

571-272-7822

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE, INC.,
Petitioner,

v.

NETWORK-1 TECHNOLOGIES, INC.,
Patent Owner.

Case IPR2015-00343 (Patent 8,640,179 B1)

Case IPR2015-00345 (Patent 8,205,237 B2)

Case IPR2015-00347 (Patent 8,010,988 B2)

Case IPR2015-00348 (Patent 8,656,441 B1)

Held: March 9, 2016

BEFORE: KEVIN F. TURNER, LYNNE E. PETTIGREW, and
JON B. TORNQUIST, Administrative Patent Judges.

The above-entitled matter came on for hearing on Wednesday,
March 9, 2016, commencing at 2:05 p.m., at the U.S. Patent and
Trademark Office, 600 Dulany Street, Alexandria, Virginia.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

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Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE PETTIGREW: And do you wish to reserve any
2 rebuttal time?

3 MR. ELACQUA: Yes, we wish to reserve 35 minutes.

4 JUDGE PETTIGREW: Thirty-five minutes?

5 MR. ELACQUA: Yes.

6 JUDGE PETTIGREW: Thank you.

7 MR. ELACQUA: And we have hard copies of the
8 slides for the Board, if you would like.

9 JUDGE PETTIGREW: Yes, that would be useful,
10 thank you.

11 JUDGE TURNER: And, Judge Pettigrew, can I just
12 confirm that you can hear me fine?

13 JUDGE PETTIGREW: We can hear you, Judge
14 Turner, thank you.

15 JUDGE TURNER: And I apologize to the parties for
16 the delay, which perhaps was on our end out here in Silicon
17 Valley. So, accept my apologies for our brief delay in getting
18 started today.

19 JUDGE PETTIGREW: All right, please begin.

20 MR. ELACQUA: Thank you. Good afternoon, Your
21 Honors. My name is Jim Elacqua and I'm hear this afternoon
22 with Doug Nemec and Andrew Gish, also from Skadden, and
23 Rich Sonnentag, in-house counsel for Google. We are here today
24 representing Google on these four IPRs that involve 90 claims.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 And this afternoon, I'm going to be using a slide deck, and the
2 slide deck is Exhibit 1022 for IPRs 343, 347 and 348, and Exhibit
3 1021 for IPR 345. The numbering of the slides is identical for all
4 the exhibits.

5 Now, even though we have four IPRs and 90 claims,
6 there are actually a limited number of issues for the Board to
7 decide, and also interesting, the dependent claims are not
8 contested for any of the patents and the motivation to combine is
9 not contested on any of the obviousness issues. So, that again is
10 limiting the number of decisions that the Board is needing to
11 make.

12 There are only really two main limitations contested,
13 and if we go to slide 2, we will see that there are three references
14 that we are going to be dealing with this afternoon, Ghias,
15 Iwamura and Conwell, and the two main limitations are
16 nonexhaustive search, regarding all the patents and all the
17 references, and the near neighbor terms, which include
18 identifying a neighbor and neighbor search. And that involves
19 three of the patents, the '988, '179 and '441, and all of the
20 references.

21 There's another limitation we'll talk about and that's
22 determining an action, which only involves the '988 patent and
23 the Ghias reference. Now, if we go to slide 3, we will see that all
24 of the contested limitations were widely known, and we took the

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 deposition of Dr. Karypis, and Dr. Karypis was at deposition, it
2 was offered as an expert by Network-1, and we'll refer to his
3 deposition from time to time. But in his deposition, we asked
4 him, did Dr. Cox in the disclosure of his patents purport to have
5 invented nonexhaustive searching, and he said no. And we also
6 asked him if it was known in the art, and he said that that concept
7 was known in the art.

8 We also similarly asked him about neighbor searching,
9 did Dr. Cox invent that, and he said, I don't believe so. And we
10 asked if that concept was well known and he agreed that that
11 concept was well known.

12 So, we're dealing with what these limitations are, they're
13 very broadly defined in these claims, and they're also very well
14 known in the art. First I would like to discuss the Ghias
15 reference, I would like to go reference by reference, I think it's
16 easiest that way. And the Ghias reference involves, excuse me,
17 the issues, if we go to slide 6, nonexhaustive, identifying a
18 neighbor and determining an action. And the Board has actually
19 provided us with a claim construction on this issue.

20 Next slide. We'll go to slide 6 now, and we will see that
21 the claim construction that the Board offered was a search that
22 locates a match without a comparison of all possible matches, and
23 we'll also see that in the Board's '988 institution decision, the
24 Board agreed that anything that was not brute force, any search

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 that was not considered to be a brute force search, is a
2 nonexhaustive search.

3 Now, Ghias, the question is, does Ghias teach a
4 nonexhaustive search, and Ghias does. If we go to slide 7, we
5 will see that Ghias self-identifies a different than brute force
6 search, and the Board has properly identified a second search in
7 Ghias that also is a nonexhaustive search. So, let's deal with them
8 one at a time, quickly.

9 The first one is, Ghias, just to give some background,
10 represents the queries and the references as a string of characters,
11 U, D and S, which represent pitch differences between the notes,
12 because after all, we're looking for a musical work. Now, Ghias
13 matches a short query to certain melody segments within the
14 song, and Ghias actually describes its comparison of the query to
15 each reference as nonexhaustive.

16 So, let's look at slide 8, and we will see how it does that.
17 Ghias tells us, in Exhibit 1010, slide 8, that running times have
18 ranged from the order of mn for brute force algorithm to the order
19 of kn or the order of $n\log(m)$. Now, what that tells us is what
20 Ghias is saying is that what they're using for a search is
21 something different than brute force, and as I said, the Board
22 recognized and the parties are not disputing that searches that are
23 different from brute force are nonexhaustive searches.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE PETTIGREW: Is that the comparison of
2 excerpts from the melody to a single record that's being discussed
3 in column 6?

4 MR. ELACQUA: No, that was brought up in a
5 different context, but this is the same quote that that issue has
6 arisen from. And you're correct, Your Honor, that what they have
7 asked here in their office -- in their Patent Owner response, they
8 made the statement that this was restricted to a single song, and
9 we can deal with that now or we can wait, but, Your Honor, our
10 position is that this is not restricted. This is a definition that they
11 provided that they're saying the searches that they're using, they're
12 using searches other than brute force.

13 So, for purposes of our *prima facie* case here, this
14 shows that Ghias actually is using a nonexhaustive search. And
15 we do not believe it's limited to a single song. And, in fact, as we
16 can show, Ghias actually demonstrates, also, and teaches, that
17 you can pack all of the songs into a single file. And to the extent
18 that you can pack them all in a single file, you could use that
19 same nonexhaustive search.

20 Now, we also looked to its second reason why Ghias is
21 teaching us a nonexhaustive search and this is one that the board
22 found as well, and that is in looking at Ghias, we see that it is
23 dealing with a multiple search process, where subsequent
24 searches consider progressively narrower sets of references.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 So, looking at slide 5 for a moment, we'll see that this is
2 the way that it actually works in Ghias, with each subsequent
3 search looking at a more restricted list. Now, if this list becomes
4 too large, what Ghias tells us is that the user can perform a new
5 query on the restricted search list, which consists of just the songs
6 that were retrieved. So, looking, again, if we look at -- we can
7 see that Ghias says this on slide 10.

8 Now, looking again, if we look at slide 9, we'll see that
9 this restricted list with the new query, the fact is, is that you're not
10 considering all possible matches, which is the requirement in the
11 claim construction that the Board provided. So, Ghias actually
12 provides a nonexhaustive search. And the Board agreed, on slide
13 11, we'll see that in the Board's '988 institution decision, the
14 Board actually agreed that with this new query on the restricted
15 search list, the Board goes on to say, Ghias makes clear that the
16 search need not be exhaustive.

17 So, again, we presented two reasons, it's self-identifying
18 in the way Ghias has presented this as a non-brute force search,
19 and also just by the way that the search actually operates.

20 I'd like to move on to the second issue for Ghias, which
21 is the neighbor search, and the Board has also provided us with a
22 definition for neighbor search, which is identifying a neighbor as
23 identifying a close but not necessarily exact or closest match.
24 That's on slide 12.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Now, the parties have different positions on this as to
2 what a neighbor search includes. Google takes the position that it
3 includes searches that always find the closest match. The Patent
4 Owner has a new interpretation that they set forth in their
5 response that said, oh, no, that wording of the claim construction
6 does not include searches that always find the closest match. So,
7 with that said, if we go, you can see it in this diagram, those
8 searches are called nearest neighbor searches. Our position is that
9 they are included in the definition of neighbor search, Patent
10 Owner's position is that they are not.

11 And there are several reasons why that is wrong. The
12 first one is, just as a matter of grammar, if we look at the
13 grammar on slide 14, we see that the Board's language reads, "not
14 necessarily exact or closest." What Network-1 would have us
15 read this to mean is "necessarily not exact or closest." And that is
16 not a fair grammatical reading of the words themselves.

