the signal to the stereo or the sounds that come from the
25 stereo).

26
27
28

1 **E. Guitar Hero controllers are not “musical instruments” because they**
2 **are the type of device the ’405 Patent disavows.**

3 The ’405 Patent disavows systems that either (1) do not involve “actual
4 operation of a musical instrument” or (2) use virtual reality-type control devices.
5 Cl. Const. at 15-20; Activision Opp. to Reconsid. at 17-20. The Guitar Hero
6 controllers fall within both disavowed categories.

7 First, as with “musical sounds,” almost any type of item might be considered
8 a “musical instrument” in some contexts. The best indicators of what constitutes
9 “actual operation of a musical instrument” are the ’405 Patent’s two examples: an
10 amplified acoustic guitar and an electric guitar. While the Court has rejected an
11 *ejusdem generis* analysis that results in the conclusion that an “actual musical
12 instrument” must be “traditional” in some sense, an “actual musical instrument”
13 must be something that a reasonable person could class with electric and amplified
14 acoustic guitars. *See Kinetic Concepts, Inc. v. Blue Sky Med. Group, Inc.*, 2009 WL
15 223733, at *5, 2009 U.S. App. LEXIS 1788, at *16-17 (Fed. Cir. Feb. 2, 2009)
16 (reviewing a specification’s examples and determining that the facially broad word
17 “wound” includes only “skin wounds” because of those examples in the
18 specification).

19 One important common feature of ’405 Patent’s example instruments is
20 having commercial value, a readily identifiable market, and standard uses apart
21 from their use as control devices. The Guitar Hero controllers are video game
22 control devices and have no commercial value, identifiable market, or standard use
23 apart from their use as control devices. Any non-video game use is therefore
24 “nonstandard.” *Cf. High Tech Med. Instrumentation, Inc. v. New Image Indus.,*
25 *Inc.*, 49 F.3d 1551, 1555-56 (Fed. Cir. 1995) (nonstandard uses do not infringe).
26 The controllers’ standard uses cannot reasonably be said to be in the same class as
27 the examples of “actual operation of a musical instrument” in the ’405 Patent.
28 Extending the ’405 Patent to cover such controllers would “expand the scope of the

1 claims far beyond anything described in the specification.” *Kinetic Concepts*, 2009
2 WL 223723 at *5, 2009 U.S. App. LEXIS at *17.

3 Second, the Guitar Hero controllers are the type of prior art virtual reality
4 control devices the ’405 Patent disavows. A virtual reality control device allows
5 the user to manipulate a representation of something else. For example, virtual
6 reality controllers are “representative of the user’s actions, such as the user’s
7 motion or the forces and torques the user exerts on the device.” Cl. Const. at 16.
8 That is, they are at least one step removed from a “reality” controller: a user
9 interacts with a virtual reality controller that merely represents something else; the
10 controller is not itself the item it represents, but some physical device that can be
11 manipulated to simulate the actual device. These devices, such as prior art “virtual
12 drum kits” and prior art “MIDI guitars,” must produce some sort of sound when
13 used, but the ’405 Patent still considers them “virtual” instruments. *See id.* at 15
14 (mentioning how the ’129 Patent, expressly distinguished in the specification of
15 the ’405 Patent, discusses a “virtual drum kit”); 20-21 (mentioning the prior art
16 MIDI guitar controller from U.S. Patent 5,393,926, which was submitted by the
17 applicants and cited by the examiner in the ’405 Patent, and which the ’926 Patent
18 calls a “virtual instrument”).

