

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC,
Petitioner,

v.

MINDBASEHQ, LLC,
Patent Owner.

IPR2021-01251 (Patent 6,510,433 B1)
IPR2021-01252 (Patent 6,665,680 B2)¹

Before NORMAN H. BEAMER, NABEEL U. KHAN, and
KARA L. SZPONDOWSKI, *Administrative Patent Judges*.

SZPONDOWSKI, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision on Remand
Determining All Challenged Claims Unpatentable
35 U.S.C. § 144, 318

¹ This combined decision applies to both identified cases. We exercise our discretion to issue the decision to be filed in each case. The parties are not authorized to use this caption style.

I. INTRODUCTION

We address these cases on remand after a decision by the United States Court of Appeals for the Federal Circuit, which vacated and remanded in part and affirmed in part our original Final Written Decisions in these *inter partes* reviews. *Google LLC v. MindbaseHQ, LLC*, 2025 WL 2471511 (Fed. Cir. 2025); Paper 44 (“Appeal Dec.”); Paper 43 (mandate).²

A. Procedural History

We instituted *inter partes* review of claims 1–46 of U.S. Patent No. 6,510,433 B1, issued on January 21, 2003 (Ex. 1001, “the ’433 patent”), and claims 1–46 of U.S. Patent No. 6,665,680 B2, issued on December 16, 2003 (IPR2025-01252, Ex. 1001, “the ’680 patent”) in response to Petitions (Paper 3, “Pet.”) filed by Google LLC (“Petitioner”). Paper 8 (“Inst. Dec.”). During the trial, MindbaseHQ, LLC (“Patent Owner”) filed Responses to the Petitions (Paper 15, “PO Resp.”), Petitioner filed Replies (Paper 25, “Reply”), and Patent Owner filed Sur-replies (Paper 26, “Sur-reply”³). In addition, Petitioner filed Motions to Strike Dr. Ranka’s Rebuttal Declarations (Paper 29, “Mot. Strike”), and Patent Owner filed Oppositions (Paper 33, “Opp. Strike”). We held a combined oral hearing for both cases on October 11, 2022, and a copy of the transcript was entered into the record. Paper 39 (“Tr.”).

On January 6, 2023, we issued Final Written Decisions in these proceedings in accordance with 35 U.S.C. § 318(a). Paper 40 (“Final

² Unless otherwise noted, citations to papers and exhibits refer to filings in IPR2021-01251. The corresponding filings in IPR2021-01252 are substantively identical as far as the issues presented here are concerned.

³ Patent Owner’s Sur-replies do not contain any page numbering. We start page number 1 on the page titled “Introduction.”

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Dec.”). We concluded that Petitioner had shown, by a preponderance of the evidence, that claims 1–13, 20–32, 41, and 42 of both the ’433 and ’680 patents were unpatentable. Final Dec. 25–40. However, we concluded that Petitioner had not shown, by a preponderance of the evidence, that claims 14–19, 33–40, and 43–46 of the patents were unpatentable. *Id.* at 40–44, 45–46, 53–60. We also dismissed as moot Petitioner’s Motions to Strike because we did not rely on Dr. Ranka’s Rebuttal Declarations (Paper 27). *Id.* at 60–61.

Petitioner appealed the Final Written Decisions to the United States Court of Appeals for the Federal Circuit, challenging the determination that claims 14–19, 33–40, and 43–46 were not shown to be unpatentable. Paper 41, 2. Patent Owner cross-appealed, challenging the determination that claims 1–13, 20–32, 41, and 42 were shown to be unpatentable. Paper 42, 2.

On August 28, 2025 the Federal Circuit issued an opinion applicable to both cases vacating and remanding in part and affirming in part our Final Written Decisions. Appeal Dec. With respect to Petitioner’s appeals, the Federal Circuit addressed the “dictionary routine” claims (claims 14–19 and 33–40) and the “normalization” claims (claims 43–46). Appeal Dec. 7–14. For the “dictionary routine” claims, the Federal Circuit vacated and remanded, stating that

In sum, as Google contends and we now hold, the “dictionary routine” claims can be practiced by *use* of an already-created dictionary, and do not also require the automatic *creation* of a dictionary. The Board needs to consider Google’s evidence and argument by applying this construction of the automatically classifying and storing limitation, and using this understanding to determine whether Conlon may, in fact, render the “dictionary routine” claims obvious (and, relatedly, whether its prior distinctions of Conlon may be immaterial).

Appeal Dec. 10–11. For the “normalization” claims, the Federal Circuit also vacated and remanded, stating that our “decision to exclude Google’s rebuttal argument and supplemental declaration is based on a clear factual error,” so on remand we “must include evaluation of the evidence and argument Google provided in reply.” *Id.* at 13–14. With respect to Patent Owner’s cross-appeals, the Federal Circuit affirmed. *Id.* at 14–16.

On November 4, 2025, the parties submitted joint statements on remand, consistent with Standard Operating Procedure 3 (“SOP3”).⁴ Ex. 3002. On November 19, 2025, we held a conference call with the parties. On November 26, 2025, we authorized the parties to submit additional briefing. Paper 45. Petitioner and Patent Owner submitted opening remand briefs. Paper 46 (“Pet. Remand Br.”); Paper 47 (“PO Remand Br.”). The parties also submitted responses to each other’s opening remand briefs. Paper 48 (“Pet. Remand Resp. Br.”); Paper 49 (“PO Remand Resp. Br.”).

B. Final Written Decision on Remand

We have jurisdiction under 35 U.S.C. § 6. This combined decision is a Final Written Decision on Remand under 35 U.S.C. § 318(a) as to the patentability of claims 14–19, 33–40, and 43–46 of the ’433 and ’680 patents. For the reasons discussed below, we determine that Petitioner has demonstrated by a preponderance of the evidence that claims 14–19, 33–40, and 43–46 of the patents are unpatentable.

As discussed above, the Federal Circuit affirmed the original Final Written Decisions as to claims 1–13, 20–32, 41, and 42 for both patents.

⁴ SOP3 replaced SOP9 and is available at https://www.uspto.gov/sites/default/files/documents/ptab_sop_3-2023-oct.pdf.

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Appeal Dec. 16. Accordingly, as directed by the Federal Circuit, we assess Petitioner’s challenge of claims 14–19, 33–40, and 43–46 in this combined decision. We maintain our decisions regarding claims 1–13, 20–32, 41, and 42. *See* Final Dec. 25–40, 44–45, 46–49, 49–53 (analysis of 1–13, 20–32, 41, and 42). As the parties are familiar with the facts, we review only those facts necessary to frame and decide the issues on remand. The issues presented and analyzed here are in all pertinent respects common to both proceedings.