17 But just as important, we have a contradiction with the
18 intrinsic record. The intrinsic record contradicts by the claim
19 language itself that it improperly excludes searches that always
20 find the closest match, which are nearest neighbor searches. So,
21 if we look at slide 15, we will see, in claim 15 of the '988 patent,
22 it calls for identification based on a nonexhaustive search
23 identifying a neighbor.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Now, if we go to slide 16, we will see that there are
2 three dependent claims, 18, 19 and 20, that both tell us that it is
3 based on these new types of searches, kd-trees, vantage point
4 trees and middle vantage point trees. But the specification in the
5 Cox patents tell us that these particular types of searches are
6 nearest neighbor searches. In fact, the '237 patent, which is
7 Exhibit 1001, at column 9, lines 7 to 9, tells us that kd-tree
8 method, which finds the nearest neighbor with certainty, and it's
9 the same for all of these that are listed in these dependent claims.

10 Why is that important? Because the fact that it's
11 identifying these as a nearest neighbor search, the Cox patents tell
12 us -- can we see slide 17, please? The Cox patents tell us, Exhibit
13 1021, that the nearest neighbor search always finds the closest
14 point to the query. So, the nearest neighbor searches are a type of
15 neighbor search, just by a plain reading of the claim language
16 itself.

17 So, Petitioner's interpretation that it excludes finding the
18 closest -- always finding the closest match is actually incorrect,
19 because the claims call for that specifically.

20 Now, there could be no dispute that the Ghias reference
21 actually locates a close match. If we look at the slide 18, we will
22 see that right within the reference itself, it talks about the output
23 as a rank list of approximately matching melodies. It tells us.
24 These are close matches. They're approximately matching

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 melodies. And, of course, figure 1 on slide 18 confirms that and
2 shows that the ranked list is part of the output.

3 There can be no dispute that there is a close match here.
4 And a close match is what it takes to meet the claim language and
5 the claim construction that the Board has provided.

6 There's one other in Ghias, and that is determining an
7 action. Now, I can't believe that this is going to be seriously
8 challenged, but I want to just address it. Action really refers
9 broadly to any act that a system executes based on the
10 identification of a work. So, once the work is identified after the
11 search, there is an action.

12 What is -- what does Ghias tell us about that? If we
13 look at slide 19, Ghias says, "the set of possible actions is
14 potentially infinite," and we also asked Dr. Karypis in his
15 deposition, and if we look at slide 20, we will see what he said,
16 and we asked him the question, and he said, "I cannot really think
17 of anything. I mean outside, you know, the constraints of the rest
18 of the words in this step." That's not in the scope of what action
19 actually means.

20 So, I can't believe that there is going actually be a
21 serious challenge on this, but if we look at the Ghias patent itself,
22 on slide 21, it tells us that the database returns a list of songs, in
23 the results of the query, the user can identify the song of interest.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 So, that is the action, and I don't think there is going to be any
2 really serious challenge to that.

3 JUDGE PETTIGREW: Now, that takes place, at least
4 the way it's presented there at the bottom of column 6 and top of
5 column 7, after that, starting at line 5 of column 7, it says, "if the
6 list is too large, the user can perform a new query on a restricted
7 search list," which is one of the things that you said is the
8 nonexhaustive search.

9 MR. ELACQUA: That's correct.

10 JUDGE PETTIGREW: I assume that you're implying
11 that after that second search, there is also a display or an output of
12 a list of songs.

13 MR. ELACQUA: Yes, there could be an action as a
14 result of each of the searches or at the end of the search.

15 JUDGE PETTIGREW: All right, thank you.

16 MR. ELACQUA: I would like to now move to the
17 Iwamura reference, which is the second of our references. And
18 here we have three issues, the nonexhaustive search issue,
19 identifying a neighbor and sublinear. Now, there's a mistake on
20 the slide here on slide 22, it should say three claims, not two
21 claims for the '237 patent. And I'm going to preview Iwamura for
22 just a moment.

23 Iwamura represents musical works as a series of
24 numbers, and those numbers are relative pitch differences

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 between adjacent notes. And to compare references, Iwamura
2 computes the absolute differences between the query and the
3 melody segments.

4 Now, what's very important in understanding Iwamura
5 is that Iwamura does not compare the query to every reference
6 segment, but only makes comparisons where the peak notes
7 alone, and peak note is defined as a note that is higher than or
8 equal to each of the adjacent notes. So, we're dealing with a peak
9 note algorithm.

10 Now, the Patent Owner's position here is that matches
11 equals songs and matches do not equal melody segments, but this
12 is -- this is incorrect, for several reasons, and we'll see that if we
13 look at the Patent Owner's response and the diagrams presented to
14 illustrate certain positions by Dr. Karypis on slide 26, we will see
15 that this is not correct. Because Dr. Karypis actually illustrates
16 the nonexhaustive nature of Iwamura's search algorithm by
17 putting segments and comparing the segments and actually taking
18 the absolute differences which he totals up and circles. And then
19 he shifts to the next peak and does the same thing.

20 And, further, Iwamura nowhere in its disclosure,
21 nowhere, calculates the overall difference or average difference
22 between a query and a work over the entire length of a song. It's
23 only done the way this is illustrated here, which is, again, from
24 the Patent Owner's own response.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Finally, at his deposition, Dr. Karypis confirmed that a
2 single reference song may contain multiple matches. So, at his
3 deposition, we put before Dr. Karypis a query, 5, 4, 3, 2, 1, on
4 slide 27, and a reference. And he stated that in that reference, he
5 found four portions that match exactly to the query. Now, the
6 whole song cannot be the match. If he recognizes and considered
7 that what he was matching to were segments and that he found
8 four of them matched in that single reference point.

9 So, his position on this is very consistent with
10 Petitioner's position that we are matching melodies, we're not
11 matching entire songs.

12 JUDGE TURNER: Counselor, can I ask a quick
13 question before you move on?

14 MR. ELACQUA: Sure.

15 JUDGE TURNER: In Iwamura, the database is made
16 up of records; what are those records in Iwamura?

17 MR. ELACQUA: The records in Iwamura is a string of
18 numbers that represent the differences between the pitches in the
19 notes of the song. And the only -- the only segments that are
20 actually matched up against the query is when they align with the
21 peak note in that string of numbers.

22 JUDGE TURNER: But each record is a song. Is that
23 correct?

24 MR. ELACQUA: That's my understanding.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: So, and I guess the follow-up
2 question I would have would be in Iwamura, isn't each record
3 examined when you search?

4 MR. ELACQUA: Each record -- each record or each
5 song, yes, is looked at. The question is, in the search, is the
6 match of the query to the song or is the match of the query to
7 each segment that's aligned with the peak, and in Iwamura, it does
8 not ever match the query, which can be, for example, a
9 hummed -- a shortened hummed version of the song, or a, you
10 know, a version that is played out in a short sequence on a piano
11 or something. So, that short query is then compared only to the
12 peaks in the notes. It's never compared to the entirety of the song.

13 JUDGE TURNER: No, I understand that, but I guess
14 my question would be, how is the basic search in Iwamura
15 nonexhaustive if it looks at every single song? If it looks at every
16 single record, how is that nonexhaustive?

17 MR. ELACQUA: Because it's our position that when
18 you're talking about possible matches, here in Iwamura, just like
19 in Ghias, you're not looking to match the query to the entire song,
20 because a match has to be the query to something. And the fact
21 that they are just touching a note in the song wouldn't be
22 sufficient to say that's actually how the match is being done,
23 because the extracted features here are the extracted features are
24 coming from the differences in the pitches of the song notes

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 themselves against each other. And what's being matched is the
2 query, which is in this case, that we're showing on 27 an example
3 of, would be, you know, five notes with the relative pitch
4 differences, and it would only be lined up against the references
5 that have the peak notes.

6 JUDGE TURNER: So, would it be fair to say that
7 Iwamura, the search is exhaustive with respect to the records, but
8 nonexhaustive with respect to the features?

9 MR. ELACQUA: It's nonexhaustive with respect to
10 what is actually being matched. It's nonexhaustive with respect to
11 what you're matching it to. You're not matching that query to the
12 entire song at one time. You're going through a series -- a
13 process which is a searching process of taking the query against
14 each segment. That's what's being matched. Those are the
15 possible matches that we're dealing with. We're not dealing with
16 the entire song.

17 We concede that every song is looked at.

18 JUDGE TURNER: Okay.

19 MR. ELACQUA: But we're not conceding that that's
20 the match. That's not the match that we're talking about.

21 JUDGE TURNER: Right.

22 MR. ELACQUA: In fact, in a brute search, and in fact,
23 we can show this. Andrew, can you put up the chart that we

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 have, I will just show as an example, the square box chart. I
2 apologize, we've lost the slide presentation.

3 I think this might be helpful at this point. Again we're
4 dealing with Iwamura and this is another instance where we
5 presented this chart to Dr. Karypis at his deposition.

6 JUDGE PETTIGREW: I'm sorry to interrupt, this is
7 slide 65.

8 MR. ELACQUA: Sixty-five. I'm sorry, Judge Turner,
9 it's slide 65.

10 JUDGE TURNER: Fifty-five?

11 MR. ELACQUA: Sixty-five, thank you.

12 JUDGE TURNER: Sixty-five, thank you. Got it.
13 Thank you.

14 MR. ELACQUA: So, here is the query, 5, 4, 3, 2, 1,
15 and you see the reference base below it at the top of the box. If
16 we were to do a brute force search or an exhaustive search, we
17 would do each one of these 16 comparisons. But, in fact, because
18 this is a peak note search, there's only two comparisons that are
19 actually done, and the two comparisons are number 5, where you
20 see the asterisk, because the 5 is lined up with the peak note 6 in
21 the reference, which is asterisked at the bottom. And you see
22 comparison 11, which is asterisk 5 and asterisk 6.