19 Guitar Hero controllers are toys that represent other items. Those
20 represented items—the controller’s referents—are what any reasonable person in
21 our society would recognize as “an actual musical instrument.” But the controllers
22 themselves have only parts roughly analogous to those of their referents. The
23 connection between the controller and its referent is even more tenuous than
24 representative significance: for example, the sounds the controllers make are
25 relevantly different in quality from those of their referents, as discussed above.
26 Using a Guitar Hero controller is therefore more like manipulating a virtual reality
27 control device than, in the ’405 Patent’s phrase, an “actual musical instrument.”
28 *See* Cl. Const. at 16; U.S. Patent

1 Gibson struggles to argue that superficial resemblance to a musical
2 instrument, together with the fact that the game console to which the controllers
3 provide input to consoles that produce indisputably “musical” sounds, makes the
4 controllers “musical instruments” for purposes of the ’405 Patent. However
5 convenient to Gibson’s argument, the superficial resemblance—the being a mere
6 representation that is manipulated to simulate manipulation of the represented
7 thing itself—renders the controllers, to use the language of the ’405 Patent,
8 indisputably more “virtual reality” than “actual musical instrument.”

9 **F. The Guitar Hero controllers do not infringe because they do not**
10 **produce instrument audio signals within the meaning of the ’405 Patent.**

11 At claim construction, the Court expressly refused to exclude digital signals
12 from the claim term “instrument audio signal.” Cl. Const. at 18-20. Despite
13 Activision’s six reasonable arguments for limiting “instrument audio signal” to
14 “audible” analog signals,⁸ the Court found such a definition unpersuasive at that
15 time, though it left the issue open. Courts have the power to engage in “rolling”
16 claim construction by revisiting the issue at any time. *Conoco, Inc. v. Energy &*
17

18
19 ⁸ Those arguments were based on: (1) on three different dictionary definitions of
20 “audio signal,” Activision Cl. Const. Br. at 15; (2) the ’405 Patent’s repeated use
21 of electric and amplified acoustic guitars as examples, both of which output
22 nondigital signals; (3) Figure 2 in the specification, which depicts analog circuitry,
23 with the caveat that the specification notes that parts of Figure 2, not involving the
24 instrument audio signal as output from the musical instrument, may be replaced
25 with a digital component, see ’405 Patent at col. 5:25-29; (4) statements in the
26 specification that laud the advantage of not needing a computer to operate the
27 simulation, see, e.g., ’405 Patent at col. 5:59-5:60 (“One advantage of this system
28 is that no computer is needed to operate or control it.”); (5) a reference in
describing a preferred embodiment to “amplif[ying]” an audio signal; and (6) the
optional “bypass” mode, described in claim 5, which appears to require a
nondigital signal in order to function, see, e.g., *id.* at cl. 5 (“the user can listen to
the instrument audio signal”). See generally Activision Cl. Const Br. at 14-17;
Activision Cl. Const. Reply Br. at 9-10.

1 *Environmental Intern., L.C.*, 460 F.3d 1349, 1359 (Fed. Cir. 2006). The Court now
2 revisits and revises its construction of “instrument audio signal.”

3 First, it is important to note that both parties conceded that “audio signal” is
4 synonymous with “instrument audio signal.” Cl. Const. at 2 n.2.

5 The Court had two reasons for earlier declining Activision’s proposed
6 analog limitation. One reason was based on a prior art referenced in the ’405
7 Patent. That prior art patent expressly adopts a “broad” definition of “audio
8 signal,” which includes digital signals. U.S. Patent 5,513,129 at col. 7:53-64. This
9 extrinsic evidence is of relatively less probative value than evidence intrinsic to the
10 ’405 Patent because it could be that the ’129 Patent was defining a term for its own
11 purposes, rather than simply using the term as it would be known to a person of
12 ordinary skill in the art. *Phillips*, 415 F.3d at 1321. Indeed, the ’129 Patent’s need
13 expressly to broaden “audio signal” suggests that a person of ordinary skill in the
14 art could reasonably read “audio signal” to exclude many types of signals,
15 including digital signals.⁹

16 Second, the Court used a dictionary definition of “transducer” to give
17 Gibson the benefit of the broadest possible construction of “audio signal.” *Id.* at
18 19-20 (noting that the ’405 Patent specification discusses the use of a “transducer”
19 and that, in the broadest sense, a transducer is any device that converts one type of
20 signal to another, including analog to digital, even though the type of transducer
21 mentioned in the specification is a guitar pick-up that generates analog signals).
22 This was despite several contrary dictionary definitions of “audio signal” offered
23 by Activision. Cl. Const. at 18-19.

