

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PARROT S.A. and PARROT, INC.,
Petitioner,

v.

DRONE TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2014-00730
Patent 7,584,071 B2

Before HOWARD B. BLANKENSHIP, MATTHEW R. CLEMENTS, and
CHRISTOPHER M. KAISER, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. BACKGROUND

Parrot S.A. and Parrot, Inc. (collectively, “Petitioner”) filed a petition requesting an *inter partes* review of claims 1–15 of U.S. Patent No. 7,584,071 B2 (Ex. 1001, “the ’071 patent”) under 35 U.S.C. §§ 311–319. Paper 1 (“Petition” or “Pet.”). The Board instituted an *inter partes* review of

claims 1–15 on asserted grounds of unpatentability for anticipation and obviousness. Paper 8 (“Dec. on Inst.”).

Subsequent to institution, Patent Owner Drone Technologies, Inc. filed a patent owner response (Paper 15, “PO Resp.”). Petitioner filed a reply to the Patent Owner Response (Paper 18, “Pet. Reply”).

Oral hearing was held on July 1, 2015.¹

The Board has jurisdiction under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–3 and 5–14 of the ’071 patent are unpatentable. Petitioner has *not* shown that claims 4 and 15 are unpatentable.

A. Related Proceedings

According to Petitioner, the ’071 patent is involved in the following lawsuit: *Drone Technologies, Inc. v. Parrot S.A.*, No. 2:05-mc-02025 (W.D. Pa.). Pet. 4.

B. The ’071 Patent

The ’071 patent relates to a remote control system in which a remote control apparatus transmits a target motion signal to a remote-controlled motion apparatus. Ex. 1001, Abstract.

Figure 2 of the ’071 patent is reproduced below.

¹ The record includes a transcript of the oral hearing. Paper 25 (“Tr.”).

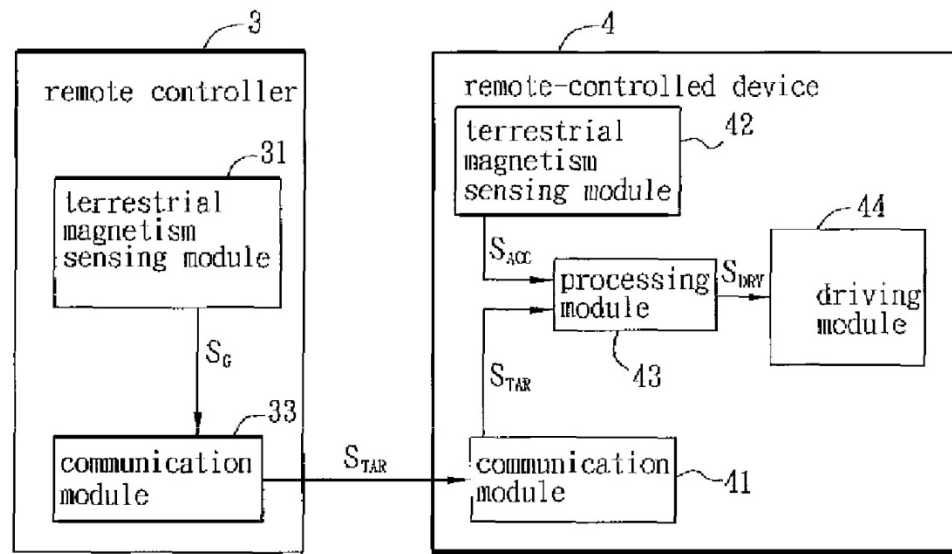


FIG. 2

Figure 2 is a system diagram of a remote control system. Ex. 1001, col. 3, ll. 13–14. Remote-controlled device 4 consists of communication module 41, terrestrial magnetism sensing module 42, processing module 43, and driving module 44. Communication module 41 receives target motion signal S_{TAR} from remote controller 3. *Id.* at col. 3, ll. 28–35. Remote controller 3 consists of terrestrial magnetism sensing module 31 and communication module 33. The terrestrial magnetism module detects the terrestrial magnetism of the remote controller and outputs terrestrial magnetism sensing signal S_G . Communication module 33 connects to terrestrial magnetism module 31 and transmits target motion signal S_{TAR} according to the terrestrial magnetism sensing signal. Target motion signal S_{TAR} is used to control remote-controlled device 4 to keep its detected terrestrial magnetism aligned with the target motion signal. *Id.* at col. 3, ll. 47–58.

C. Illustrative Claim

Claim 1, the sole independent claim, is illustrative and reproduced below.

1. A remote control system, comprising:

a remote controller, comprising:

a motion detecting module, which detects the remote controller's motion and outputs a motion detecting signal; and

a first communication module, which connects to the motion detecting module and receives the motion detecting signal, and transmits a target motion signal according to the motion detecting signal; and

a remote-controlled device, which is controlled by the remote controller, comprising:

a second communication module, which receives the target motion signal from the remote controller;

a terrestrial magnetism sensing module, which detects the remote-controlled device's terrestrial magnetism and outputs a terrestrial magnetism sensing signal;

a processing module, which has a first input connected to the terrestrial magnetism sensing module and receives the terrestrial magnetism sensing signal, and a second input connected to the second communication module and receives the target motion signal, and processes the terrestrial magnetism sensing signal and the target motion signal to output a driving control signal; and

a driving module, which connects to the processing module and receives the driving control signal, and adjusts the remote-controlled device's motion according to the driving control signal.