23 And Dr. Karypis, as we will see, has admitted that those
24 are the only two comparisons done and the other comparisons are

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 not complete. They're not -- they're never performed. And, in
2 fact, you will also see, if you look at comparison 12, that's an
3 exact match. We know that because if you look at the right-hand
4 column, where the total absolute differences are, it lists zero. So,
5 that shows that it's an exact match. That exact match is never
6 performed and never found.

7 So, if we were to do an exhaustive search using that
8 query against the reference, that's what it would look like, 16
9 comparisons and, in fact, the way Iwamura does it, there's only
10 two.

11 I will now move on to the neighbor search. Iwamura
12 also has neighbor search as an issue. If we go back to slide 28,
13 we will see that, again, we're using the same construction, of
14 course, that we used with Ghias. And here, there can be no
15 dispute that Iwamura locates a close match. We go to slide 29,
16 we'll see that in Iwamura itself, it tells us that "the reference
17 melody that gives the least difference is returned as a search
18 result."

19 The last reference that I want to discuss is Conwell, it's
20 the last of the three references. And with Conwell, there's only
21 two issues, identifying a neighbor, and nonexhaustive search.
22 But to really understand Conwell, I believe it's important to
23 understand hashing. And I want to make sure that we're all on the
24 same page there.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 So, I would like to provide just a quick review of that.
2 Now, a hash is a mathematical algorithm that converts a large file
3 into a much smaller number in a deterministic manner. The same
4 file will always yield the same hash value. But there are other
5 types of hash algorithms. For example, if we have slight
6 differences in the input file, in some hash algorithms, you will
7 still yield the same hash value. In others, a slight difference in
8 the input value will yield a dramatically different hash value.

9 So, when looking at Conwell, we first need to decide
10 what type of hashing is used in Conwell. Conwell tells us, on
11 slide 31, "of course, by suitably designing the algorithm by which
12 identifiers are derived, nonidentical versions of the same basic
13 content may nonetheless correspond to the same identifier."
14 There is extensive published research on such technology, e.g.
15 hashing algorithms by which similar or related, but non-identical,
16 inputs map to the same hash outputs."

17 So, we know that's the type of hashing that's being
18 done, and the Board understood that and agreed in its institution
19 decision for the 343 IPR at paper 6, page 11, and actually, the
20 Patent Owner also agreed in the Patent Owner response, paper 17
21 at 21.

22 JUDGE PETTIGREW: Mr. Elacqua, you are into your
23 rebuttal time, would you like to take a few more minutes and
24 continue?

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 MR. ELACQUA: Yes, I would like to take a few more
2 minutes and finish up here. I have just a few more things to say
3 about Conwell. And one is that Conwell actually extracts a hash
4 value from a query work and transmits it and then looks it up in
5 identifier database using a standard database query. And based
6 on that, there is a URL that is sent to the user.

7 So, the question is, does Conwell, does it teach a
8 neighbor search, and yes, it does teach a neighbor search, because
9 the same hash can represent works that are similar, but not
10 exactly the same, and this search can locate near matches. So,
11 Conwell does perform a neighbor search. And if we look at slide
12 34 quickly, the Board actually agreed with that.

13 The final issue on Conwell that I will touch on is
14 nonexhaustive, we're using the same construction. The sole
15 dispute in Conwell is not whether or not the searches for matches
16 are using a database query, but whether that database query is
17 nonexhaustive. And the position that Patent Owner has been
18 taking is that they argue that since it can also possibly be an
19 exhaustive database query and not just a nonexhaustive one, it's
20 not inherent, but inherency is not really the issue we're saying
21 here.

22 We're saying Conwell literally discloses a
23 nonexhaustive search. And we know that because Dr. Cox, the
24 inventor of these four patents, tells us. And if we look at slide 36,

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 we can see that Dr. Cox tells us that when you have databases of
2 this size that are now common, they rely on efficient search to
3 access entries. They do not perform a linear search. And there's
4 no dispute that linear equals brute force, equals exhaustive. They
5 do not perform a linear search. He's teaching away from that.

6 And he emphasizes it by describing, he says, "A binary
7 search of a 90 million item database requires less than 20
8 comparisons." This is on slide 36. "In contrast, a linear search
9 will require an average of 45 million." And he puts an
10 exclamation point to emphasize not to use an exhaustive search.
11 He's teaching that database queries literally mean nonexhaustive
12 search.

13 JUDGE PETTIGREW: And is there anything in
14 Conwell that goes into that in any more detail?

15 MR. ELACQUA: We -- in Conwell itself?

16 JUDGE PETTIGREW: In Conwell itself.

17 MR. ELACQUA: Conwell itself, I don't believe does.

18 JUDGE PETTIGREW: All right, thank you.

19 MR. ELACQUA: Your Honor, I will now reserve the
20 rest of my time. Thank you.

21 JUDGE TURNER: Can I ask a quick question before
22 you step down?

23 MR. ELACQUA: Yes.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: Sorry, this is quick. Do you
2 acknowledge that one of ordinary skill in the art would
3 understand that there's a difference between searching a table and
4 doing a lookup on a table or do you think they're synonymous?

5 MR. ELACQUA: I think that the way they are used,
6 they're synonyms here, that a database query and a lookup table
7 are considered to be synonyms, and I think -- I can't pull it up
8 right this second, but I believe there is -- that we have a slide that
9 I will put up in my rebuttal that I think will actually say that. But
10 I don't think there's any dispute here that a database query and a
11 lookup table here are considered to be the same. The way
12 Conwell --

13 JUDGE TURNER: But when you search a table, is that
14 the same, I guess is the question. Because if I'm doing a lookup,
15 assuming that I have some index, and I do a lookup of the table
16 that's going to provide me with a value versus searching the
17 whole table, that seems like that's going to be different, because if
18 I would search the whole table, I may be searching the whole
19 table for a particular value and I may not be using the index.

20 MR. ELACQUA: The difference is, though, is that
21 when Conwell -- when they're talking about a database query, and
22 if a person of skill in the art understands that that is going to be a
23 nonexhaustive search, that means that that's an intelligent search.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 You're not just doing a lookup in an exhaustive way by going
2 through the lookup table and hitting every single entry in it.

3 What that tells us when you're doing a database query
4 and a person skilled in the art, even based on what Dr. Cox just
5 said, and also Dr. Karypis in his deposition said that it was
6 probable that one skilled in the art would use a nonexhaustive
7 search. Between what Dr. Cox tells us and what Dr. Karypis
8 admitted to, it's probable that it would be nonexhaustive, then you
9 would be using an intelligent search to go through that lookup
10 table in a nonexhaustive way. It wouldn't be just going through
11 each one of the repetitive slots of the lookup.

12 JUDGE TURNER: Okay. I'll let you go, I think Patent
13 Owner is ready to get up and talk.

14 MR. ELACQUA: Okay, thank you.

15 JUDGE PETTIGREW: All right, let's hear from Patent
16 Owner now.

17 MR. DOVEL: My name is Greg Dovel, I am back-up
18 counsel for the Patent Owner, and with me is the lead counsel,
19 Charlie Macedo.

20 I am going to address all of the references. I don't know
21 if I will have time to get to every issue, but I am going to try to
22 hit the most important issues, Your Honor.

23 I am going to start with the Iwamura reference. The
24 Iwamura reference, contrary to what Google's counsel told you,

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 there are actually four missing elements: Sublinear, neighbor,
2 approximate nearest neighbor and nonexhaustive. Four missing
3 elements from Iwamura that are set forth in the independent
4 claims.

5 I'm going to start with sublinear.

6 JUDGE PETTIGREW: Let me remind you, Mr. Dovel,
7 if you could identify the slides as you move through them for
8 Judge Turner's benefit. Thank you.

9 MR. DOVEL: Yes, Your Honor, and for Judge Turner's
10 benefit, I am going to be moving through them in order. I am
11 currently on slide 4, I am moving to slide 5.

12 JUDGE PETTIGREW: Thank you.

13 MR. DOVEL: In the petition, the Petitioner asserted
14 that sublinear was satisfied by the Boyer-Moore algorithm. And
15 the Petitioner included a claim chart that said, "Iwamura discloses
16 searching using the Boyer-Moore algorithm, which is sublinear."
17 That same claim chart was copied into the declaration of
18 Petitioner's declarant, Dr. Moulin, and in addition, Dr. Moulin
19 stated, this is also on slide 5, "it is my opinion that Iwamura
20 further teaches how this search can be sublinear. For example,
21 Iwamura discloses ... the Boyer-Moore algorithm ... the Boyer
22 Moore algorithm has a sublinear behavior." And in his
23 deposition on cross examination, he admitted that that was the
24 only thing that he had identified that would -- in Iwamura that

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 could be a sublinear time search. And he admitted, also, that the
2 definition of sublinear that he was applying in his declaration, in
3 his testimony, his written testimony, was this equivalent to the
4 same one that the Board had applied, that is it's a search whose
5 execution time scales with a less than linear relationship to the
6 size of the data set to be searched.

7 But then I confronted Dr. Moulin, their declarant, with
8 Boyer-Moore's original paper describing the Boyer-Moore
9 algorithm, and when I did that, he had to admit that, in fact, the
10 Boyer-Moore algorithm describes a linear relationship. It's not a
11 sublinear algorithm. He went on to say, in fact, that it had never
12 been his opinion that the Boyer-Moore algorithm was sublinear,
13 that he's always known that it was a linear algorithm and not
14 sublinear.