II. BACKGROUND

A. *Related Matters*

Petitioner advises that the ’433 and ’680 patents are the subject of the following district court litigation: *MindbaseHQ LLC v. Google LLC*, No. 1-20-cv-24742 (S.D. Fla.) (terminated on Mar. 12, 2021) and *MindbaseHQ LLC v. Google LLC*, No. 3:21-cv-03603 (N.D. Cal.) (transferred on Mar. 13, 2021) (“related litigation”). Pet. 7.

B. *The ’433 Patent (Ex. 1001)*⁵

The ’433 patent is titled “Database Structure Having Tangible and Intangible Elements and Management System Therefor” and is generally directed to “a new organizational protocol for creating and manipulating relational databases and database structures.” Ex. 1001, code (54), 1:16–18. The ’433 patent states that “[p]resently available databases do not categorize data elements into specific categories with rules for storing and manipulating each type of data element.” *Id.* at 2:28–30.

Because “[t]he inventive arrangements use the neuron-synapse-neuron model for structuring relationships of all data elements in a new database

⁵ The ’680 patent is comparable.

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structure[,] . . . the database system . . . is referred to as the MINDBASE database system.” *Id.* at 2:19–23. The MINDBASE data system is generally described as follows:

The inventive arrangements categorize all MINDBASE data elements as either tangible data elements or intangible data elements. Tangible data elements are physical data elements that have weight. Tangible data elements are defined as “cause” data elements. Intangible data elements are all other data elements. Intangible data elements are further categorized into verbs which are identified as “effect” data elements and descriptive data elements which are identified as “descriptors[.]”. Descriptors are used to describe tangible data elements and the degree of performance of tangible data elements.

Id. at 2:28–42. The ’433 patent states that “[t]he unique categorization of cause, effect, and descriptive data elements and their specific uses is not followed by any other database system.” *Id.* at 2:45–48.

Further, “[t]he MINDBASE format is based on the completely detailed information people have in their minds instead of the ‘verbal shorthand’ that people generally use when speaking or writing.” *Id.* at 2:65–3:1. Thus,

[f]or a computer system to simulate the way people communicate, it must have a way to store all of the descriptive details and word associations that people usually leave out of their communications. The MINDBASE system has the unique ability to store all of the possible relationships that are usually left out of verbal shorthand and all other database systems. The MINDBASE system classifies each word as either a cause, an effect, or a descriptor. The MINDBASE system can also differentiate between multiple uses of the same word for different parts of speech. For example, some words like ‘book’ can be a noun, verb, or an adjective. The MINDBASE system can advantageously be provided with a very detailed dictionary

routine that classifies all words as causes, effects, or descriptors. This routine also differentiates between uses of the same word for different parts of speech.

Id. at 3:19–35.

C. Illustrative Claims

Independent claim 14 and dependent claim 43 of the '433 patent are reproduced below, with brackets noting Petitioner's identifiers.

14. [14.0] A database system, comprising:

[14.1] a database stored in a fixed medium and having a set of tangible data elements representing things which have physical weight and can cause an effect and a set of intangible data elements representing words and concepts which have no physical weight and cannot be weighed;

[14.2] said set of intangible data elements including a first subset of effect data elements representing verbs, standing alone and in combination with other words, which describe actions, objectives, results, missions, procedures and processes, and a second subset of descriptive data elements describing said tangible data elements, said effect data elements and degrees of performance of said tangible data elements; and,

[14.3] a dictionary routine for automatically classifying and storing words entered into said database according to said sets and subsets of data elements.

43. [43.0] A method for inter-relating different databases structured as recited in claim 41, comprising the steps of:

[43.1] for each of said databases, and in any order, [43.1.1] normalizing names of like data elements having different names in said different databases and [43.1.2] normalizing names of different data elements having like names in said different databases;

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[43.2] normalizing data elements which are separate in any one of said databases and which are grouped together as single data elements in any other of said databases;

[43.3] comparing each of said normalized databases with each other one of said normalized databases;

[43.4] recording all common data elements found during each said comparing step; and,

[43.5] recording one location of each said common data element in each of said databases.

Ex. 1001, 36:7–24, 39:12–28.

Claims 14 and 43 of the '680 patent are identical, except for limitation 14.2, which recites:

[14.2] said set of intangible data elements including a first subset having effect data elements representing at least one among verbs standing alone and verbs in combination with other words, which describe at least one among said tangible data elements, actions, objectives, results, missions, procedures and processes, and a second subset having descriptive data elements describing at least one among said tangible data elements, said effect data elements, degrees of performance of said tangible data elements and the nature of the relationship between the tangible data elements and the effect data elements.

IPR2021-01252, Ex. 1001, 36:28–38. This difference is not relevant to this Decision.

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D. Evidence

Petitioner relies on the following references (*see* Pet. 9).

Reference	Exhibit	Patent/Printed Publication
Conlon	1005	Conlon, et al., <i>Developing a Large Lexical Database for Information Retrieval, Parsing, and Text Generation Systems</i> , Information Processing & Management, Vol. 29, No. 4, pp. 415-431 (1993)
Miller	1013	Miller, <i>Nouns in WordNet: A Lexical Inheritance System</i> , International Journal of Lexicography, Vol. 3, No. 4, pp. 245–264 (1990)
Beckwith	1016	Beckwith, et al., <i>Implementing a Lexical Network</i> , International Journal of Lexicography, Vol. 3, No. 4, pp. 302–312 (1990)
Fong	1029	Fong, et al., <i>Guide on Logical Database Design</i> , NBS Special Publication 500-122 (1985)

In the original Final Written Decisions, we determined that Conlon, Beckwith, and Miller are analogous art to the '433 patent. Final Dec. 21–23. The Federal Circuit determined that substantial evidence supported our finding, rejecting Patent Owner’s arguments on cross-appeal that the three references are not analogous art. Appeal Dec. 15. Patent Owner has not challenged whether Fong is analogous art.

E. Prior Art and Asserted Grounds

Petitioner asserts that claims 1–46 are unpatentable on the following grounds (Pet. 9):

Claims Challenged	35 U.S.C. §⁶	References
1, 2, 9, 12–21, 28, 32–40	103(a)	Conlon
3–6, 8, 10, 11, 22–25, 27, 29–31, 41, 42	103(a)	Conlon, Miller
7, 26	103(a)	Conlon, Miller, Beckwith
43–46	103(a)	Conlon, Miller, Fong

In support, Petitioner relies on the Declarations of Dr. Bernard J. Jansen (Ex. 1002) and the Rebuttal Declarations of Dr. Jansen (Ex. 1057). Patent Owner relies on the Declarations of Dr. Sanjay Ranka (Ex. 2001) and the Rebuttal Declarations of Dr. Ranka (Paper 27). A deposition transcript has been entered into the record for Dr. Ranka (Ex. 1051).