D. Prior Art

Smith, III et al. (“Smith”) (Ex. 1002)	US 5,043,646	Aug. 27, 1991
Barr (Ex. 1005)	US 7,219,861 B1	May 22, 2007
Fouche (Ex. 1006)	US 6,751,529 B1	June 15, 2004
Spirov et al. (“Spirov”) (Ex. 1007)	US 2006/0144994 A1	July 6, 2006
Bathiche et al. (“Bathiche”) (Ex. 1008)	US 7,145,551 B1	Dec. 5, 2006
Shkolnikov (Ex. 1009)	US 2004/0263479 A1	Dec. 30, 2004

E. Instituted Grounds of Unpatentability

The Board instituted *inter partes* review on the following asserted grounds of unpatentability against claims 1–15 under 35 U.S.C. §§ 102(b) and 103(a) (Dec. on Inst. 19):

Reference(s)	Basis (35 U.S.C.)	Claim(s)
Smith	§ 102(b)	1–5 and 10–14
Smith and Barr	§ 103(a)	6 and 7
Smith and Fouche	§ 103(a)	8 and 9
Smith, Spirov, Bathiche, and Shkolnikov	§ 103(a)	15

II. ANALYSIS

A. Claim Interpretation

In an *inter partes* review, the Board construes claim terms in an unexpired patent using their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1275–79 (Fed. Cir. 2015). The claim language should be read in light of the specification, as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The Office must apply the broadest reasonable meaning to the claim language, taking into account any definitions presented in the specification. *Id.* (citing *In re Bass*, 314 F.3d 575, 577 (Fed. Cir. 2002)). There is a “heavy presumption” that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002). The “ordinary and customary meaning” is that which the term would have to a person of ordinary skill in the art in question. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

1. Detecting the Remote Controller’s Motion

Illustrative claim 1 recites “a motion detecting module, which detects the remote controller’s motion and outputs a motion detecting signal.” At the preliminary stage of the proceeding, we determined that the phrase “detect[ing] the remote controller’s motion” does not require any construction beyond our finding that it is broad enough to include detecting the orientation of a remote controller with respect to magnetic North. Dec.

on Inst. 9. That is because we concluded that determining a change in orientation is *within the scope of* the claimed “detect[ing] the remote controller’s motion,” based on the ’071 patent’s description of the operation of the motion detecting module.

The ’071 patent provides:

In the preferred embodiment of the invention, the remote controller 3 [Fig. 2] consists of a terrestrial magnetism sensing module 31 and a communication module 33, the terrestrial magnetism module 31 detects the terrestrial magnetism of the remote controller 3 and outputs [a] terrestrial magnetism sensing signal S_G , the communication module 33 connects to the terrestrial magnetism module 31 and transmits a target motion signal S_{TAR} according to the terrestrial magnetism sensing signal S_G , the target motion signal S_{TAR} is used to control the remote-controlled device 4 to keep its detected terrestrial magnetism to align with the target motion signal S_{TAR} . The terrestrial magnetism sensing signal S_G is used to represent the terrestrial magnetism information of the remote controller 3.

The terrestrial magnetism sensing module 31 consists of a magnetic sensor to detect the remote controller’s terrestrial magnetism in the X, Y and Z axes. *Since the terrestrial magnetism of the earth directs to a fixed direction parallel to the horizontal ground surface, when the remote controller 3 is held by the user and is moved with a motion related to the horizontal ground surface, the terrestrial magnetism sensing module 31 will detect a change in the terrestrial magnetism since the remote controller body’s angle or position to the ground has been changed, so the resulting terrestrial magnetism sensing signal S_G will be changed.*

In the user’s operation, the user holds the remote controller 3 and moves it or rotate[s] it, the terrestrial magnetism sensing module 31 in the remote controller 3 will detect a change in terrestrial magnetism, and accordingly outputs an terrestrial magnetism sensing signal S_G , the terrestrial magnetism sensing signal S_G provides the

communication module 33 a reference to transmit the target motion signal S_{TAR} to control the remote-controlled device 4. For example, the terrestrial magnetism sensing signal S_G contains three voltage levels to represent the terrestrial magnetism of X, Y and Z axes, the three voltage levels can be converted and transmitted by the communication module 33 (such as using radio transmission with the PCM coding technique). The user can even use only one [h]and to operate the remote controller 3 and generate the 3-D X, Y and Z axes target [motion] signal S_{TAR} .

Ex. 1001, col. 3, l. 47 – col. 4, l. 19 (emphasis removed, remaining emphasis added).

The '071 patent, thus, makes clear that, in the preferred embodiment of the invention, “detecting” the remote controller’s motion is detecting the change in terrestrial magnetism relative to the horizontal ground surface as the controller is moved or rotated, with the resulting terrestrial magnetism sensing signal S_G changing accordingly. The “terrestrial magnetism” of the Earth “directs to a fixed direction parallel to the horizontal ground surface.” *Id.* at col. 3, ll. 63–65. Detecting the orientation of a remote controller with respect to magnetic North is, at the least, *within the scope of* “detect[ing] the remote controller’s motion” as claimed. “A claim construction that excludes the preferred embodiment ‘is rarely, if ever, correct and would require highly persuasive evidentiary support.’” *Adams Respiratory Therapeutics, Inc. v. Perrigo Co.*, 616 F.3d 1283, 1290 (Fed. Cir. 2010) (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583–84 (Fed. Cir. 1996)).