15 And he said, and this is on slide 7, "when you wrote
16 this, were you trying to convey that searching using the
17 Boyer-Moore algorithm would be sublinear with respect to the
18 size of the data set being searched?

19 "Answer: No."

20 He said that wasn't even his intent to try to convey that.
21 So, that ends the issue with respect to the Boyer-Moore
22 algorithm. It's undisputed, the Boyer-Moore algorithm is linear
23 and not sublinear. However, before I move on, I want to address
24 an issue about credibility. The Board is going to have to consider

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 the credibility of the experts. And let's consider this -- these
2 statements in Dr. Moulin's declaration. How is it that he came to
3 write that Boyer-Moore is sublinear when it's always been his
4 opinion that it's not sublinear? Well, Google says, it was just a
5 mistake.

6 Well, that could be true if he was unfamiliar with the
7 Boyer-Moore algorithm and only when I showed him that paper
8 did he realize, oh, yeah, it's actually linear, not sublinear. But
9 that's not what he said. He said he was very familiar with it. He
10 had always been familiar with it. He used the phrase "golden
11 standard" on page 60 of his testimony. It was a golden standard.

12 And, in fact, before he signed his declaration, he had
13 gone back and checked the Boyer-Moore paper and checked other
14 references to verify that he understood exactly what Boyer-Moore
15 did. So, his explanation wasn't that it was a mistake. Instead, I
16 asked him a number of questions about that, and it's summarized
17 on slide 10, his testimony, which I will read.

18 "Question: To be candid with the Board, wouldn't it
19 have been better to say, 'Board, the Boyer-Moore algorithm is
20 linear, not sublinear'?"

21 His answer: "Listen, there are many words that I -- I'm
22 sure I could have chosen better words. So I agree with you, there
23 is probably better ways to write this."

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 So, his excuse is this was simply poor word choice.

2 That's how this happened. But that excuse is not credible.

3 Someone trying to say, accurately, that the Boyer-Moore
4 algorithm is linear, would never reach for the word "sublinear."
5 Sublinear is not a synonym of linear.

6 And if you were trying to establish that in a claim that
7 dealt with -- that had an element about sublinear time search and
8 you knew that Boyer-Moore was not sublinear, why even
9 mention Boyer-Moore in the first place? The only plausible
10 explanation is that Dr. Moulin was trying to convince this Board
11 that Boyer-Moore disclosed a sublinear algorithm as used in the
12 patent and that's why he wrote these words.

13 And, at least up until that deposition, he was doing just
14 that, the Board relied upon this in their decision to institute. But
15 an expert declarant that's willing to write words in his declaration
16 that are directly contrary to what he knows to be the truth is not a
17 reliable expert. For that reason, for any fact for which the
18 Petitioner relies upon Dr. Moulin as their source of proof, the
19 Board can conclude that Petitioner has not met their burden of
20 proof. Dr. Moulin is not a reliable expert.

21 Now, let me move on to their new reply theory. In
22 reply, they state for the first time that, well, Iwamura discloses a
23 sublinear search when WAV files are added to a database of
24 MIDI files. This is on slide 11. But that's a new theory, and

1 under the Board's rules, a reply that raises a new issue will not be
2 considered. This is a new issue. We didn't have a chance to
3 present any evidence on it. We didn't have a chance to cross
4 examine their expert about this. It's a new theory, it shouldn't be
5 considered.

6 In addition, it is wrong. It relies upon -- I'm going to go
7 to slide 13 now. It relies upon factual propositions that just like
8 their Boyer-Moore theory, have no basis in fact. They say that
9 Iwamura stores reference songs in two different file formats,
10 low-resolution MIDI and high-resolution waveform WAV files.
11 That's from reply 16.

12 They don't cite anything at the end of that sentence, and
13 the reason is Iwamura says nothing like that. Iwamura teaches
14 only disclosing the music files in MIDI format. It refers to WAV,
15 but only as a format that's used to transmit the query to the search
16 engine. It's never -- there's no disclosure of storing songs in a
17 MIDI format.

18 In addition, they go on to say, in Iwamura, "Higher
19 resolution works are added to a reference database of lower
20 resolution works." Once again, at the end of that sentence, they
21 cite nothing. And their reason is, Iwamura says nothing about
22 that. It nowhere teaches that we're going to have a database of
23 high-resolution songs and we're going to -- or low-resolution

1 songs and we're going to add some high-resolution or have mixed
2 resolution in any way. No teaching whatsoever of that.

3 What's more, and, in fact, they will have the last word,
4 they're not going to go up here and point you to any place in
5 Iwamura that discloses storing referenced songs in MIDI format
6 or adding two different mixtures of songs together in a reference
7 database.

8 In addition, what's worse is that the Iwamura search --
9 I'm still on slide 13 now -- the Iwamura search could not work in
10 the manner they describe. The Iwamura search is actually done,
11 as Judge Turner elicited, on a database consisting of a sequence
12 of pitch values. The Iwamura search technique is not applied to
13 the reference files, that is the music files themselves. There's no
14 disclosure in Iwamura of taking this peak note search and
15 applying it to reference files and it could not be applied in that
16 manner.

17 So, as a result, this new theory itself doesn't work. They
18 didn't present any evidence to support it, other than attorney's
19 argument. It's new, it shouldn't be considered, and it's wrong.

20 Now, let me move to the next issue in Iwamura -- I'm
21 on slide 14 -- and that is nonexhaustive search. Slide 14, 15, and
22 then I'm going to go to 16. The Board's construction of
23 nonexhaustive search is a search that locates a match without a
24 comparison of all possible matches. That's in contrast to the

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 construction that had been proposed by the Petitioner and
2 rejected, which would be a search that it would also be
3 nonexhaustive if it does the search without comparing all data
4 within all possible matches. I've got it up on the top of slide 16.
5 All data within all possible matches.

6 Well, what they say is that Iwamura does this because it
7 matches melody segments, but Iwamura does no such thing. In
8 fact, in their slide 29, I'm now looking at a slide from their slide
9 deck, slide 29, they say this on their slide, "Iwamura teaches
10 identifying similar works by returning the reference melody with
11 the least difference." And that's exactly what it does.

12 It identifies and only determines what reference melody
13 has the least difference. And they quote from Iwamura the
14 relevant passage. "In this manner, the entered melody is shifted
15 to each peak in each reference melody and compared. The
16 reference melody that gives the least difference is returned as a
17 search result." And if we go to then, I'm going to look at their
18 slide 27.

19 This is the slide where they have the testimony from Dr.
20 Karypis. And what they point to is he was presented with a
21 sequence, which they call reference, sequence of pitch values,
22 which compared to a query, and he was asked to say whether
23 those 5, 4, 3, 2, 1, lined up with the 5, 4, 3, 2, 1, four times there,
24 and he says, yeah, those four portions match exactly. But he

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 doesn't say that the possible match that's identified in Iwamura is
2 a music segment and, in fact, it's not.

3 When Iwamura finds out that pitch values 5, 4, 3, 2, 1,
4 are identical to 5, 4, 3, 2, 1, what it does is simply record that as
5 zero, as total absolute value, and then move to the next segment,
6 the next pitch value, do another calculation, and continue
7 throughout the entire melody and then throughout the entire
8 database.

9 It never at the conclusion of that process says, ah, which
10 melody segment matched? It never takes the 5, 4, 3, 2, 1, and
11 goes back to the referenced melody database and says, which
12 were those five notes? Let's return those five notes. I want to
13 identify those five notes, those -- that melody. It never identifies
14 a melody segment. It always returns a reference melody that had
15 the lowest absolute difference. That's the only thing it can
16 identify.

17 In fact, I'm now on slide 17 of our presentation, of our
18 set of demonstratives. We asked Dr. Moulin about this, because
19 his theory was if we apply the rejected construction, well
20 Iwamura teaches a nonexhaustive search, but when we applied
21 the Board's construction, in fact, he agreed, it's not a
22 nonexhaustive search.

23 What are the possible matches? This is on slide 17. I
24 asked him, "when we do the search that's described in Iwamura,

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 are the possible matches the set of the melodies in the database in
2 Iwamura?

3 "Answer: Yeah, that you try to match melodies."

4 Unambiguous testimony. Undisputed.

5 Continuing to slide 18, "Question: Let's turn to
6 Iwamura. We've talked about how the possible matches that can
7 be returned in Iwamura are musical works that are in the
8 reference database; right?

9 "Answer: Yes.

10 "Question: You would agree that in Iwamura, the
11 search that's identified there does make a comparison to each of
12 the possible musical works that could be returned as a match?

13 "Answer: To each of the musical works, yes."

14 In another question on slide 19, he agreed that the
15 Iwamura search examines each of the musical works that can be
16 returned as a possible match, and that it looks at each of the
17 possible matches.

18 So, the testimony from the experts was undisputed, it
19 was in agreement, that Iwamura does not do a nonexhaustive
20 search, it's exhausting, it looks at each of the reference melodies
21 which are the items in the database that it looks to match.

22 Now, in the reply, the Petitioner -- I'm on slide 20
23 now -- they quote a passage from Iwamura that uses the phrase
24 "brute force," and they say, "any time the words brute force

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 appear, we're talking about something that's exhaustive with
2 respect to comparing all the matches in the data set." But brute
3 force is used in different ways in different contexts, and
4 sometimes it's not referring to that at all.