24 These two reservations, combined with the caution that the specification
25 should not be used to limit claim terms unless warranted, *Phillips*, 415 F.3d at
26

27 ⁹ The Court further recognizes that the ’129 Patent, though distinguished in the
28 specification, was not incorporated by reference and therefore the ’129 Patent’s
specification is not part of the intrinsic record.

1 1323, the Court at claim construction exercised caution by declining at limit
2 “instrument audio signal” to analog signals. The Court is now persuaded that an
3 analog-only limitation is warranted because any reasonable person of ordinary skill
4 in the relevant arts would read “instrument audio signal” in the ’405 Patent to
5 exclude digital signals.

6 Most significantly, Gibson’s own expert uses “audio signal” in juxtaposition
7 to digital signals. Gibson’s expert admits that a “digital number” is a “higher level
8 representation of musical events than an audio signal.” Freeman Decl. at ¶¶ 18-19
9 (emphasis added). This is because analog waveforms are continuous signals that
10 vary across time, while digital signals contain discrete, quantized data. Further, the
11 ’405 Patent’s examples produce “electromechanical,” not digital, signals. *See*
12 Freeman Depo. at 114:19-25; ’405 Patent col. 5:12-17 (explaining that “electrical
13 signals” of the type output by electric and amplified acoustic guitars are the
14 relevant type of signal). In fact, the ’405 Patent does expressly discuss digital
15 signals, but only with respect to the system’s output and to the recorded
16 soundtrack, not ever with respect to the musical instrument or its instrument audio
17 signal. ’405 Patent at col. 1:64-66, col. 5:5-10, 5:24-30. Finally, digital
18 instruments, such as electronic keyboards, were well known at the time of filing.
19 Such keyboards may have built-in speakers and may also output digital signals
20 equivalent to the signals that are internally processed to drive the built-in speakers.
21 In this situation, the digital output signal is not “representative of” the sound
22 generated by the built-in speakers but instead “corresponds” to or is “the same as”
23 the signal sent from the keys to drive the built-in speakers.¹⁰

24
25
26 ¹⁰ Such a keyboard may use the MIDI protocol, which requires digital output. The
27 ’129 Patent, expressly distinguished in the specification of the ’405 Patent,
28 discusses MIDI devices. Another patent, U.S. Patent 5,393,926, submitted by the
’405 Patent applicants and cited by the examiner, uses a MIDI guitar and discusses
capturing “song information off of a MIDI instrument that is being played.”

1 These facts, combined with the other reasons Activision gave at claim
2 construction, see Cl. Const. at 18-19, now persuade the Court that a person having
3 ordinary skill in the art would read the “audio signals” of the ’405 Patent to be
4 limited to analog, but not digital, signals. The Court still is unpersuaded to further
5 limit “instrument audio signal” to “audible” signals or to “electrical” signals of the
6 type output by the ’405 Patent’s example instruments, despite reasonable
7 arguments for such constructions. *See* Activision Cl. Const. Br. at 14-17.

8 It is not disputed that Guitar Hero controllers send digital signals. Mot. for
9 Summ. J. at 15-17 (discussing the data sent by Guitar Hero controllers). Summary
10 judgment is therefore appropriate on this independent ground.

11 **G. Gibson’s doctrine of equivalents arguments border on the frivolous.**

12 As explained in the procedural history above, Activision’s summary
13 judgment motion anticipated some of Gibson’s arguments because Activision at
14 the time was unaware whether counsel would appear to oppose the motion.¹¹ One
15 argument Activision anticipated was infringement under the doctrine of
16 equivalents. Activision’s papers demonstrate why any doctrine of equivalents
17 argument fails as a matter of law. Summ. J. Mot. at 20-23; Reply at 10-21.