1. Conlon (Ex. 1005)

Conlon is an article titled “Developing a Large Lexical Database for Information Retrieval, Parsing, and Text Generation Systems.” Ex. 1005, 415. Petitioner contends that Conlon was catalogued and accessible to the public in 1993, more than one year before the ’433 patent’s earliest possible effective date, and is prior art under 35 U.S.C. § 102(b). Pet. 27 (citing Ex. 1005; Ex. 1011, 1–2).

Conlon describes the “construct[ion] of a lexical database by combining material from a number of machine-readable sources,” and “the

⁶ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 103. Because the ’433 and ’680 patents have an effective filing date prior to the effective date of the applicable AIA amendment, we refer to the pre-AIA version of § 103.

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kind of lexical information required for applications in information retrieval and in other natural language processing areas.” Ex. 1005, 415 (Abstract).

Conlon describes the organization and design of the tables of a lexical database (“LDB”), which is stored in an Oracle Relationship Database Management System (“RDMS”). *Id.* Conlon’s lexical database “contains information about approximately 50,000 word entries (each word may have many senses)” and “is grouped by major parts of speech into tables for nouns, verbs, adjectives, and adverbs.” *Id.* at 416. Conlon states “[t]o support our goals, we need to collect and organize the huge amounts of information used routinely by humans to process language.” *Id.*

Conlon explains that “[e]ach source of lexical data has a different structure and must be treated differently.” Ex. 1005, 418. Conlon includes information from machine readable dictionaries, and states that “[i]n order to translate knowledge from machine-readable dictionaries into a form usable in a lexical database, it must be analyzed and formalized in order to make it sufficiently explicit for machine use. We have performed this analysis by semi-automatic methods.” *Id.* Conlon states that its LDB collected “almost 61,000 words and phrases” from the Collins English Dictionary and additional “material from other sources, like the Indiana lists, the Brandeis verb lists, and the Jacobson adverb dictionary.” *Id.* at 427.

As one example, “the definition of ‘chip’ in homograph number 1 and sense number 1 provided by [Collins English Dictionary] is shown in Table 2,” reproduced below:

Table 2. Definition

chip	1	1	a thin strip of potato fried in deep fat
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Ex. 1005, 418. Table 2, above, depicts the definition of “chip 1 1,” including “a thin strip of potato fried in deep fat.” *Id.*

Conlon states that “[a]fter analyzing this definition semi-automatically, we have been able to create explicit information about ‘chip,’” such as Table 3, reproduced below:

Table 3. Lexical information

chip	1	1	regular	sing	count	common	no-gen	concrete	inan
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Id. at 418–419. Table 3, above, depicts the lexical information of “chip 1 1,” including: (1) “concrete (from part of the definition ‘a thin strip of potato . . .)’”; (2) “countable (from the part of the definition ‘a thin strip of potato . . .)’”; (3) “inanimate (‘potato’ is not an animate noun)”; (4) “regular (the plural form is ‘chips)’”; (5) “singular ([the Collins English Dictionary] specifies the plural form of words explicitly)”; (6), “a common noun (the word ‘chip’ does not begin with a capital letter)”; and (7) “neuter (there is no gender specification).” *Id.* at 419.

Conlon’s lexical database was designed “to contain a large amount of information needed by information retrieval systems and other NLP [natural language processing] systems (parsers, text generation systems, etc.) to process language.” Ex. 1005, 420. Conlon explains that “[a] useful [lexical database] should make it easy for NLP systems to automatically choose appropriate words and know where to find them.” *Id.* Additionally, “[w]ords that belong to different parts of speech are stored in separate tables along with other words having similar properties, so that programs can concentrate on exactly the groups of words they need.” *Id.* at 420. Conlon’s lexical database “contains tables of lexical and semantic relations and

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relationships, to make it possible to find terms related to any given word.”

Id. at 421. The “organization is based on parts of speech, with each part of speech involving different types of syntactic and semantic information.” *Id.*

2. *Miller (Ex. 1013)*

Miller is an article titled “Nouns in WordNet: A Lexical Inheritance System.” Ex. 1013, 245. Petitioner contends that Miller was catalogued and accessible to the public in 1993, more than one year before the ’433 patent’s earliest possible effective date, and is prior art under 35 U.S.C. § 102(b). Pet. 60 (citing Ex. 1011, 1–2).

Miller describes organizing noun files in WordNet.⁷ Miller states: “Definitions of common nouns typically give a superordinate term plus distinguishing features; that information provides the basis for organizing noun files in WordNet. The superordinate relation (hyponymy) generates a hierarchical semantic organization that is duplicated in the noun files by the use of labeled points between sets of synonyms.” Ex. 1013, 245 (Abstract). Miller describes:

The fundamental design that lexicographers try to impose on the semantic memory for nouns is not a circle, but a tree (in the sense of *tree* as a graphical representation). It is a defining property of tree graphs that they branch from a single stem without forming circular loops. The lexical tree can be reconstructed by following trails of superordinate terms: *oak@ → tree@ → plant@ → organism*, for example, where ‘@ →’ is the transitive, asymmetric, semantic relation that can be read ‘is a’ or ‘is a kind of’. (By convention, ‘@ →’ is said to point upward.) This design creates a sequence of levels, a hierarchy, going from many specific terms at the lower levels to a few

⁷ “WordNet is an on-line lexical reference system whose design is inspired by current psycholinguistic theories of human lexical memory.” Ex. 1012, Abstract.

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generic terms at the top. Hierarchies provide conceptual skeletons for nouns; information about individual nouns is hung on this structure like ornaments on a Christmas tree.

Id. at 247. “The semantic relation that is represented above by '@ →' has been called the ISA relation, or the hypernymic or superordinate relation (since it points to a hypernym or superordinate term); it goes from specific to generic and so is a generalization.” *Id.* Miller, therefore, describes a “lexical inheritance system,” where “a systematic effort has been made to connect hyponyms with their superordinates (and vice versa).” *Id.* at 248.

3. *Fong* (Ex. 1029)

Fong is an article titled “Guide on Logical Database Design.”

Ex. 1029. Petitioner contends that Fong “bears a publication date of February 1985, and was distributed to depository libraries in microfiche and available for purchase at least as of December 1986.” Pet. 77–78 (citing Ex. 1029, 119; Ex. 1032, 46; Ex. 1031, 1; Ex. 1002 ¶ 278). Petitioner contends Fong is prior art under 35 U.S.C. § 102(b). *Id.*

Fong generally describes “an iterative methodology for Logical Database Design” that “lead[s] to the development of a high quality [Logical Database Design].” Ex. 1029, Abstract, 1–2. One procedure is “normalization,” which helps “to ensure that the collection of entities is optimal.” *Id.* at 8, 75. Fong describes the following four conditions to “[n]ormalize the [c]ollection”: (1) “Each non-key attribute is identified by only the simplest possible identifiers”; (2) “Redundant, non-key attributes are eliminated”; (3) “Entities with the same identifier are combined”; and (4) “Entities with equivalent identifiers (identifiers that identify each other) are combined.” *Id.* at 75–76.