5 So, the question is, what is it referring to in Iwamura?
6 And you'll see that I quoted exactly what they've got there, and
7 they've got four ellipses there, for some words that they left out,
8 and those words they left out tell us what brute force refers to.
9 And it explains that, in fact, brute force here refers to it doesn't
10 look at all of the data within a possible match, but it does look at
11 all possible matches.

12 Let's look at that. The actual quote, slide 20, is that "a
13 brute force search which shifts the entered melody note by note."
14 Now, let me explain what that refers to. I'm on slide 21, I'm
15 going to go through a series of slides to explain how this works.

16 In the Iwamura database, we've got -- in the record
17 we've got a sequence of pitch values, an example is indicated
18 here, 5, -1, 1, 4 and so on. And the way the system works, it sets
19 alongside it pitch values for a work to be identified, and then
20 computes an absolute difference. For example, here we've set it
21 at a particular location, it computes 5 minus 5 is 0, -1 and 0, the
22 absolute difference is 1 and so on. And then it totals all that up.

23 Having done that, made one such comparison, what
24 does it do next? Well, one possibility, and this is the one that's

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 referred to in that passage from Iwamura, is to shift the melody
2 note by note. Shift it over one note, which I've done now on slide
3 23, go from 22 to 23, you see we shift over one note. And now
4 we do another computation. That's one possibility. But that's for
5 looking within a possible match.

6 The other way to approach it, and this is slide 24, is the
7 Iwamura peak note approach. There, we line up peak notes in a
8 work to be identified, and for each possible match, and then after
9 we've done that calculation, going to slide 25, we slide over to the
10 next peak note and do a calculation. That has an advantage in
11 that it allows us to avoid four interim calculations when we're
12 assessing a particular record. But when we do that, we are still
13 going to be doing a brute force comparison to each of the records
14 in the database -- to each of the possible matches.

15 As Dr. Moulin admitted, we've looked at each of the
16 possible matches, yes. What happens in Iwamura is we slide
17 along, we complete that analysis of that possible match, and then
18 we go to the next one, and we consider every one. So, when it
19 says it's faster than a brute force search, it's faster than a brute
20 force search within a match. It provides a technique that's faster
21 for looking at the data within all possible matches.

22 I am now on slide 27, but that's the construction that
23 was rejected by the Board. Nonexhaustive doesn't require
24 locating a match without looking at all data within all possible

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 matches. In Iwamura, we don't have to make a comparison of the
2 query to every possible combination, what we have to do to have
3 a nonexhaustive search is a search that locates a match without a
4 comparison of all possible matches. What are the matches of the
5 reference melodies? And it does that.

6 Now, finally, for this issue, the Board in its decision to
7 institute said that -- and this is slide 28 -- "if, in Iwamura, the
8 computational limit is reached, the search is stopped, even if not
9 all the records have been searched." Well, in fact, what Iwamura
10 says is that what is stopped is the computation of the total
11 absolute difference. Now, what does that mean? Let me give
12 you an example, and this is slide 29, and what we have here is a
13 record in the database and we've set a computational limit of 20
14 in our example. And we start doing our computation and we go
15 what's the difference between 5 and 5? That's 0.

16 Go on to slide 30, what's the next computation, the
17 difference between -1 and 0, that's 1. Keep going until we hit our
18 limit of 20 and we hit that finding and we get to the number 10.
19 At that point, our total is 24. Procedural limit of 20. So, we stop
20 our calculation. We stop the computation of the total absolute
21 difference. We stop that. But we don't stop the search. We don't
22 even stop our computation with respect to this record. Instead,
23 we move this along to the next peak and do a new -- do the next
24 computation.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Slide 33, we shift over to the next peak, and as their
2 expert, Dr. Moulin agreed in this circumstance, he would shift
3 this peak over to the next peak, start another calculation. We
4 don't stop the search. And we keep going, in fact, until we've
5 completed this record and all the records in the database.

6 Slide 34, the entered melody -- as Iwamura says, the
7 entered melody is shifted to each peak in each reference melody
8 and compared. And as their expert agreed, it does examine each
9 of the musical works that could be returned as a possible match.
10 The computational limit is reached when we're using this limit
11 formula, but we don't stop the search as the Board concluded. In
12 fact, we keep searching. Both experts agreed with that, that
13 testimony is undisputed.

14 Now, that's my -- what I'm going to say about Iwamura
15 sublinear and Iwamura nonexhaustive. There are two other issues
16 with Iwamura which I am going to reserve and get to if I have
17 time. I've got other references that I want to address as well and I
18 am going to address neighbor and approximate neighbor all
19 together at the end.

20 Let's turn to Ghias. The Ghias reference fails to
21 disclose five elements. Petitioner in their presentation said there
22 were three; no, there are five missing. Sublinear, approximate
23 nearest neighbor, nonexhaustive, neighbor and determining an
24 action. Five elements that are failed to be disclosed by Ghias.

1 Let's start with sublinear. I'll do this very quickly.

2 Sublinear in Ghias, just like in Iwamura, they pointed to
3 something on cross examination of their expert, he admitted it
4 does not teach a sublinear search, it teaches a linear search, I
5 knew that all along, my declaration is inaccurate. Again, his
6 excuse, poor word choice. Poor word choice for saying it was
7 sublinear when he knew it was not.

8 What do they say in reply to that? They say nothing.
9 Slide 45, the reply brief, they say that Ghias anticipates a number
10 of claims, but they don't include the claims 1 through 3 and 5
11 through 7 that had the sublinear element in them. They appear
12 not to be disputing that as to those claims.

13 In addition, they don't identify sublinear as an element
14 that is missing from Ghias any longer. So, they appear to
15 abandon their position on Ghias and sublinear.

16 Let me move on, then, to nonexhaustive. Just one
17 moment, Your Honor.

18 Again, Your Honors, the Board's construction is that a
19 nonexhaustive search is a search that locates a match without a
20 comparison of all possible matches. It's not one that requires to
21 be exhaustive to look at all data within all possible matches. In
22 their petition, it was that incorrect construction they applied, that's
23 what their declarant, Dr. Moulin, applied. But when asked about

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Ghias, and the correct construction, he had to admit, as our expert
2 testified, that it actually does not disclose a nonexhaustive search.

3 Our expert, this is on slide 49, testified that Ghias
4 teaches an exhaustive search that compares the work to be
5 identified with "all the songs" in the database, i.e., "all possible
6 matches." That's from his declaration at paragraph 266. And
7 then at -- he had a detailed explanation of that, and then at
8 paragraph 289, "the only algorithm Ghias teaches for conducting
9 a search is to compare a query statement against every record in
10 the data set against which the algorithm is to be run -- and is thus
11 always an exhaustive search."

12 As he explained, every search, in every search situation,
13 there's going to be three things. There's going to be a query,
14 something we're trying to match, something we're trying to find.
15 There's going to be a search algorithm. And then there's going to
16 be a data set that we're going to run the algorithm against. The
17 question for nonexhaustive is, when we run the algorithm, does
18 the algorithm check each of the possible matches in that data set,
19 or not.

20 In, as he testified, in Ghias, the only algorithm that's
21 identified in Ghias compares the query statement against every
22 record in the data set against which the algorithm is to be run.
23 What about their expert, Dr. Moulin? Again on slide 49,
24 "Question: Would it be the case that the Ghias search is going to

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 be performing a comparison to each of the melodies that are
2 possible matches in the database?

3 "Answer: It does a comparison, yes, to each of them."

4 So, in cross examination, he admitted that it matches --
5 that it flunks the test of the Board's construction, it doesn't do a
6 search without a comparison of all possible matches; instead, it
7 does a comparison to each of them.

8 Now, in reply, the Petitioner relies upon a new theory, a
9 new theory to them, it was a theory that the Board adopted in
10 their decision to institute, but that theory also does not disclose a
11 nonexhaustive search. I'm going to explain why, using the
12 diagram that's in the reply brief, Petitioner's reply, and I'll start
13 with slide 51 and we'll walk through a series of slides that show
14 that.

15 So, the way this subsequent search works is we've got a
16 data set, a set of references, A, B, C, D, E. We're going to do a
17 search on that, and we're going to use, in this example, we're
18 going to use the chorus of the song *My Way*. We do the search
19 and it produces, in our example, this is slide 52, a list of -- a
20 ranked list of matches and they happen to be A, C, D and E. And
21 then the user says, gee, that's kind of still a long list, I want to
22 refine the query a little bit.

23 Let's now put in another part of the song. This is now
24 slide 53. And we'll put in the first verse from *My Way*, against

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 those four. And it does the search and it pulls up then two works,
2 A and C.

3 Now, what the Petitioner now points to in the reply is
4 the second search, search 2, and they say that's nonexhaustive.
5 But it is perfectly exhaustive. Search two searches over a data
6 set, a search list consisting of works A, C, D, E. It's an
7 exhaustive comparison. It examines each one of them and it -- to
8 determine what are the possible matches.

9 The set of all possible matches for search 2 is the data
10 set that it's applied against, that the algorithm is applied against.
11 And that data set is works A, C, D and E. As the -- as Ghias itself
12 says, and now I'm on slide 55, it describes this situation. It says,
13 "if the list is too large, the user can perform a new query on a
14 restricted search list consisting of songs just retrieved."