18 Gibson’s doctrine of equivalents arguments violate numerous well
19 established rules, including the all-elements rule. The doctrine of equivalents is “a
20

21 ¹¹ Further, Local Rule 7-3 requires counsel to meet and confer on proposed
22 motions. Activision and Gibson’s prior counsel did confer as required. Summ. J.
23 Notice at 2. But Gibson’s new counsel complains that Activision waived its right
24 to rebut some of the doctrine of equivalents arguments that Gibson raised in its
25 opposition. Summ. J. Opp. at 20-21. It is unsurprising that Activision’s motion did
26 not anticipate every argument that Gibson’s new counsel—with whom Activision,
27 through no fault of its own had no chance to confer before filing—could make.
28 Gibson will not be heard to complain of procedural irregularities when those
purported irregularities—if they exist, and the Court expresses no opinion on
whether anything Activision did would be procedurally improper in ordinary
circumstances—were the result of Gibson’s conduct.

1 limited exception” that requires “insubstantial differences” between the claimed
2 invention and accused product and must include an analysis of how each claim
3 limitation applies to the purported equivalent in the accused product. *DePuy Spine,*
4 *Inc. v. Meditronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1017 (Fed. Cir. 2006).

5 But Gibson would have this Court determine that any device that controls
6 something that produces musical sounds is covered by the ’405 Patent. For
7 example, Gibson’s response to the all-elements rule is that applying the rule to one
8 of the ’405 Patent’s limitations—that the instrument audio signal be representative
9 of the sound the musical instrument makes or is capable of making—causes the
10 equivalents analysis to collapse back into literal infringement. Opp. at 19; Summ.
11 J. Hearing Tr. at 54:20-56:24 (counsel for Gibson engaging in discussion of the
12 point with the Court). It is irrelevant whether such is the case under the present
13 facts: the doctrine of equivalents does not allow Gibson to recapture ground the
14 ’405 Patent gives up.¹²

16 ¹² Gibson’s arguments never identify precisely the proposed elements. However,
17 Gibson’s opposition indicates that any signal representative of “depressing” a
18 button satisfies the instrument audio signal, Summ. J. Opp. at 24:15, and that any
19 such signal which controls a “prerecorded performance of . . . music” suffices. *Id.*
20 at 24:4. The elements implicit in Gibson’s argument then are: (1) a control device,
21 the operation of which generates some sound, however incidental; where (2) that
22 control device affects the playback of something prerecorded and “musical.” This
23 would give the patentholder exclusive rights to common uses of almost any
24 entertainment device. For example, a DVD system could infringe if (1) pressing a
25 button on the DVD remote generates clicks that someone, in some context, might
26 find “musical”; and (2) that remote is used to a control a scene from a DVD
27 containing a concert recording.

28 The doctrine of equivalents is not so broad and does not generate such absurdity;
it does not allow a patentholder to extend a narrow patent into a virtually boundless
right to exclude. “If [the doctrine] were otherwise, then claims would be reduced to
functional abstracts, devoid of meaningful structural limitations on which the
public could rely.” *Safe Prods., Inc. v. Devon Indus., Inc.*, 126 F.3d 1420, 1424-25
(Fed. Cir. 1997).

1 Gibson's arguments do not merit further discussion from the Court and are
2 rejected for the reasons Activision states in its motion and supporting papers. *See*
3 *Summ. J. Reply* at 10-21.

4 **H. Gibson's arguments about the MIDI protocol actually undermine its**
5 **position.**

6 Activision chose to use the MIDI protocol to transmit velocity data from the
7 drum-shaped controller. Gibson attempts to attach some meaning to this because
8 MIDI stands for, and was originally created as a, "musical instrument device
9 interface." *Freeman Decl.* at ¶ 18. This glib argument is unavailing: MIDI today is
10 used in many devices without any connection to music at all. *Freeman Depo.* at
11 110-12.¹³

12 Activision correctly points out that it is good practice to engineer products
13 for the future. Such engineering frequently will include using a standard protocol
14 such as MIDI. Thus, third parties may be able to make controllers that work with
15 Guitar Hero. The MIDI protocol may also allow Activision to extend the
16 capabilities of future Guitar Hero games. *Guinchard Depo.* at 58:59:25.