III. ANALYSIS

A. *Legal Standards*

“In an IPR, the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). 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; (3) the level of skill in the art; and (4) objective evidence of nonobviousness, i.e., secondary considerations. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

A patent claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR*, 550 U.S. at 418. An obviousness determination requires finding “both ‘that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled

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artisan would have had a reasonable expectation of success in doing so.”

Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359, 1367–68 (Fed. Cir. 2016) (citation omitted); *see KSR*, 550 U.S. at 418.

Further, an assertion of obviousness “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418; *In re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (a finding of a motivation to combine “must be supported by a ‘reasoned explanation’” (citation omitted)).

B. Level of Ordinary Skill in the Art

In the original Final Written Decisions, we adopted Petitioner’s proposed level of ordinary skill in the art. Final Dec. 14–21. The Federal Circuit determined that substantial evidence supported our finding, rejecting Patent Owner’s arguments on cross-appeal that adoption of Petitioner’s proposed level of ordinary skill in the art was error. Appeal Dec. 14–15.

Accordingly, a person of ordinary skill in the art “would have had at least a bachelor’s degree in computer science, computational linguistics, computational lexicography, or the equivalent, [and] at least two years of academic or industry experience in lexical databases, computational linguistics, computational lexicography, or the equivalent, and experience or coursework in computer science, database development, or the equivalent. Less experience can be remedied with additional education (e.g., a Master’s degree); conversely, less education can be remedied with additional experience.” Pet. 14–15. However, although we apply Petitioner’s proposed level of ordinary skill in the art, we would reach the same conclusion under Patent Owner’s proposal. Final Dec. 21.

C. Claim Construction

The Federal Circuit concluded that Petitioner’s construction of “automatically classifying and storing” (as recited in limitation [14.3]), is correct. Appeal Dec. 8. That is, “the ‘dictionary routine’ claims can be practiced by [the] *use* of an already-created dictionary, and do not also require the automatic *creation* of a dictionary.” *Id.* at 10; *see also* Reply 7 (the limitation is “directed to the use of a dictionary function to automatically look up words and their syntax”); Appeal Dec. 8 (“nothing about the term . . . would inform a person of ordinary skill in the art that automatic ‘creation’ of a database, in addition to the ‘use’ of an already-created database, is a requirement of the dictionary routine claims”); *id.* (“the plain and ordinary meaning of the claim language is broad enough to include ‘use’”); *id.* (agreeing with Petitioner that “the specification describes the ‘dictionary routine’ as the act of looking up words *already in* the database”); *id.* at 9 (stating that “[i]t is notable, as well, that the specification nowhere describes automatically *creating* a dictionary; all instances of creating dictionary entries rely, at least in part, on manual data entry by users”). As directed by the Federal Circuit, we will apply this construction in our analysis.⁸ *Id.*

⁸ Patent Owner argues that the Federal Circuit “cherry-picks” and misinterprets the patents’ specifications, and “ignores the clearly contrary specification language.” PO Remand Br. 4–5, 10; *id.* at 8 (arguing that that the specification clearly set forth the definition of the claim term, and “the Board must accept term definitions . . . above all external definitions”). We do not consider these arguments on the construction of this limitation, because the Federal Circuit has directed us to proceed under its construction of the limitation. We also agree with Petitioner that the Federal Circuit’s claim construction is “foreclosed from further consideration” under its

D. Ground 1: Obviousness Over Conlon (Claims 14–19 and 33–40)

Petitioner contends claims 14–19 and 33–40 would have been obvious over Conlon. Pet. 45–53, 56–60.

1. Analysis of Independent Claim 14

For limitations [14.0], [14.1], and [14.2], Petitioner relies on the same analysis as for limitations [1.0]–[1.4]. Pet. 45. As set forth in our original Final Written Decisions, we determined that Petitioner had shown, by a preponderance of the evidence, that Conlon teaches all of these limitations. Final Dec. 27–34. Therefore, as directed by the Federal Circuit, we determine whether Conlon teaches limitation [14.3] under the proper construction, but otherwise do not revisit our analysis of claim 14.

Limitation [14.3] recites “a dictionary routine for automatically classifying and storing words entered into said database according to said sets and subsets of data elements.” Ex. 1001, 36:22–24. As discussed above, the Federal Circuit concluded that “the ‘dictionary routine’ claims can be practiced by [the] *use* of an already-created dictionary, and do not also require the automatic *creation* of a dictionary.” Appeal Dec. 10.

We agree with Petitioner that Conlon teaches this limitation under the Federal Circuit’s construction. See Pet. 45–48; Reply 23–24; Pet. Remand Br. 2–6; Pet. Remand Resp. 2–5. Conlon describes using a commercially available Oracle RDMS to construct a lexical database that may be used for information retrieval. Ex. 1005, 415 (Abstract); Pet. Remand Br. 3. Conlon combines word entries from multiple machine-readable sources to create the

mandate and serves as the law of the case. *Engel Indus., Inc. v. Lockformer Co.*, 166 F.3d 1379, 1383 (Fed. Cir. 1999); *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 149 F.3d 1309, 1315 (Fed. Cir. 1998); see Pet. Resp. Br. 1.

lexical database and stores the information in tables based on parts of speech. Ex. 1005, 415, 421 (Table 8), 427 (“almost 61,000 words and phrases”); Pet. Remand Br. 4; Pet. 46. Petitioner argues that this constitutes each word’s “predetermined categorizations (i.e., classifications).” Pet. Remand Br. 4 (citing Appeal Dec. 8).

As Petitioner persuasively argues, “[t]he point of Conlon’s database was to easily look up (*retrieve*) information about words.” Pet. Remand Br. 3 (citing, *e.g.*, Ex. 1005, 415 (title referring to “a Large Lexical Database for Information **Retrieval**”), 4 (citing Ex. 1005, 420 (“make it easy for [natural language processing] systems to **automatically** choose appropriate words and know where to find them”); Pet. Remand Resp. Br. 3–5. Conlon discloses that “the database functions as a thesaurus as well as a dictionary.” Ex. 1005, 415 (cited at Pet. 45–46, Pet. Remand Br. 4–5)). Petitioner’s arguments are supported by, among other things, testimony from Dr. Jansen that the Oracle RDMS in which Conlon stores its lexical database allows users to automatically retrieve information using Oracle’s conventional “**query**” lookup functionality. Pet. Remand Br. 3 (citing Ex. 1057 ¶ 66); Ex. 1052⁹, 9–19 (describing Oracle’s query functionality); *see also* Ex. 1057 ¶¶ 67–72 (Dr. Jansen further describing Oracle’s query functionality), ¶¶ 136–137 (same, directed to limitation [14.3]); Ex. 1002 ¶¶ 164–169 (same); Ex. 1051, 71:13–72:7 (Dr. Ranka cross-examination, testifying that performing a SQL instruction to retrieve data from a database is performing querying); Reply 24; Pet. Remand Resp. Br. 3–5.