15 The second search is a new query performed on a new
16 data set, a restricted search list. It's performed on that search list.
17 The question for search 2 is, does it apply an intelligent algorithm
18 that knows not to look at certain of the references in the set it's
19 looking at? No, it exhaustively does a comparison to each one of
20 them, A, C, D and E. As our expert testified, the restricted search
21 list comprises all possible matches. That testimony was never
22 rebutted, it was never undermined in cross examination.

23 And, in fact, on slide 56, I asked Dr. Moulin about this.
24 In some testimony that was on page 336 of his testimony, lines 13

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 to 22, I asked him, about the second search, "we get a list that
2 comes from there of a set of our best matches?" He said "yes."
3 And then we do another search, and then the key testimony starts
4 at line 19. "And the possible matches for that search" -- that's for
5 the second search -- "the possible matches for that search are
6 defined to be only the ones that are on the list; is that right?"

7 "Answer: That's correct."

8 The works that are not on that list are not possible
9 matches. The search is never applied to anything else other than
10 that list on that second search. They could not be possible
11 matches. It's impossible for them to be retrieved as a match.

12 Slide 58, Petitioner says, well, what about work B? It
13 was on the first list, it's not on the second list. Work B is not a
14 possible match.

15 If we look at search 1, everybody agrees, that's an
16 exhaustive search. Exhaustive algorithm goes through A, B, C,
17 D, E. Well, search 1 does not examine works F, G, H, I, J, K, L.
18 There are always going to be data that are not -- that a search is
19 not applied against. We don't then say, well, that is
20 nonexhaustive. The determination of whether something is
21 nonexhaustive or exhaustive is based upon the algorithm what
22 data set is it applied to. If it's applied to a given data set, and does
23 a comparison to all possible matches, it is exhaustive. It's not
24 nonexhaustive.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Search 1 does a comparison to works A, B, C, D, E.
2 Why? Because it is an exhaustive algorithm. When we get to the
3 second search, we're using the exact same algorithm. We haven't
4 changed algorithms. You're just doing another search but
5 applying it to a different data set. The work B is not a possible
6 match, all possible matches are work A, C, D, E.

7 As Dr. Karypis testified, this is again on slide 58,
8 "records that are not on the restricted list are not possible matches
9 for the restricted search." That testimony was never rebutted,
10 there's no reply declaration rebutting it, it was never undermined
11 on cross examination.

12 Now, in their reply, this is now slide 59, they also bring
13 up, well, what happens if a user says, I'm going to do a search for
14 *My Way*, and I get four songs, works A, C, D, E. And now I want
15 to try to find *Twist and Shout*. What are the chances that *Twist*
16 *and Shout* is going to match *My Way*? I'm not going to find it.
17 And they suggest that this somehow means that the search is
18 nonexhaustive.

19 Well, there's two problems with this example. The first
20 is -- I'm going to go to slide 59 now -- or slide 60 now. The first
21 is, Iwamura doesn't teach anything like this. This is not
22 disclosed, it's not inherent, and it, in fact, defies common sense.
23 What Iwamura teaches is that if a user finds a list to be too large,
24 the user is going to have the option of performing another query,

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 implementing another query on a different search list. A
2 restricted search list.

3 This is not a circumstance where it suggests, gee, if
4 you've done a search and found four songs that match *My Way*,
5 and now you want to find *Twist and Shout*, why don't you take
6 the *Twist and Shout* and apply it to those four songs. No
7 suggestion of that.

8 If you want to find *Twist and Shout*, and you've got a set
9 of references, four references that you conclude cannot be *Twist*
10 *and Shout*, you would never apply the second search to that. You
11 would apply it to the original, broader database. But more
12 importantly, if you -- if a user did try to want to take that silly
13 approach and took *Twist and Shout* as the query, and submitted it,
14 the search algorithm would do an exhaustive search of each of the
15 items in the data set that it was asked to search over. It wouldn't
16 skip any of them, it doesn't have an intelligent algorithm that
17 would say, let's divide it in half and only look at the bottom half,
18 let's look at every other one. It would go through each one of
19 them exhaustively. It identifies an exhaustive search.

20 Now, the Petitioner also has another new reply theory,
21 one, again, that should not be considered because it's new. This is
22 on slide 62. They say that Ghias discloses string matching
23 algorithms that operate faster than a brute force search. This is
24 similar to the argument they made about Iwamura. They say, if

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 the -- if a reference uses the word "brute force," it must be telling
2 us there's a nonexhaustive search. But the question is, what's --
3 what's brute force used with reference to? Is it saying that this
4 does a brute force -- it doesn't do a brute force comparison of all
5 possible matches, which would be the Board's construction? No.
6 It doesn't say that.

7 And we can -- we know that by examining actually
8 what Ghias says. The portion that they're pointing to that
9 suggests something faster than brute force is this term in this
10 equation on the order of $n \log(m)$. $\log(m)$ is an indication that
11 something is -- that the search time is -- operates at less than a
12 linear relationship, faster than brute force. But what is m ? Is m
13 the items in the database? No.

14 Slide 63, as it says here, " m is the number of pitch
15 differences in the query." What this is stating is that it's talking
16 about algorithms where it operates faster than brute force, faster
17 than a linear relationship with respect to the number of pitch
18 differences in the query, the size of the query string.

19 It's not saying that, oh, this is faster than brute force
20 with respect to the data set. In fact, it says just the opposite. n , n
21 as in Nancy, is the size of the string, the size of the song that this
22 query is going to be run over. And what's it say with respect to
23 n ? It says, in every case, it's directly proportional to the size of n ,
24 either m times n , k times n or n times the $\log(m)$. It's always

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 directly proportional to n the size of the string, the query that
2 they're showing.

3 In other words, it's always brute force with respect to
4 the size of the string, the song that you're going to do this search
5 over. So, it's not saying, hey, look, this -- we've disclosed an
6 algorithm that's faster than brute force with respect to the size of
7 the data set, it doesn't say that at all.

8 And, in fact, I got -- they had raised the same argument,
9 I'm going to go to slide 64 now, for sublinear. This is that
10 abandoned argument, the one that where their expert said he
11 agreed it's not sublinear. And in that context, he admitted that
12 what this is referring to is the query data set, not the database that
13 the search is run against. He explained it, it's simply a problem of
14 matching a query to a single song. There's not even a database
15 here that's mentioned at all in this analysis. So, it does not at all
16 imply that Ghias is disclosing an algorithm that does not do a
17 comparison to all possible matches.

18 Let's take a look at slide 65. What do they do then?
19 They say, well, let's give you a little refinement on that theory.
20 What about if we pack all of the songs into a single file, because
21 Ghias talks about that. And we do this same thing? What
22 happens? It doesn't change anything. We're still going to be
23 doing a search that's linear, that's brute force, with respect to that

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 song. It's going to go through every bit of that song. It's not
2 going to skip any of it.

3 It's not in any way non-brute force with respect to n as
4 in Nancy, which is the number of bits in the song. And in
5 addition, if we did that, if we took that approach, what would be
6 the matches that would be returned? It would be that song, we
7 would have a single song in our database and, of course, it does a
8 comparison to that song, it does a comparison to all possible
9 matches.

10 So, this new theory, it's not supported by their expert at
11 all, it's brand new, shouldn't be considered and it's wrong on its
12 face.

13 Now, let me turn to Conwell.

14 JUDGE TURNER: Before you leave, counsel, before
15 you leave Ghias, let me just ask a quick question. There are
16 several grounds that are in terms of being obvious over Ghias.
17 So, let me give you a quick hypothetical. Why couldn't one of
18 ordinary skill in the art look at the process of Ghias with its two
19 searches, the first search as being analogous to preprocessing and
20 then say, well, why wouldn't that render obvious a nonexhaustive
21 search if I look at it that way?

22 MR. DOVEL: Well, there's a couple of things. Let me
23 make sure I understand your hypothetical. In other words, search
24 1 is preprocessing; is that right?

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: Sure.

2 MR. DOVEL: And then search 2 would be the search
3 algorithm.

4 JUDGE TURNER: Sure.

5 MR. DOVEL: There's two problems with that. Ghias
6 doesn't teach that as one combined process. That's two separate
7 searches that are operated as a user. Now, as an obviousness
8 theory, there's no evidence to support that. To supply the
9 evidence of exhaustiveness, or of nonexhaustiveness, they have
10 relied simply on a theory that it was disclosed in anticipation.

11 They have never asserted that if nonexhaustive is not
12 disclosed, actually disclosed by Ghias, then it would have been
13 obvious to come up with. They have never asserted that. They
14 have supported that with no testimony. That would be a brand
15 new theory. We would -- we didn't have a chance to present any
16 theories explaining why that would not have been obvious to
17 conclude from Ghias.

18 And, therefore, the Board should not conclude that it
19 would have been obvious either. It's not a theory that was
20 presented, it's not a ground that they've asserted, they haven't
21 asserted that element that it would have been obvious, and they
22 haven't presented any evidence on it.

23 JUDGE TURNER: Okay. Thank you.

1 MR. DOVEL: Now, there are a number of -- there are
2 three other elements in Ghias. I'm going to -- with time
3 permitting at the end, I think I will have time, get back to those,
4 but I want to say -- I want to address two issues in Conwell first.
5 I'm going to slide 75 now to discuss the issue of neighbor search
6 in Conwell.