2. Difference of Motion

Petitioner submits that “difference of motion,” a phrase in claim 4, should be interpreted as “calculations related to motion that causes a change

in orientation.” Pet. 17. As Petitioner indicates (*id.*), the ’071 patent does not provide a definition of the relevant terms different from the ordinary meaning of the words. At the preliminary proceeding stage, we interpreted “difference of motion” simply to mean, under the required broadest reasonable interpretation, relative motion. Dec. on Inst. 10. That interpretation is consistent with the language of claim 4. Claim 4 recites that the “calculated result” — the calculated current motion of the remote-controlled device — is compared with the target motion signal to get the “difference of motion” (relative motion) between the remote-controlled device and the remote controller. In relation to Petitioner’s proffered interpretation, because a change in orientation is a type of motion, relative orientation would be a type (or species) of “difference of motion.”

3. Information of the Remote Controller’s Motion In the 3D Space

Petitioner submits that the phrase “information of the remote controller’s motion in the 3D space,” which appears in claim 13, should be interpreted as “any motion in three dimensional space, including motion in one or two dimensions.” Pet. 17.

Again, we find no definition in the ’071 patent that would depart from the ordinary meaning of the words. Claim 13 recites “wherein the motion detecting signal represents the information of the remote controller’s motion in the 3D space.” Claim 13 depends from claim 1. Neither claim sets forth an antecedent for “the 3D space.” Consistent with Petitioner’s position, information of motion in the 3D space, under its broadest reasonable interpretation, does not require complete information of motion in each of

the three dimensions. Although the motion is in “the 3D space,” information of the motion may be information relating to motion in one, two, or three dimensions. Our interpretation of “information of the remote controller’s motion in the 3D space is unchanged from the preliminary stage. Dec. on Inst. 10–11.

Instituted Grounds of Unpatentability

B. Prior Art — Smith

Smith relates to a remote control transmitter/receiver system in which the transmitter can generate an absolute direction command relative to magnetic North, in accordance with an internal compass signal. Ex. 1002, Abstract.

Figure 3 of Smith is reproduced below.

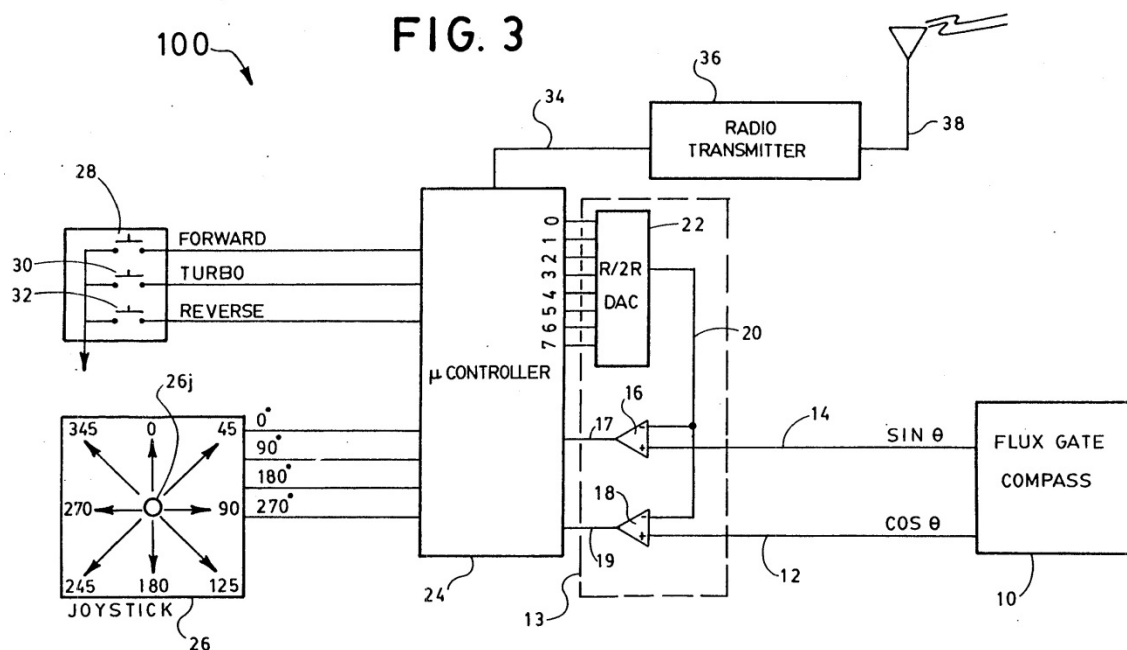


Figure 3 is a schematic block diagram of a remote control transmitting device. Ex. 1002, col. 3, ll. 1–3. Remote control transmitter 100 contains

microcontroller 24, which is provided with inputs from three momentary pushbutton control switches 28, 30, and 32, eight-position joystick 26, and flux gate compass 10 (via A/D converter 13). *Id.* at col. 3, ll. 61–66. Flux gate compass 10 outputs sine and cosine voltages 14 and 12. The magnitude of the voltages at the sine and cosine outputs corresponds to the sine and cosine of the earth’s magnetic field. The data necessary to interpret the orientation of the flux gate compass and the remote control transmitter is obtained by determining the ratio of the sine and cosine voltages. *Id.* at col. 4, ll. 17–32.

C. Anticipation by Smith — Claims 1–3, 5, and 10–14

Petitioner contends that Smith anticipates claims 1–3, 5, and 10–14. The Petition maps the language of the claims to the structures in Smith that are deemed to correspond with the limitations. Pet. 19–28. Petitioner also relies on the testimony of Dr. Raffaello D’Andrea. Ex. 1010 (“D’Andrea Decl.”).