⁹ George Koch, *ORACLE: The Complete Reference* (Osborne McGraw-Hill 1990).

Conlon describes that each database entry contains words, with a homograph (H#) and sense (S#) number for each word in a separate entry for the purpose of lexical disambiguation. Ex. 1005, 421–422, Table 8; *see also* Ex. 1002 ¶¶ 110–111, 166–167 (Dr. Jansen’s testimony, describing this disclosure). Petitioner explains:

A user’s query of “chip 1 1” would automatically retrieve the word’s definition and predetermined part-of-speech classification. Ex-1002, ¶¶ 166–167. Querying “chip 1 1” would retrieve a single disambiguated result indicating that the word is a *concrete noun* (i.e., a tangible data element). Ex-1005, 418–419 (Table 3 indicates chip 1 1 is “concrete”), 422 (all nouns classified in Table 9 by “whether [the] noun is abstract or concrete”); Ex-1002, ¶¶ 111, 166–168; Ex-1057, ¶¶ 136–137.

Pet. Remand Br. 5; *see* Pet. 46–48; Reply 23–24. Thus, Petitioner states, “[a]utomatic retrieval of a word’s (predetermined) part-of-speech thus satisfies the *classifying* part of the claim.” Pet. Remand Br. 5 (citing Appeal Dec. 7–8). Further, “the query and its output would be ‘logged and stored’ automatically into a file, through Oracle’s **save** command . . . —thereby satisfying the *storing* part of the claim.” *Id.* (internal citations omitted, citing Appeal Dec. 7–8); Ex. 1057 ¶ 137 (describing examples in Ex. 1052 of SQL querying, logging, and storing in the Oracle RDMS); Ex. 1052, 83–112 (describing SQLPLUS Reports and Commands, including the “save” “command”), 450–451 (describing SQLPLUS querying and reporting), 784 (describing logging), 848 (describing logging); *see also* Pet. 45 (Conlon “discloses a sub-program or function within a larger program for looking up words in a dictionary which automatically classifies and stores words entered into the [lexical database] and differentiates between uses of the

same word for different parts of speech”). We find Petitioner’s evidence, cited above, persuasive.

Patent Owner’s arguments do not undermine Petitioner’s showing. Patent Owner did not specifically challenge Petitioner’s contentions as to the sufficiency of Conlon’s disclosure for claim 14¹⁰ in the Patent Owner Response. In the Sur-replies, Patent Owner argues that the claim requires that at least some relationships are created “automatically,” and “these automatic embodiments . . . are represented in this group of claims.” Sur-reply 9. Along these lines, in the additional briefing Patent Owner argues that Conlon does not teach “automatic,” but merely teaches “semi-automatic.” PO Remand Br. 9–10. The crux of Patent Owner’s argument, however, is that the Federal Circuit did not properly construe the limitation, and ignored certain disclosures in the ’433 (and ’680) patent. *Id.* at 10–11; *see* Pet. Remand Resp. Br. 1–4; PO Remand Resp. Br. 4–5. The Federal Circuit held that “the dictionary routine claims can be satisfied by mere use of a lexical database, and do not also require the automatic creation of additional definitions.” Appeal Dec. 10. Moreover, the statements from Conlon that Patent Owner relies upon relate to creating a database, not using the database. *See id.* As discussed above, on remand we are directed to apply the Federal Circuit’s construction. Patent Owner does not explain

¹⁰ As discussed in the original Final Written Decisions, Patent Owner raised several arguments that generally applied to all the claims, challenging, for example, the level of ordinary skill in the art, whether Conlon, Miller, and Beckwith were analogous art, and several general arguments relating to Conlon and the motivation to combine Conlon with a DBMS. *See* Final Dec. 14–23, 25–27. We were not persuaded by Patent Owner’s arguments; the Federal Circuit affirmed, determining that our findings were supported by substantial evidence. Appeal Dec. 14–16.

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why Petitioner's contentions are not persuasive in light of the Federal Circuit's construction of this limitation.

In addition, Patent Owner argues in the Sur-replies that “[c]laims 14–19 are not disclosed by the proffered prior art” and cites to paragraphs 78–83 of the Ranka Rebuttal Declarations. Sur-reply 10. As discussed in the original Final Written Decisions, Patent Owner's reliance on six paragraphs of Dr. Ranka's Rebuttal Declarations is an improper incorporation by reference, as Patent Owner did not discuss that testimony or further elaborate on these arguments in the Sur-replies. 37 C.F.R. § 42.6(a)(3); *Cisco Systems, Inc. v. C-Cation Techs., LLC*, IPR2014-00454, Paper 12 at 9–10 (PTAB Aug. 29, 2014) (informative); *see, e.g.*, Final Dec. 37–39, 45, 48–50, 52. Therefore, we will not consider arguments that are not made in the Sur-replies, but are instead improperly incorporated by reference to the cited paragraphs in Dr. Ranka's Rebuttal Declarations.

Accordingly, after considering the evidence and arguments of the complete record, we determine that Petitioner has shown, by a preponderance of the evidence, that Conlon teaches limitation [14.3], and that claim 14 would have been obvious over Conlon.

2. Analysis of Dependent Claims 15–19

Petitioner contends that dependent claims 15–19, which depend directly or indirectly from independent claim 14, would have been obvious over Conlon, and provides explanation as to how the prior art teaches each claim limitation. Pet. 49–53; Pet. Remand Br. 7–8. Patent Owner does not provide further briefing on dependent claims 15–19.

Patent Owner did not specifically challenge Petitioner's contentions as to the sufficiency of Conlon's disclosure for claims 15–19 in the Patent

Owner Response, but in the Sur-replies provided the same arguments as discussed above for claim 14. Sur-reply 9–10. For the same reasons as discussed above, these arguments are not persuasive.

After considering the evidence and arguments of the complete record, and for the reasons set forth by Petitioner, we determine that Petitioner has shown, by a preponderance of the evidence, that Conlon teaches the limitations in claims 15–19 and that claims 15–19 would have been obvious over Conlon.

3. Analysis of Independent Claim 33 and Dependent Claims 34–40

Petitioner contends that independent claim 33 would have been obvious over Conlon, largely for the same reasons as set forth for independent claim 1 and independent claims 14 and 20, and provides explanation as to how the prior art teaches each claim limitation. Pet. 56–57; Pet. Remand 6. For limitations [33.0], [33.1], [33.2], and [33.3], Petitioner relies on the same analysis as for limitations [1.0]–[1.4] and [20.0]. Pet. 56–57. As set forth in our original Final Written Decisions, we determined that Petitioner had shown, by a preponderance of the evidence, that Conlon teaches all of these limitations. Final Dec. 27–34, 44–45. Similar to claim 14, claim 33 also recites “automatically classifying and storing words entered into said database according to said sets and subsets of data elements.” Ex. 1001, 38:9–11. Petitioner relies on the same analysis as limitations [1.0]–[1.4] and [14.3]. Pet. 57. Petitioner contends that dependent claims 34–40, which depend directly or indirectly from independent claim 33, would have been obvious over Conlon, and provides explanation as to how the prior art teaches each claim limitation. *Id.* at 57–60; Pet. Remand Br. 7–9.