7 The Board's construction of neighbor search is
8 "identifying a close, but not necessarily exact or closest, match."
9 Now, they raise a dispute about what this means, and they say,
10 well, if it always identifies the closest match, if it always -- that it
11 could still be a neighbor search. Well, that's not what the Board's
12 construction says, but that issue, they've identified, is not relevant
13 for Conwell. You don't need to resolve that for Conwell.

14 Here's why: Both sides agree, both parties agree, that a
15 search that could only identify exact matches is not a neighbor
16 search. If it identifies only and necessarily always identifies an
17 exact match, it's not a neighbor search. And as we'll see, the
18 search that's shown in Conwell is an exact match search.

19 Now, let me get to that. Actually, slide 75, our expert
20 testified that a search that could only identify an exact match is
21 not a neighbor search. Slide 76, their expert in his declaration did
22 the same, identifying a neighbor means identifying a close but not
23 necessarily exact matches. And that this is in contrast to a system

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 that searched only for exact matches. So, a search that only
2 identifies exact matches is not a neighbor search.

3 Now, what Google does to avoid the impact of this
4 exact match problem, is they say -- they rewrite the claim, and
5 they rewrite it to ignore what the claim requires that the neighbor
6 search be applied to. The claim requires that the neighbor search
7 be applied to compare two specific things, they rewrite the claim.
8 On slide 77, from their reply brief, they say that the claims recite
9 "identifying the first electronic work using a neighbor search."

10 Now, written like this, you see the phrase "using a
11 neighbor search?" That's an adverbial phrase, and under the rules
12 of grammar, it's going to modify the immediately preceding verb,
13 which is identifying, so this says, "Identifying, using a neighbor
14 search, the first electronic work." If the claim said, read this way,
15 what the claims would require would be satisfied by would be
16 identifying a neighbor of the first electronic work. And they say
17 Conwell does that.

18 But, unfortunately for Google, the claims don't recite
19 that. They don't say that at all. Let's put up the actual claim
20 language on slide 78. And in general, I'm going to go through the
21 claim language in detail, but first, in general, it identifies a result
22 that's achieved and then a method of how it's achieved. And the
23 key phrase that we're looking at is this one at the end, "using a
24 nonexhaustive neighbor search." And you will see here that in

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 the actual claim language, this adverbial phrase links to the
2 immediately preceding verb, which is "comparing." We're
3 comparing A to B, using a nonexhaustive neighbor search. I'm
4 going to talk in a minute about what A and B are and why that
5 makes such an important difference for Conwell.

6 But that's what the language of the claim requires. It
7 doesn't require identifying a first electronic work using a
8 nonexhaustive neighbor search, it's identifying, and then it goes
9 on to say, how are we going to do it? By comparing A to B using
10 a nonexhaustive neighbor search.

11 So, on slide 82, it doesn't say, we're going to -- the A
12 and B are the first electronic work and B is the set of reference
13 electronic works. That's not what we're comparing. And starting
14 on slide 83, I'm going to go through a series of slides to unpack
15 exactly what it does require here.

16 The first thing is the right side. We're saying, what are
17 we going to compare? Compare the first electronic data. What's
18 the first electronic data? Well, element (a) identifies that for us.
19 Step (a). And I'm using claim 13 as an example, but this is true
20 for each of the independent claims in the '441 and '179 patent that
21 Conwell is asserted against.

22 Element (a), "the first electronic data comprising a first
23 digitally created compact electronic representation of one or more
24 reference electronic works." So, we've got a database, it has first

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 electronic data comprising first digitally created compact
2 electronic representations. So, rather than having -- doing this
3 over the reference electronic works, we're going to have a set of
4 compact electronic representations. That's what we're going to be
5 comparing. That's where we're going to be looking for our
6 neighbors at.

7 What about the left side? The left side is not the first
8 electronic work, instead, the left side is a second digitally created
9 compact electronic representation. This is slide 84. And going to
10 slide 80 -- or continuing on slide 84, what is that second digitally
11 created compact electronic representation? That's defined in
12 element (b) of the claim. It is a compact electronic representation
13 of a first electronic work.

14 So, what the claim requires is that we obtain a compact
15 electronic representation of a first electronic work. We've put
16 together a database that includes first electronic data, and those
17 are compact representations of our reference works, and then we
18 compare those using a neighbor search. What the claim requires
19 is that this item on the left, this compact electronic representation,
20 we use the neighbor search to find neighbors of that. We're not
21 looking for neighbors of the first electronic work, we're looking
22 for neighbors of the compact electronic representation. And we
23 find those among the first electronic data.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Now, that's plainly what the claim says, we look at
2 actually what the words of the claim say. It doesn't say
3 comparing first electronic work to the first electronic data using a
4 neighbor search; no, we're going to compare two different things
5 using a neighbor search.

6 Now, let me go through on slide 85 why that's so
7 important to Conwell. In Conwell, we laid this out in our
8 responsive papers. It's undisputed, their expert agrees, that the
9 compact electronic representation in Conwell is a hash of
10 extracted features from the first electronic work. And on the right
11 side, the first electronic data is a set of hash values that
12 correspond to reference works. And in Conwell, when we
13 compare, we do our search comparing the hash of extracted
14 features to the hash values, we do an exact match search. We're
15 always looking for an exact match.

16 To the extent it's a search, as Judge Turner has
17 suggested, maybe this wouldn't even be considered a search, but
18 to the extent it is, we're looking to find an exact match and it only
19 identifies an exact match of the hash. It never says, well, here's a
20 hash value that's kind of close, close enough, I'll return that. It
21 never. It always is an exact match search.

22 Let me show you some testimony on slide 86 from their
23 expert. "Question: If in Conwell, when it does a comparison of
24 the extracted features of the first electronic work with the first

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 electronic data, it's comparing a hash value with a set of hash
2 values; right?

3 "Answer: Yes."

4 So, he agreed, we're looking at the right things here. It's
5 comparing the hash of the extracted features with a set of hash
6 values. Now, what does that mean? What happens when we do
7 that? "Question: That comparison is always going to produce
8 either an exact match or no match; right?

9 "Answer: Yes.

10 "Question: That comparison will never return a
11 suggestion that, here's something that doesn't quite match, but it's
12 close?

13 "Answer: That's correct."

14 And that testimony is on slide 87. So, their expert
15 agrees that when we actually apply the claim language, what it
16 requires the neighbor search be used on, it requires that the
17 neighbor search be used on the hash of extracted features to
18 look -- to look for neighbors in a set of hash values, and in
19 Conwell, we don't do a neighbor search, it's only an exact match
20 search.

21 Again, the actual claim, this is slide 84, they say -- they
22 suggest, well, the whole result of this process is we've got some --
23 we can find a neighbor of the first electronic work. We can find a
24 reference electronic work that's a neighbor of the first electronic

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 work. That's not our process. Again, the claim is not simply,
2 hey, let's do a neighbor search. Neighbor searches were known in
3 the art. This claim is not about let's do a neighbor search. It's
4 let's do a neighbor search in a specific way on specific things that
5 nobody had ever thought of and that was completely nonobvious.
6 And the specific way we're doing it is by comparing a compact
7 digital representation on electronic work with compact -- with a
8 set of compact digital representations of other works. And we
9 look for neighbors there. This claim was not disclosed in
10 Conwell; Conwell teaches away from this claim.

11 Now, let me turn to --

12 JUDGE TURNER: Counsel, can I ask a quick
13 question?

14 MR. DOVEL: Sure.

15 JUDGE TURNER: Can we go back to slide 85.

16 MR. DOVEL: Yes, Your Honor, we're there.

17 JUDGE TURNER: So, I think what you just said is --
18 you said that a neighbor search was known, right?

19 MR. DOVEL: I'm sorry?

20 JUDGE TURNER: That a neighbor search was known
21 generally in the art, right?

22 MR. DOVEL: Yeah, neighbor searches were known,
23 that's right.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: So, it would seem like the
2 difference between, if I'm looking at your slide 85, that the
3 difference there, that sort of Conwell has all the elements but
4 doesn't teach an exact -- it teaches an exact search match instead
5 of a nonexhaustive neighbor search, right?

6 MR. DOVEL: That's right.

7 JUDGE TURNER: But if the neighbor search was
8 known, I'm halfway there, aren't I, if I somehow had the
9 nonexclusive aspect of Conwell, it seems like I'm most of the way
10 there, am I not?

11 MR. DOVEL: No, Your Honor, that's the difference
12 between an invention and hindsight reconstruction based on
13 looking at our claim. No one at the time had ever thought that
14 that was a good way to approach it. And they don't assert that.
15 There's no testimony from their expert that, gee, you know what,
16 given Conwell and that we're doing a search here, let's just throw
17 a neighbor search in. No testimony whatsoever that that would
18 have been obvious. No attempt to establish that that was obvious.
19 It was not asserted as a ground that if this doesn't show a neighbor
20 search that it would have been obvious to insert a neighbor search
21 in this circumstance.

22 So, again, it wasn't even asserted in the petition as a
23 ground and it would not have been. If it would have been, of
24 course, we would have had a chance to present the evidence on

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 that and established why no one ever would have thought of this.
2 This is an inventive aspect of this claim, it's not taught in
3 Conwell. The fact that we see now that all the components were
4 in the prior art merely means that the claim was enabled, but
5 enablement does not imply obviousness. Every claim, every
6 claim necessarily has to use stuff that's there before, and every
7 claim when it's written has to use words that exist before and you
8 put them together in a new way. No one had ever thought of this.
9 The fact that a neighbor search was known doesn't tell us that.