Patent Owner lists allegations in its response why it believes Dr. D’Andrea’s testimony should be given little or no weight. PO Resp. 21– 22. The only testimony pointed out that may be relevant to the particular facts of this case, however, is the answer at the deposition indicating that he used “multiple references” for anticipation of the ’071 patent claims. *Id.* at 22. As pointed out by Petitioner, however, the answer is accurate, and does not reflect a misunderstanding of the law of anticipation, because his Declaration (Ex. 1010) addressed both Smith and a French patent publication (“Potiron”) as anticipatory prior art. Pet. Reply 12; Ex. 1010

¶¶ 113–126; Dec. on Inst. 5–6 (Petitioner’s asserted grounds); Ex. 2012 (D’Andrea Depo.) 312:21–313:7.

Patent Owner, in addition, argues that Smith does not determine changes in orientation. PO Resp. 5–9. According to Patent Owner, Smith discloses “determining orientation” but does not disclose “determining changes in orientation.” *Id.* at 7. Patent Owner relies, in part, on the Declaration of a co-inventor of Smith (Ex. 2014) (Jay Smith, III Declaration). Mr. Smith testifies that “[t]o determine changes in orientation of the remote controller [in Smith], the system would need to calculate a difference between the remote controller’s orientation at different points in time.” Ex. 2014 ¶ 21. “Nothing in [Smith] discloses that.” *Id.* Another of Patent Owner’s declarants, Dr. Robert H. Sturges, concurs that Smith does not detect motion of any component of its system. Ex. 2013 ¶¶ 63–64. Patent Owner goes so far as to allege that in order to determine “changes” in orientation of a remote controller the controller must “retain” the orientation after it sends a signal. PO Resp. 8.

Patent Owner does not, however, address how the supposed requirement of storing a previous orientation for comparison with the current orientation is consistent with the disclosure of the ’071 patent. In particular, Patent Owner does not address the portion of the ’071 patent, reproduced in § II.A.1 *supra*, that describes and provides support for “detect[ing] the remote controller’s motion” as claimed. We again reproduce a pertinent portion of the ’071 patent:

In the user’s operation, the user holds the remote controller 3 [Fig. 2] and moves it or rotate[s] it, *the terrestrial magnetism sensing module 31 in the remote controller 3 will detect a change in terrestrial magnetism, and accordingly*

outputs an terrestrial magnetism sensing signal S_G , the terrestrial magnetism sensing signal S_G provides the communication module 33 a reference to transmit the target motion signal S_{TAR} to control the remote-controlled device 4.

Ex. 1001, col. 4, ll. 5–12 (emphasis removed, remaining emphasis added).
When the remote controller is moved with a motion relative to the horizontal ground surface, the terrestrial magnetism sensing module will detect a change in the terrestrial magnetism because the remote controller body's angle or position to the ground has been changed; the resulting terrestrial magnetism sensing signal S_G will be changed. *Id.* at col. 3, l. 65 – col. 4, l. 4.

Thus, “detecting” the remote controller’s motion is detecting the change in terrestrial magnetism relative to the horizontal ground surface as the controller is moved or rotated, with the resulting terrestrial magnetism sensing signal S_G changing accordingly. Patent Owner has not pointed to any disclosure in the ‘071 patent of the remote controller storing a previous orientation for comparison with a present orientation to effect “detect[ing] the remote controller’s motion” as claimed. We, therefore, remain convinced that detecting the orientation of a remote controller with respect to magnetic North — which Patent Owner admits Smith to disclose — is, at the least, *within the scope of* “detect[ing] the remote controller’s motion” as claimed.

Although placed under the heading regarding a “difference of motion” limitation that is relevant only to claim 4, Patent Owner argues in its Response that “[b]ecause Smith does not disclose a comparison of the ‘071 Patent’s target motion signal with the remote-controlled device’s terrestrial magnetism sensing signal (Ex. 2014 (Smith Decl.), ¶¶ 18, 21), it cannot

anticipate claim 2 of the ‘071 Patent.” PO Resp. 12. We do not find the lack of “comparison” argument persuasive because Patent Owner’s Declarant states that, upon receipt of the direction control signal, “the microcontroller [in Smith] *compared* the car’s current heading (relative to magnetic North) to the direction control signal heading to determine if the car needed to turn.” Ex. 2014 ¶ 19 (emphasis added).

We also are not persuaded that the claims require that the remote controller detect motion in all of the (three-dimensional) X, Y, and Z axes. Patent Owner argues that requiring fewer than all three axes would exclude the preferred embodiment of the invention. PO Resp. 12–13. We agree with Petitioner, however, that a *broad*er construction that does not require all the details of a preferred embodiment cannot “exclude” the preferred embodiment. Pet. Reply 9.

With respect to claim 13, we also are not persuaded that the recited “information” requires information about all of the X, Y, and Z axes. PO Resp. 14–18; *see* § II.A.3 *supra*. If the claim was intended to be so limited then the claim is a drafting error, or represents “the fault of the draftsman, not the Board.” Pet. Reply 10. Even in proceedings where the claims cannot be amended and the presumption of validity applies, our reviewing court has repeatedly and consistently recognized that “courts may not redraft claims, whether to make them operable or to sustain their validity.” *Chef Am., Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1374 (Fed. Cir. 2004) (citations omitted). “[I]n accord with our settled practice we construe the claim as written, not as the patentees wish they had written it.” *Id.*

In consideration of the Petition and supporting evidence, and Patent Owner’s arguments and evidence in response, we conclude that Petitioner

has demonstrated, by a preponderance of the evidence, that claims 1–3, 5, and 10–14 are unpatentable for anticipation by Smith.