Aside from the arguments discussed above for claim 14, Patent Owner does not provide further briefing on claims 33–40. Patent Owner did not specifically challenge Petitioner’s contentions as to the sufficiency of Conlon’s disclosure for claims 33–40 in the Patent Owner Responses, but in the Sur-replies argued that “[c]laims 33–40 are not disclosed in the proffered prior art” and cites to paragraphs 92–102 of Dr. Ranka’s Rebuttal Declarations. Sur-reply 9. As discussed above, we will not consider arguments that are not made in the Sur-replies, but are instead improperly incorporated by reference to the cited paragraphs in Dr. Ranka’s Rebuttal Declarations.

After considering the evidence and arguments of the complete record, and for the reasons set forth by Petitioner, and set forth above for claim 14, we determine that Petitioner has shown, by a preponderance of the evidence, that Conlon teaches the limitations in claims 33–40 and that claims 33–40 are obvious over Conlon.

4. Summary of Ground 1

Having considered the *Graham* factors,¹¹ including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the challenged claims, we are persuaded, based on the current record, that Petitioner has shown, by a preponderance of the evidence, that claims 14–19 and 33–40 would have been obvious over Conlon.

¹¹ Patent Owner does not submit evidence of secondary considerations. *See generally* PO Resp.

E. Ground 4: Obviousness Over Conlon, Miller, and Fong

Petitioner contends claims 43–46 would have been obvious over the combination of Conlon, Miller, and Fong. Pet. 77–86.

1. Analysis of Dependent Claim 43

Claim 43 depends from independent claim 41. In our original Final Written Decisions, we determined that Petitioner had shown, by a preponderance of the evidence, that claim 41 was obvious over the combination of Conlon and Miller. Final Dec. 49–51. We maintain our decision regarding claim 41, and will not discuss it further. Our focus, generally is on the combination of Conlon and Fong.

Petitioner contends the combination of Conlon, Miller, and Fong teaches the limitations in claim 43, and that a person of ordinary skill in the art would have been motivated to combine the references. Pet. 78–85. As described below, Petitioner generally relies on Fong to teach the claimed “normalizing.” In the Reply Briefs, Petitioner provides a detailed example, created by Dr. Jansen, purportedly explaining the principles from Fong and another reference, Hansen,¹² and explaining how Fong’s four conditions teach limitations [43.1]–[43.5]. Reply 31–35. Petitioner also submits additional testimony from Dr. Jansen in Supplemental Rebuttal Declarations. *See* Ex. 1057 ¶¶ 222–261. As directed by the Federal Circuit, we determine whether the combination renders obvious claim 43, taking into account the

¹² Hansen, et al., *Database Management and Design* (2d ed. 1996) (Ex. 1034). Dr. Jansen cites to Hansen for “further evidence of the level of skill in the art . . . show[ing] what an undergraduate student would have known about database management and design.” Ex. 1002 ¶ 289; Ex. 1057 ¶ 227.

arguments made in the Reply Briefs and Dr. Jansen’s Supplemental Rebuttal Declarations.

a) Petitioner’s Contentions

(1) Limitations [43.0] – [43.5]

For limitation [43.0], which recites “[a] method for inter-relating different databases structured as recited in claim 41, comprising the steps of,” Petitioner contends that “Conlon built a lexical database by inter-relating different database structures.” Pet. 79–80 (citing Ex. 1005, 418, Table 1; Ex. 1002 ¶ 290). For example, Conlon describes that “[e]ach source of lexical data has a different structure that must be treated differently. The structure of sources that we used to build our [lexical database] is shown in Table 1.” Ex. 1005, 418, Table 1 (showing e.g., Dictionaries, Linguistic groups, and Informants).

For limitation [43.1] and [43.1.1], which recite “for each of said databases, and in any order, normalizing names of like data elements having different names in said different databases,” Petitioner contends that Conlon’s lexical database “correlates *like data elements having different names* obtained from different data sources.” Pet. 80. As examples, Petitioner cites to synonyms and irregular nouns. *Id.* at 80–81 (citing Ex. 1005, 422, 429, Tables 10 and 24; Ex. 1002 ¶¶ 291–292). Petitioner also argues that “Conlon performed ‘lexical disambiguation’ by creating a table that identifies each word’s homograph number, sense number, part of speech, and source.” *Id.* at 81 (citing Ex. 1005, 421–422); *see also* Ex. 1005, 427.

For the claimed “normalizing,” Petitioner asserts that to the extent that Conlon does not expressly state that “normalizing” is performed, a person of

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ordinary skill in the art “would have immediately recognized that the above-described relational structures necessarily involved normalization,” “or at least normalization was an obvious and beneficial technique for building such structures.” Pet. 81 (citing Ex. 1029 (Fong), 75–76; Ex. 1002 ¶¶ 293–295); Reply 32 (citing Ex. 1057 ¶¶ 242–244) (describing how Fong’s first two conditions are met).

For limitation [43.1.2], which recites “normalizing names of different data elements having like names in said different databases,” Petitioner contends that Conlon in view of Miller “correlates *names of different data elements having like names* obtained from different data sources,” for example, words related as parent-child or homonyms. *Id.* at 81–82 (citing Ex. 1005, 421–422, 426; Ex. 1013, 252); Ex. 1002 ¶¶ 296–297. Again, with respect to the claimed “normalizing,” Petitioner asserts that to the extent that Conlon does not expressly state that “normalizing” was used, “normalization would have been necessary or at least obvious.” *Id.* (citing Ex. 1002 ¶¶ 288–289; Ex. 1029 (Fong), 75–76); Reply 32 (citing Ex. 1057 ¶¶ 245–247) (describing how Fong’s first two conditions are met).

For limitation [43.2], which recites “normalizing data elements which are separate in any one of said databases and which are grouped together as single data elements in any other of said databases,” Petitioner contends that Conlon discloses this limitation. Pet. 82–83 (citing Ex. 1005, 421–422; Ex. 1002 ¶ 300). Again, with respect to the claimed “normalizing,” Petitioner asserts that to the extent that Conlon does not expressly state that “normalizing” was used, “normalization would have been necessary or at least obvious.” *Id.* at 83 (citing Ex. 1002 ¶¶ 288–289; Ex. 1029 (Fong), 75–76); Reply 32–33 (citing Ex. 1057 ¶¶ 248–250).