17 Even if some theoretical configurations, cobbled together using third-party
18 tools or devices, could infringe the '405 Patent—and the Court expresses no
19 opinion on whether they could—the fact that Activision used MIDI is probative of
20 nothing more than sound design decisions that will not be second-guessed by this
21 Court. *See id.*; *ACCO brands, Inc. v. ABA Locks Mfrs. Co.*, 501 F.3d 1307, 1313
22 (Fed. Cir. 2007) (hypothetical uses do not infringe); *High Tech Med.*
23 *Instrumentation, Inc. v. New Image Indus., Inc.*, 49 F.3d 1551, 1555-56 (Fed. Cir.
24 1995) (nonstandard uses do not infringe). Perhaps Activision is laying the
25

26 ¹³ The claim construction Order expressly declined to address prior art where a
27 MIDI guitar was used as a control device. *Cl. Const.* at 20-21. Given this prior art,
28 it is quite surprising that Gibson now suggests that MIDI implies infringement. *See*
also Activision Reply in Supp. Summ. J. at 17-18 (making a related observation).

1 groundwork for a day when it can expand Guitar Hero to support more
2 sophisticated configurations; whether potential configurations might present a
3 closer case of infringement is not before this Court. The present case is not close:
4 the accused devices do not infringe.¹⁴

5 **I. Gibson’s attempt to put YouTube video in the record was improper.**

6 At the hearing on this motion, Gibson proffered a YouTube video purporting
7 to show that someone—perhaps the teenager the video appears to depict—hacked
8 Guitar Hero to allow a configuration that could present a somewhat closer case on
9 some, but not all, of the independent grounds for summary judgment discussed
10 above. Summ. J. Hearing Tr. at 85:16-88:4.

11 The Court notes that Gibson did not contend that Activision endorsed,
12 encouraged, or knew about the system in the video. There is no record evidence to
13 the effect that Activision has committed any act of inducement; nor any act that
14 could subject it to vicarious liability.¹⁵ To the contrary, Activision’s protection of
15 its controllers’ data as trade secret information, together with the fact that Gibson
16 insisted it needed discovery of information about the controllers’ signals, strongly
17 suggest that the configuration is nonstandard.

18 More important, Activision submitted a written objection to this video on
19 four grounds: (1) failure to include in opposition; (2) lack of foundation; (3)

21 ¹⁴ The Court notes again that (1) MIDI uses digital signals and therefore
22 necessarily falls outside the scope of “instrument audio signal,” see supra
23 discussion of an electronic keyboard, which may well use MIDI; and (2) Gibson’s
24 own expert states that a MIDI digital signal is a “higher level representation of
25 musical events than an audio signal.” Freeman Decl. ¶ 19.

26 ¹⁵ Gibson submitted, also after the hearing and apparently in response to
27 Activision’s objections to the proffered YouTube video, materials that were not
28 referenced in its opposition or other prior materials. Urbanawiz Supp. Decl. (Feb.
23, 2009). That submission is untimely. L.R. 56-2. Even if admitted, the materials
could possibly be relevant to some, but not all, the independent grounds for
summary judgment discussed in this order.

1 hearsay; and (4) relevance. Activision's objections are sustained on all grounds
2 except hearsay.

3 **VI.**

4 **CONCLUSION**


5 Gibson's reconsideration request is DENIED.

6 Activision's objection to the YouTube video is SUSTAINED; the YouTube
7 video is STRICKEN from the record.

8 Activision's summary judgment motion is GRANTED.

9
10
11 IT IS SO ORDERED.

12
13 DATED: February 26, 2009


14 Hon. Mariana R. Pfaelzer
15 United States District Judge
16
17
18
19
20
21
22
23
24
25
26
27
28