D. Anticipation by Smith — Claim 4

Claim 4 of the '071 patent recites that the processing module uses the terrestrial magnetism sensing signal to calculate the current motion of the remote-controlled device, and uses the calculated result to compare with the target motion signal to get the difference of motion between the remote-controlled device and the remote controller, and according to the difference to output the driving control signal. Petitioner submits that the “difference of motion” is inherent in Smith because the target motion signal is the desired orientation and the comparison for the target motion signal necessarily involves calculating a difference with respect to the current orientation and the target orientation. Pet. 27. For the showing of inherency, Petitioner refers to the Declaration of Dr. D’Andrea and to Fouche. *Id.* at 27–28; Ex. 1010 ¶ 91; Ex. 1006, col. 7, ll. 36–42. Fouche discloses that, in the remote control of a model aircraft, pitch attitude error is the difference between a commanded pitch attitude and a measured (actual) pitch attitude error. Ex. 1006, col. 7, ll. 36–42.

Patent Owner responds that Smith does not consider the “difference of motion” between the remote-controlled device and the remote controller. PO Resp. 9–12. Patent Owner argues that the Smith remote controller sends an “absolute direction” that is the sum of the orientation of the remote control transmitter relative to magnetic North and the orientation of the joystick shaft relative to the remote control transmitter. *Id.* at 10.

Smith discloses:

The user selects a desired direction (D) with the joystick shaft 26j [Fig. 2b] (“selected direction”) while simultaneously depressing either the forward 28 [Fig. 3] or reverse switch 32. The absolute direction (“absolute” meaning relative to magnetic North) corresponding to the selected direction *is obtained by summing the orientation of the remote control transmitter 100 relative to magnetic north with the orientation of the shaft 26j relative to the remote control transmitter 100*. For example, if the user moves the joystick shaft 26j so that it is oriented 90° relative to the remote control transmitter 100 while holding the remote control transmitter 100 so that it is oriented 60° from North, the user has selected an absolute direction of 150° relative to North. A direction control signal containing information about the absolute direction relative to magnetic North can then be provided to an ordinary radio transmitter 36 via line 34 and then transmitted over antenna 38 to the car 200.

Ex. 1002, col. 5, ll. 14– 31 (emphasis added).

Patent Owner acknowledges that we have construed the claim 4 phrase “difference of motion,” in accordance with its broadest reasonable interpretation, as meaning “relative motion.” PO Resp. 9; Dec. on Inst. 9–10; § II.A.2 *supra*. But because after the summation in Smith the orientation of the remote controller is “no longer relevant” and not included in the signal being transmitted, Patent Owner submits that Smith cannot disclose a comparison of the target motion signal with the remote-controlled device’s motion to get the “relative motion.” PO Resp. 11 (citing Ex. 2013 (Sturges Decl.) ¶¶ 40–44).

As explained by another of Patent Owner’s Declarants:

Consider two users – back to back – one facing due east and one facing due west. Each user wants his car to turn north. The user facing east would move his joystick to the left (North). The user facing west would move his joystick to the right (also

North). The direction control signal sent from both remote controllers would be the same – namely, 0° (i.e., magnetic North). Even though the orientations of the users’ remote controllers were directly opposite, under the invention disclosed in my Patent, the exact same direction control signal would be sent by the remote controllers to the remote-controlled cars because the orientations of the joysticks relative to magnetic North would be the same.

PO Resp. 11 (quoting Ex. 2014 (Smith Decl.) ¶ 17).

Petitioner in its Reply acknowledges, as does Patent Owner, that we construe “difference of motion” in claim 4 as relative motion. Pet. Reply 5–6. Petitioner in its Reply does not, however, provide a persuasive explanation with respect to how the signal sent by the remote controller in Smith, or its “target motion signal” in the terms of claim 4, may contribute to getting the relative motion between the remote controller and the remote-controlled device.² Petitioner submits that “[i]t bears noting, moreover, that the ‘target motion signal’ (S_{TAR3}) of Fig. 5 of the ’071 Patent, also is a combination of the remote-controller’s measured orientation and the angle of the joystick, just as in Smith. Ex. 1001, 6:39-51. In that embodiment, it is ‘ S_{TAR3} ’ that is used to calculate the ‘difference of motion.’” Pet. Reply. 7. Petitioner refers to no evidence of record, however, to establish that this “third operation mode” described by the ’071 patent necessarily sends, as in Smith, a target motion signal that is the summation of the terrestrial magnetism signal and the orientation of the joystick relative to the remote

² Although we did not institute trial on the alternative ground that claim 4 would have been obvious over Smith and Fouche (or the knowledge of a person of ordinary skill in the art) (Pet. 29), the alternative ground for obviousness would suffer from the same deficiency as the anticipation ground.

controller. Although attorney arguments are helpful when directing us to evidence in the record, the arguments themselves do not constitute evidence. Arguments of counsel cannot take the place of evidence in the record. *See, e.g., Meitzner v. Mindick*, 549 F.2d 775, 782 (CCPA 1977); *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

In consideration of the foregoing, we conclude that Petitioner has *not* demonstrated, by a preponderance of the evidence, that claim 4 is unpatentable as anticipated by Smith.