For limitation [43.3], which recites “comparing each of said normalized databases with each other one of said normalized databases,” Petitioner contends that “[o]nce the information has been normalized as taught by Fong, the next necessary step is to compare the normalized information.” Pet. 83 (citing Ex. 1002 ¶ 303); Reply 33–34 (citing Ex. 1057 ¶¶ 251–253) (stating that “[i]t is necessary to *compare* all data elements under Fong’s third and fourth conditions to know which entities are the ‘same’ or ‘equivalent’”); Pet. Remand Br. 12.

For limitation [43.4], which recites “recording all common data elements found during each said comparing step,” Petitioner contends that “[i]n order to combine entities with the same or equivalent identifiers as taught by Fong, a [person of ordinary skill in the art] would next record all common data elements found during the comparing step.” Pet. 83 (citing Ex. 1002 ¶ 304); Reply 34 (citing Ex. 1057 ¶¶ 254–257) (stating that “[i]t is necessary to *record* each occurrence of data elements being the same or equivalent so they can be combined under Fong’s third and fourth conditions”); Pet. Remand Br. 12.

For limitation [43.5], which recites “recording one location of each said common data element in each of said databases,” Petitioner contends that “[a]s explained above for claim 9, in Conlon, each data element is stored only once in the main table. Entities with the same or equivalent identifiers are combined and recorded once in the main table.” Pet. 83 (citing Ex. 1002 ¶ 305); Reply 35 (citing Ex. 1057 ¶¶ 258–261) (stating that “[i]t is necessary to *record one location*—i.e., the ultimate location where the same or equivalent entities will be ‘combined’—to satisfy Fong’s third and fourth conditions”); Pet. Remand Br. 12–13.

(2) Motivation to Combine Conlon and Fong

Petitioner contends that a person of ordinary skill in the art “building a database of lexical data from multiple heterogeneous sources, like the one in Conlon . . . would have been motivated to use a logical database design (“LLD”)” and “would have been drawn to Fong’s description of a ‘high quality LDD’ whose benefits include internal consistency, completeness, and robustness.” Pet. 78 (citing Ex. 1005, 418; Ex. 1029, 2; Ex. 1002 ¶ 286).

Petitioner provides various reasons why a person of ordinary skill in the art would have been motivated to perform normalization as described by Fong in Conlon’s lexical database. Pet. 78–79. For example, Petitioner contends that the challenge in Conlon of making existing entries “richer” while avoiding the addition of redundant words and phrases, and to capture identical words having different meanings, would have lent itself readily to normalization as described in Fong. *Id.* (citing Ex. 1002 ¶ 287; Ex. 1029, 76). Therefore, Petitioner argues, applying normalization to Conlon’s data amounts to the use of a known technique to improve similar systems in the same way, or the application of a known technique to a known system ready for improvement to yield predictable results. *Id.* at 79 (citing Ex. 1002 ¶ 287). Additionally, Petitioner argues a person of ordinary skill in the art would have had a reasonable expectation of success in normalizing the data in Conlon. *Id.* (citing Ex. 1029, 76; Ex. 1002 ¶¶ 288–289).

b) Patent Owner’s Arguments and Analysis

Patent Owner did not specifically challenge Petitioner’s contentions as to claim 43 in the Patent Owner Responses. In the Sur-replies, Patent Owner argues that Fong “defines the word” normalizing “substantially different

than the '433 Patent defines the word.” Sur-reply 9; PO Remand Resp. Br. 8. Patent Owner also argues in the Sur-replies that the graphics in Dr. Jansen’s Rebuttal Declarations are created by Dr. Jansen, so do not follow the Fong guidelines, and that Fong requires the use of “database keys,” which are not required by the '433 patent. Sur-reply 9. Patent Owner also argues that claims 43–46 “are not disclosed in the proffered prior art.” *Id.* at 10. In support of these arguments, Patent Owner cites to the Dr. Ranka’s Rebuttal Declarations. *Id.* at 9–10 (citing Ranka Rebuttal Dec. ¶¶ 44–45, 47, 50, 146–178). As discussed above, Patent Owner’s reliance on Dr. Ranka’s Rebuttal Declarations¹³ is an improper incorporation by reference, as Patent Owner did not discuss that testimony in the Sur-replies, or elaborate on these arguments. We will not consider arguments that are not made in the Sur-replies, but are instead improperly incorporated by reference to the cited paragraphs in Dr. Ranka’s Rebuttal Declarations.

Patent Owner also argues that “each DBMS requires a normalization process customized for it,” so “[m]ere use of the word ‘normalization’ is insufficient for providing obviousness” because “normalization functionality is specific to each DBMS.” PO Remand Br. 12. According to Patent Owner, “Fong’s concept of normalization differs from that of” the '433 patent because “Fong’s conditions of normalization depend up on ‘entities’ and ‘identifiers’ and determining ‘non-key attributes’ from key attributes.” *Id.* Patent Owner argues that Fong’s normalization is different than that defined in the '433 patent. *Id.* at 13; PO Remand Resp. Br. 8. Therefore,

¹³ Patent Owner did not rely on or cite to Dr. Ranka’s Rebuttal Declarations in the subsequent authorized briefing. *See* PO Remand Br., PO Remand Resp. Br.

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Patent Owner argues, “[i]t is a logical impossibility for two different DBMSes, with unique structures and functions, to use a single normalization process to equal effects.” PO Remand Br. 13.

We agree with Petitioner that claim 43 is obvious over the combination of Conlon, Miller, and Fong. The Federal Circuit stated, “[i]n this context, ‘normalization’ generally refers to de-duplicating and simplifying database entries (for instance, combining entries for ‘car’ and ‘automobile’).” Appeal Dec. 4 (cited at Pet. Response Br. 5). This is consistent with the disclosure in the ’433 patent. *E.g.*, Ex. 1001, 16:55–17:24 (discussing, for example, “recogniz[ing] that the differently named data elements in different structures are actually the same data element . . . is referred to as normalizing the names of the same data elements,” “recogniz[ing] that the same named data elements in different structures are actually different data elements . . . is referred to as normalizing the names of the different data elements,” and “normalizing multiple single data elements”). This is also consistent with how Fong describes “normalization.” Ex. 1029, 76 (The “Function” of “Normaliz[ing] the collection of entities” is to “[r]emove redundancies and detect errors”); *see also* Ex. 1057 ¶ 226.