E. Obviousness over Smith and Barr — Claims 6 and 7

Petitioner contends that the combination of Smith and Barr renders obvious the subject matter of claims 6 and 7. The claims add further limitations to claim 1 regarding a driving unit that receives the driving control signal and adjusts the pitch of an airplane wing. Barr describes a radio-controlled flight system that includes aircraft 30 (Ex. 1005, Fig. 1) that receives signals fed through flight control circuitry in order to control set of ailerons 35A, 35B, rudder 40, and elevator 45. *Id.* at col. 4, ll. 18–26, Fig. 2; Pet. 29–30.

Petitioner submits there is express suggestion in Smith to combine its teachings with the wing of the aircraft disclosed in Barr. Pet. 30–31. Although Smith’s preferred embodiment is directed to remote control of a “small scale remotely controlled car” (Ex. 1002, col. 3, ll. 21–24), the reference teaches that remote-controlled hobby vehicle systems include planes, boats, and cars (*id.* at col. 1, ll. 18–21). Moreover, Smith teaches that “the present invention is adaptable to other hobby vehicles such as planes and boats.” *Id.* at col. 6, ll. 39–41.

Patent Owner in its Response does not provide any separate arguments or evidence directed to the ground asserted against claims 6 and 7. Upon review of the Petition and supporting evidence, as well as the Patent Owner Response and supporting evidence, we conclude Petitioner has demonstrated, by a preponderance of the evidence, that claims 6 and 7 are unpatentable for obviousness over Smith and Barr.

F. Obviousness over Smith and Fouche — Claims 8 and 9

Petitioner contends that the subject matter of claims 8 and 9 would have been obvious over the combination of Smith and Fouche. The claims further limit the subject matter of claim 1 with respect to receiving the driving control signal and adjusting the rotation speed or pitch of a rotor of a helicopter. Fouche describes a remotely controlled helicopter with drivers for controlling the helicopter's rotor. Ex. 1006, Figs. 2, 3, col. 7, ll. 53–56. Petitioner relies on Smith's teachings with respect to hobby vehicles, in addition to its described embodiment of a car, as showing motivation to apply Smith's control system to a remotely controlled helicopter as described by Fouche. Pet. 32–33. Smith refers to remote-controlled hobby vehicle systems "such as remote control planes, boats, cars, etc." Ex. 1002, col. 1, ll. 19–21. Petitioner submits that a person of ordinary skill in the art "would have been motivated to combine Smith with known art teaching drivers for the rotor of a helicopter to adjust speed or pitch of the rotor blades." Ex. 1010 (D'Andrea Decl.) ¶ 105.

Patent Owner in its Response does not provide any separate arguments or evidence directed to the ground asserted against claims 8 and 9. Upon review of the Petition and supporting evidence, as well as the

Patent Owner Response and supporting evidence, we conclude Petitioner has demonstrated, by a preponderance of the evidence, that claims 8 and 9 are unpatentable for obviousness over Smith and Fouche.

G. Obviousness over Smith, Spirov, Bathiche, and Shkolnikov

1. Prior Art – Spirov, Bathiche, and Shkolnikov

Spirov describes a remotely controlled hovercraft in which the remote controller may provide a thumb-activated throttle and yaw control 20 and one or more finger-operated trigger controls 22 and 24. Ex. 1007 ¶ 82, Fig. 3. The remote controller also may provide one-handed operation with pitch and roll control by mimicking the pitch and roll of controlled hovercraft 10 by means of XY axis transducers in the controller. *Id.* ¶ 87, Fig. 3.

Bathiche teaches a computer input device that may be operated in a first mode whereby X and Y axis tilt sensors generate orientation information. Ex. 1008, col. 8, ll. 37–44. In a second mode, input is from switches rather than the X and Y tilt sensors. *Id.* at col. 8, ll. 48–55. A mode switch selects between the different modes. *Id.*

Shkolnikov (Ex. 1009) teaches an active keyboard system for handheld electronic devices, such as remote controllers (*id.* ¶¶ 27, 87, 94), that may include first selector 216 and second selector 218 (*id.* at Fig. 2) to select between manual input and motion (via movement sensors) as an input. *Id.* ¶¶ 24–25. Shkolnikov also teaches that the motion input may be provided as an alternative or “in addition to” the manual input. *Id.* ¶ 25.

2. Claim 15

Claim 15 recites that the motion detecting module “further comprises a configuration switch module to select between the terrestrial magnetism detecting module and/or the manual input module as the input of the communication module.” Ex. 1001, col. 10, ll. 5–9. Petitioner asserts that the subject matter of the claim would have been obvious over the combination of Smith, Spirov, Bathiche, and Shkolnikov. Pet. 35–40.

Patent Owner responds that neither Bathiche nor Shkolnikov is analogous art. PO Resp. 19–21. The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, and (3) the level of skill in the art. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). Whether a reference is analogous art is part of the analysis of the scope and content of the prior art. *Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc.*, 21 F.3d 1068, 1071 (Fed. Cir. 1994). Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992).

With respect to Shkolnikov, Patent Owner submits that the reference is directed to an active keyboard system for hand-held electronic devices. PO Resp. 20 (citing Ex. 1009 ¶ 20).³ “Shkolnikov discloses entering

³ Our analysis is directed to Shkolnikov but we consider Bathiche to be, at the least, reasonably pertinent to the particular problem with which the

alphanumeric text and data into the system using only one hand. In no way is this technology analogous to the '071 Patent.” *Id.* (internal citation omitted). Patent Owner asserts that Shkolnikov is not in the '071 patent's field of endeavor, nor reasonably pertinent to the particular problem with which the '071 patent is concerned, which is “easier control of remotely controlled ‘flying things.’” *Id.* at 20–21. Patent Owner points out that, when questioned on cross-examination about the problem that the '071 patent addressed, Petitioner's expert Dr. D'Andrea responded that “[t]he problem being addressed was to be able to control these vehicles in [an] as-claimed easier way.” *Id.* at 19 (citing Ex. 2012, 96:1–13).

Patent Owner also refers to the Declaration of Dr. Robert H. Sturges (Ex. 2013). Dr. Sturges submits that Shkolnikov's system is an active keyboard system for handheld data entry, used to enter alphanumeric text. Ex. 2013 ¶ 60 (citing Ex. 1009, at [54], ¶¶ 3, 20). Dr. Sturges acknowledges that Shkolnikov states that the system can be used with electronic handheld devices including remote controls. *Id.* However, with respect to Shkolnikov's disclosure of using the system with a remote control, Dr. Sturges states that:

I interpret these passages to mean that Shkolnikov's system can be used as a remote control for controlling such things as a television or a computer where alphanumeric input may be

inventor was involved and, thus, analogous art. Counsel for Patent Owner conceded as much at the oral hearing. *See* Tr. 59:22–60:2 (“I must confess that in terms of Bathiche being non-analogous art, Professor Sturges and I disagree on that point. He does not say that Bathiche is non-analogous art, and I understand that's evidence and what I'm saying is argument.”).

useful — just as I can use my cell phone to control my cable box and search for programs to view.

Ex. 2013 ¶ 60.

In its Reply to the Patent Owner Response, Petitioner responds that “[i]n its Institution Decision, the Board found that claim 15 is obvious over Smith in view of Spirov, Bathiche, and Shkolnikov.” Pet. Reply 11.

Petitioner is incorrect. In our Decision on Institution we did not find that any claim was anticipated or obvious over the references, or otherwise unpatentable. In view of the record at that time, we determined that the Petition demonstrated a reasonable likelihood of Petitioner prevailing (at trial) on certain asserted grounds of obviousness. Dec. on Inst. 19.

Petitioner further submits that Patent Owner’s argument in the Patent Owner Response with respect to non-analogous art is, “in substance, identical to” the argument it raised in its Preliminary Response. Pet. Reply 11. Petitioner is, again, incorrect. In our Decision on Institution we addressed two arguments regarding non-analogous art that Patent Owner raised in its Preliminary Response. First, we disagreed that the Petition’s discussion of the level of ordinary skill in the art served to “define” the field of endeavor. Dec. on Inst. 17. Second, we were not persuaded by the argument that the particular problem with which the ’071 patent is concerned is “control of remotely controlled vehicles,” noting that only dependent claim 5 limits the generic remote-controlled “device” to a remote-controlled vehicle such as a model airplane, a model helicopter, or a model car. *Id.* at 17–18.

Petitioner notes (Pet. Reply 11), correctly, that at the institution of trial we determined that “[b]ecause Patent Owner’s arguments [in its

Preliminary Response] regarding non-analogous art are not supported by the facts in this record, we are not persuaded that either of Bathiche and Shkolnikov represents non-analogous art.” Dec. on Inst. 18. Notably, in that Decision instituting trial, we did not find that any of the applied references were analogous art with respect to the ’071 patent. Nor did we find that any of the applied references were non-analogous art with respect to the ’071 patent. Rather, we merely were not swayed by unsupported attorney arguments in the Preliminary Response as to why the references should be considered non-analogous art. Patent Owner had not yet had a full opportunity to submit evidence supportive of its argument. Petitioner had not had the opportunity to provide arguments and/or evidence as to why the applied references might, to the contrary, represent analogous art, and we had not had the opportunity to hear Petitioner’s views on the issue.

Petitioner’s only reply to the arguments and evidence in the Patent Owner Response in support of why Shkolnikov is non-analogous art, other than the unfounded reliance on the Decision on Institution, is the observation that the fact Dr. D’Andrea had not heard of Bathiche or Shkolnikov prior to this case is irrelevant to the analogous-art inquiry. Pet. Reply 11; PO Resp. 20. We agree with Petitioner to the extent that the fact Dr. D’Andrea was not aware of the Bathiche and the Shkolnikov references prior to this case has little relevance to the question of whether the references are analogous art. “The issue of obviousness is determined entirely with reference to a *hypothetical* ‘person having ordinary skill in the art.’ It is only that hypothetical person who is presumed to be aware of all the pertinent prior art.” *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 454 (Fed. Cir. 1985).

When the analogous-art issue was raised by Patent Owner in its Patent Owner Response, it was incumbent upon Petitioner to demonstrate that Shkolnikov is analogous art. The grounds for unpatentability in this proceeding are asserted by Petitioner, not grounds entered by the Board as permitted, for example, in reexamination proceedings. In an *inter partes* review, the burden of persuasion is on the petitioner to prove unpatentability by a preponderance of the evidence (35 U.S.C. § 316(e)), and that burden never shifts to the patentee. *Dynamic Drinkware, LLC v Nat'l Graphics, Inc.*, No. 2015-1214, 2015 WL 5166366, at *2 (Fed. Cir. Sept. 4, 2015). Petitioner has not met its burden in showing that Shkolnikov is analogous art. Moreover, Petitioner cannot rely on the Board to make new findings regarding analogous art in a final written decision.