Patent Owner’s arguments that Fong’s normalization is “different” from the normalization described in the ’433 patent does not persuasively rebut Petitioner’s arguments. As Petitioner points out, Patent Owner does not provide a construction for “normalization,” despite claiming that the term is “defined” in the ’433 patent. Pet. Remand Resp. Br. 6; PO Remand Br. 13. Moreover, although Patent Owner purports to identify differences between the ’433 patent and Fong, the “normalization” applied is expressly

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recited in limitations [43.1.1], [43.1.2], and [43.2], and the subsequent actions taken on those normalized databases (i.e., comparing and recording) are recited in limitations [43.3]–[43.5]. That is, the “normalization” required by the claim is reflected in the claim language itself, and is broader than argued by Patent Owner. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 391 (Fed. Cir. 1991) (“It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art”). Patent Owner does not explain how these purported “differences” (e.g., that Fong may require the use of “database keys,” “identifiers,” “entities,” or determining ‘non-key attributes’ from key attributes) impacts the claim language, or Petitioner’s showing. *See EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985) (A prior art reference “must be considered for everything it *teaches* by way of technology and is not limited to the particular *invention* it is describing and attempting to protect”). For the same reasons, as well as those set forth by Petitioner, we are also not persuaded by Patent Owner’s arguments that each DBMS requires a normalization process that is customized for it. Pet. Remand Resp. Br. 6–7. These arguments by Patent Owner also are not commensurate with the scope of the claim language, which does not recite a DBMS, and generally recites “normalizing” or “normalized” without regard to the DBMS. *Id.*

Dr. Jansen provides an example of a database in unnormalized form that is converted into a normalized form, based on Fong’s four conditions, as applied to the claim language. *See* Reply 31–35; Ex. 1057 ¶¶ 226–261. Therefore, we are not persuaded by Patent Owner’s arguments that Petitioner has not explained how the example maps onto the limitations. PO

Remand Resp. Br. 6–12. Patent Owner’s complaint that Dr. Jansen created the graphic in the example does not undermine Petitioner’s showing. *E.g.*, Trial Practice Guide,¹⁴ I.G., (“Experts may testify about the teachings of the prior art and how they relate to the patentability of the challenged claims.”). We find Dr. Jansen’s testimony credible and persuasive in explaining why the combination of Conlon and Fong teaches the claim limitations.

After considering the properly presented evidence and arguments of the complete record, we determine that Petitioner has shown, by a preponderance of the evidence, that the combination of Conlon, Miller, and Fong teaches the limitations in claim 43, that one of ordinary skill in the art would have been motivated to combine the teachings of Conlon, Miller, and Fong, and that claim 44 would have been obvious over Conlon, Miller, and Fong.

2. Analysis of Dependent Claims 44–46

Claims 44–46 depend, directly or indirectly, from claim 41. We, likewise, determine whether the combination renders obvious claims 44–46, taking into account the arguments made in Petitioner’s Reply Briefs and Dr. Jansen’s Supplemental Rebuttal Declarations.

Petitioner contends that dependent claims 44–46, would have been obvious over Conlon, Miller, and Fong, and provides explanation as to how the prior art teaches each claim limitation. Pet. 84–86; Reply 35–39; Pet. Remand Br. 13–14. Patent Owner does not provide further briefing on dependent claims 44–46.

¹⁴ Available at <https://www.uspto.gov/patents/ptab/trial-practice-guide#step2>.

Patent Owner did not specifically challenge Petitioner's contentions as to the sufficiency of Conlon and Fong's disclosure for claims 44–46 in the Patent Owner Responses. As discussed above, in the Sur-replies, Patent Owner argues that claims 44–46 are “not disclosed in the proffered prior art.” Sur-reply 10. In support of these arguments, Patent Owner cites to Dr. Ranka's Rebuttal Declarations. *Id.* (citing Ranka Rebuttal Dec. ¶¶ 146–178). As discussed above, Patent Owner's reliance on Dr. Ranka's Rebuttal Declarations is an improper incorporation by reference, as Patent Owner did not discuss that testimony in the Sur-replies, or elaborate on these arguments. We will not consider arguments that are not made in the Sur-replies, but are instead improperly incorporated by reference to the cited paragraphs in Dr. Ranka's Rebuttal Declarations.

After considering the properly presented evidence and arguments of the complete record, we determine that Petitioner has shown, by a preponderance of the evidence, that the combination of Conlon, Miller, and Fong teaches the limitations in claim 44–46, that one of ordinary skill in the art would have been motivated to combine the teachings of Conlon, Miller, and Fong, and that claims 44–46 would have been obvious over Conlon, Miller, and Fong.

3. *Summary of Ground 4*

Having considered the *Graham* factors, including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the challenged claims, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 43–46 would have been obvious over Conlon, Miller, and Fong.

F. Additional Arguments

1. Petitioner's Arguments

In the original Final Written Decisions, we dismissed as moot Petitioner's motion to strike the Ranka Rebuttal Declarations. Final Dec. 60–61. Petitioner argues that we should strike the Ranka Rebuttal Declarations, because Patent Owner's defense, that Petitioner's Replies raised new issues and evidence, is foreclosed by the Federal Circuit's holding that Petitioner's reply was proper. Pet. Remand Br. 15. Patent Owner does not respond to this argument, nor does Patent Owner cite to or rely on the Ranka Rebuttal Declarations in the additional briefing. As discussed above, we do not rely on the Ranka Rebuttal Declarations. Therefore, we maintain the dismissal of Petitioner's Motions to strike as moot.

2. Patent Owner's Arguments

Patent Owner also argues that the PTAB rules regarding replies and sur-replies do not provide procedural due process because they do not, on their face, provide an opportunity to rebut Petitioner's reply evidence. PO Remand Br. 13–16. Patent Owner also argues that their due process rights have been violated because (1) Patent Owner's attempts to rebut Petitioner's Reply evidence was denied by the Board and (2) the Federal Circuit relied on Petitioner's Reply evidence to decide against Patent Owner. *Id.* at 14.

Patent Owner's arguments are outside the scope of our mandate. Moreover, we agree with Petitioner that Patent Owner did not avail itself of the opportunities to challenge Petitioner's evidence. *See* Pet. Remand Resp. Br. 7; *see* Paper 45, 7–8 (explaining that Patent Owner could have sought authorization to file new evidence or a motion to strike); Final Dec. 61.

IV. CONCLUSION

For the foregoing reasons, we are persuaded that Petitioner establishes by a preponderance of the evidence that claims 14–19, 33–40, and 43–46 are unpatentable.

In summary, for both the '433 and '680 patents:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 9, 12–21, 28, 32– 40	103(a)	Conlon	1, 2, 9, 12–21, 28, 32–40	
3–6, 8, 10, 11, 22–25, 27, 29– 31, 41, 42	103(a)	Conlon, Miller	3–6, 8, 10, 11, 22–25, 27, 29–31, 41, 42	
7, 26	103(a)	Conlon, Miller, Beckwith	7, 26	
43–46	103(a)	Conlon, Miller, Fong	43–46	
Overall Outcome			1–46	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–46 of the '433 patent have been shown to be unpatentable under 35 U.S.C. § 103(a);

FURTHER ORDERED that claims 1–46 of the '680 patent have been shown to be unpatentable under 35 U.S.C. § 103(a); and

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

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