We find no fault with Patent Owner's position that Shkolnikov is non-analogous art. The '071 patent states that the field of invention "relates to a remote-controlled motion apparatus which includes a remote-controlled device and a remote controller." Ex. 1001, col. 1, ll. 17–20. The related art is said to include "conventional" remote control systems that use a remote controller and a remote-controlled device, with the user operating the remote controller to control the motion of the remote-controlled device. *Id.* at col. 1, ll. 21–25. The patent provides an example of a remote-controlled model airplane, with a control signal sent by a remote controller for controlling the airplane's flight by changing the angle of a rear fin. *Id.* at col. 1, ll. 25–59.

Further, the '071 patent's claims are directed to a remote control system that includes a remote controller that "detects the remote controller's motion and outputs a motion detecting signal" and a remote-controlled device that ultimately has its motion adjusted according to a driving control

signal derived in part from the remote controller's motion detecting signal. Ex. 1001, claim 1 (sole independent claim).

Consistent with Patent Owner's arguments, Shkolnikov appears to relate to "active" keyboard systems for handheld electronic or data entry devices. Ex. 1009 ¶ 3. The related art is said to include electronic devices having small or limited keyboards for data entry or for navigating the Internet. *Id.* ¶¶ 5–10. The inventive "active" keyboard system is said to dynamically present available choices on a display to facilitate entry of alphanumeric text and data using one hand. *Id.* ¶ 20. The system may include movement sensors to interpret motion of the system as an input. *Id.* ¶ 25. The motion input is used however, for data-entry applications such as aiding in the navigation of Internet web pages (*id.* ¶ 112) or in moving a selection pointer in a graphical user interface (*id.* ¶¶ 115–116, Figs. 11–13), as opposed to controlling the motion of a remotely controlled device. We find little in Shkolnikov that would be reasonably pertinent to an artisan seeking to improve upon control of the motion of a remotely controlled device.

Shkolnikov is critical to the asserted ground of unpatentability because that reference provides the teaching of selecting between three modes of operation, where the third mode is a combination of the first and second mode, to demonstrate obviousness of selecting between "the terrestrial magnetism detecting module and/or the manual input module" as recited in claim 15. Pet. 37, 40 (claim chart); Ex. 1009 ¶¶ 24–25. Upon review of the Petition and supporting evidence, as well as the Patent Owner Response and supporting evidence, we conclude that Petitioner has *not*

demonstrated, by a preponderance of the evidence, that claim 15 is unpatentable for obviousness over Smith, Spirov, Bathiche, and Shkolnikov.

H. Patent Owner's Motion to Exclude

Patent Owner moves to exclude, under 37 C.F.R. § 42.64(c), the entirety of Exhibit 1010 (Dr. D'Andrea's Declaration). Paper 19 ("Mot. To Excl.") 1–5.

Petitioner responds that the objections were untimely, citing 37 C.F.R. § 42.64(b)(1), which requires that any objection to evidence submitted during a preliminary proceeding (e.g., D'Andrea Decl.) must be served within ten business days of the institution of the trial. Paper 23 (Petitioner's Opposition to Patent Owner's Motion to Exclude) 1–3. Patent Owner submits that it "objected to the admissibility of Exhibit 1010 on February 16, 2015" (Mot. to Excl. 1) and that it was "timely served" by Paper Number 16, filed on that date. Paper 24 (Patent Owner's Reply in Support of Motion to Exclude).

The Board's rules provide that a party relying on evidence to which an objection is timely served may respond to the objection by serving supplemental evidence within ten business days of service of the objection. 37 C.F.R. § 42.64(b)(2). Patent Owner alleges that it served the objection to Exhibit 1010 on February 16, 2015. Mot. to Excl. 1. If so, the objection was more than three months late; trial was instituted on October 28, 2014. Patent Owner's late objection to Dr. D'Andrea's Declaration was, thus, prejudicial to Petitioner because it deprived Petitioner of the opportunity to respond with supplemental evidence to cure alleged deficiencies.

Accordingly, Patent Owner's Motion to Exclude Exhibit 1010 is *dismissed* as untimely.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that claims 1–3, 5, and 10–14 are unpatentable for anticipation by Smith.

Petitioner has demonstrated by a preponderance of the evidence that claims 6 and 7 are unpatentable for obviousness over Smith and Barr and that claims 8 and 9 are unpatentable for obviousness over Smith and Fouche.

Petitioner has *not* demonstrated by a preponderance of the evidence that claim 4 is unpatentable for anticipation by Smith or that claim 15 is unpatentable for obviousness over the combination of Smith, Spirov, Bathiche, and Shkolnikov.

IV. ORDER

In consideration of the foregoing, it is

ORDERED that claims 1–3 and 5–14 of the '071 patent are *unpatentable*;

FURTHER ORDERED that claims 4 and 15 have not been shown, by a preponderance of the evidence, to be unpatentable;

FURTHER ORDERED Patent Owner's motion to exclude evidence is *dismissed*; and

FURTHER ORDERED that, because this is a final written decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

IPR2014-00730
Patent 7,584,071 B2

For Petitioner:

James E. Hopenfeld
Tammy J. Terry
OSHA LIANG LLP
hopenfeld@oshaliang.com
terry@oshaliang.com

For Patent Owner:

Gene Tabachnick
James Dilmore
BECK & THOMAS, P.C.
gtabachnick@beckthomas.com
jdilmore@beckthomas.com