10 JUDGE TURNER: Let me ask another quick question
11 before you move on to the next topic. So, if I look at element (c)
12 of claim 13 that's identified, that you've been talking about, if I
13 had another system that maybe you thought infringed this claim,
14 and in the identifying it brought back an exact match, would that
15 fall within the scope of that element of the claim?

16 MR. DOVEL: Now, let me see if I understand. You're
17 saying it says identifying by the computer system a matching
18 reference electronic work that matches the first electronic work
19 and let's assume it brings back an exact match in that search?

20 JUDGE TURNER: Yeah.

21 MR. DOVEL: There is no limitation whatsoever that an
22 exact match would satisfy that element.

1 JUDGE TURNER: But an exact match can. If I'm
2 doing a neighbor search and it provides me an exact match and
3 neighbors, that's fine, that still comports to the definition?

4 MR. DOVEL: No, no, let me be clear.

5 JUDGE TURNER: Which is what I -- that was kind of
6 what my question was designed to tease out, but maybe I'm
7 missing something. Please explain.

8 MR. DOVEL: This is an important point, and if I could
9 have you turn to our slide 84, we've got the claim language, we
10 can look at this one. The claim requires that we use the neighbor
11 search when comparing what I have called A and B, that's these
12 compact representations. There we've got to find a neighbor, not
13 an exact match. If the result of that process -- I'll give you an
14 example. Let's suppose our first electronic work is a very
15 particular version of *My Way*, digital copy. And over in our
16 reference electronic works, we have a digital copy over there.
17 Exact same one. And we've got our hash values here.

18 But when it does that, when it uses -- let's assume we've
19 got a neighbor search running and that neighbor happens to
20 identify that one as a neighbor, as a close match, and it pulls that
21 up. It says we're doing a neighbor search, and there it is.

22 In that circumstance, then we would satisfy the claim.
23 We've used a neighbor search to compare our compact
24 representations, and the fact that we happen to pull up a reference

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 electronic work that exactly matches the first electronic work is
2 not contrary to the claim, because that first clause says identifying
3 a matching reference. We're trying to find a matching reference.
4 It doesn't say identifying using a neighbor search a matching
5 reference. Or identifying a neighbor of the -- a neighboring
6 matching referenced electronic work. Or identifying a neighbor
7 of the first electronic work.

8 If the claim said that, it would do exactly what Your
9 Honor suggested, it would require that the -- that we identify a
10 neighbor of the first electronic work among the referenced
11 electronic works. But the neighbor phrase doesn't appear there.
12 It simply says that we find a match, which is very broad. It could
13 be any type of match.

14 Now, we get down to the clause that where the neighbor
15 appears, now we have to have a neighbor. Exact match search
16 will not work. If we used a search that always gives us an exact
17 match, we are not doing claim 13. In fact, we're not doing any of
18 the claims of the '179 or '441 patent. They all have this language
19 or comparable language. And their expert agreed that the
20 language is comparable in all the claims.

21 It always requires using a neighbor search to compare A
22 to B, and A is never the first electronic work, and B is never the
23 reference electronic work. It's always something else.

24 Does that answer Your Honor's question?

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: I think so. It seems contradictory,
2 but I think I understand what you're saying. So, please, go ahead,
3 I don't want to use up all your time.

4 MR. DOVEL: Well, I don't mind using up my time to
5 answer all your questions. If there's something you still think is
6 contradictory, I'm happy to answer that.

7 JUDGE TURNER: I understand what you're saying
8 isn't supported by the claim, I'm still trying to understand from a
9 claim construction standpoint if I have a neighbor search and it
10 does happen to result in an exact match, in addition, that
11 somehow that maybe it shouldn't.

12 MR. DOVEL: Oh, that's a different issue. Let me
13 address that. I think it's a different issue. A neighbor search can
14 happen to pull up an exact match.

15 JUDGE TURNER: Right.

16 MR. DOVEL: Or even a closest match. The difference
17 is a neighbor search can't be a search that always identifies exact
18 matches. That is, the algorithm is one that only looks for exact
19 matches.

20 JUDGE TURNER: Right.

21 MR. DOVEL: If you're doing a neighbor search, one
22 that it's looking and it happens to pull up an exact match, that
23 would still be a neighbor search, but that's not Conwell either.
24 Conwell is not one that happens to pull up an exact match, it's one

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 that always pulls up an exact match. It's the only match it can
2 identify is an exact match.

3 Is that helpful?

4 JUDGE TURNER: Yeah. And I guess the only quick
5 follow-up question, not to use up all your time, is it possible to
6 have hash values from figure 3 of Conwell that would be the
7 same? So, if I have -- so that I would have in the first column, I
8 would have 198, 198, 198, for example?

9 MR. DOVEL: I don't know the answer to that.
10 Conwell I don't think addresses that. It gives an example where
11 they happen to be different.

12 JUDGE TURNER: Well, Conwell does talk about the
13 fact that you can have, you know, I didn't know this before we
14 started this whole process, but apparently you can have a hash
15 that is if I make a small change, it results in the same hash value,
16 so I would think that perhaps we would wind up with some hash
17 values that are either the same or close to similar works,
18 according to what Conwell teaches.

19 MR. DOVEL: Yeah, that makes sense, Your Honor,
20 but still, we're not using a neighbor search in Conwell. We would
21 still be taking our hash -- first hash value and comparing it to try
22 to find an exact match to that hash value, and that's all we would
23 return. We would say, this hash matches exactly this hash when
24 we do our search.

1 It doesn't matter if the table includes multiple exact
2 matches, it might return both, all three of them and might say all
3 three of these are exact matches.

4 JUDGE TURNER: So, I think this is sort of equivalent
5 to what you have briefed, which was that it's a different process
6 you use to achieve the same results?

7 MR. DOVEL: Exactly. Exactly right. The fact that
8 it -- yeah. This isn't a situation where the claim says, hey, go find
9 a neighbor. You know, it says go find a neighbor, using a
10 neighbor -- it says go find a match. It doesn't say go find a
11 neighbor, it says go find a match. And when you do that, use a
12 neighbor search on A and B.

13 Let me talk about nonexhaustive in Conwell. They -- in
14 their petition, they say that it requires a single lookup in a
15 numerically sort of lookup table and therefore it's a nonexhaustive
16 search, it doesn't do an exhaustive comparison. But Dr. Karypis,
17 our expert, in his declaration, explained why that's not true, that
18 the lookup table, and this is slide 90, the lookup table disclosed in
19 Conwell cannot be used to identify a match using a single lookup,
20 as suggested by Petitioner.

21 He explained that it would require a hash table that
22 had -- and that it included values for every potential hash number,
23 and either had a no record or an actual record there, that when
24 you've got items stored in consecutive positions, even if the hash

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 keys of two adjacent records do not differ by one, we cannot
2 locate the row within that table using this single lookup operation.

3 Instead, he said, instead, this is now slide 91, this is
4 consistent with a search that would be exhaustive rather than the
5 claimed nonexhaustive, because it systematically checks whether
6 each potential match matches the work to be identified until a
7 match is found. Now, this testimony was not undermined in cross
8 examination. They didn't submit any rebuttal of this. This is
9 undisputed. And in their reply, they don't come back and try to
10 rebut this at all. A single lookup is not the table that's disclosed
11 in Conwell.

12 What they do say in reply is this, and this is on slide 92.
13 They say that the patent explains that database lookups
14 commonly employed binary search. But by patent, they're not
15 referring to, as Judge Pettigrew pointed out, they're not referring
16 to the Conwell reference, they're referring to the Cox '179 patent.
17 This is not something disclosed in that prior art reference. And
18 what it says in the Cox patent, is that if you've got very large
19 databases on the order of 100 million items, it would commonly
20 employ a binary search. It doesn't say that every database lookup
21 was always a binary search, and that's the only way it could be
22 done, or it's inherent that it must be a binary search. And the test
23 for what's disclosed in Ghias is actually what's disclosed there or
24 what's inherent.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 And under -- and this is slide 92, under the Federal
2 Circuit's Akamai decision, "a claim limitation is inherent in the
3 prior art if it is necessarily present in the prior art, not merely
4 probably or possibly present." So, pointing out that our patent
5 says, hey, here's a good way it might be done, doesn't mean it was
6 disclosed in the Conwell reference. And as Dr. Karypis
7 explained, the actual method that they -- the actual table they've
8 disclosed there is consistent with an exhaustive search, not a
9 nonexhaustive search.

10 Now, they present one additional new theory, in reply,
11 again, another new theory, they rely upon this doctrine of genus
12 disclosing a species, which says -- this is on slide 93 -- "if a genus
13 is so limited that a person of ordinary skill in the art can at once
14 envisage each member of this class, then genus anticipates every
15 species."

16 So, this is a very rarely applied doctrine, but it applies
17 when you've got this very narrow genus, a limited number of
18 species, so that it's so limited that one of ordinary skill when they
19 think of the genus, they automatically have in mind all the
20 species. That's not the circumstance.

21 What do they say in reply? They say, well, there's only
22 two species in this genus. Only two types of database query.
23 You've got nonexhaustive and exhaustive. But those aren't the
24 species in the set of all database searches. Those are just two

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 ways of classifying them. It's like saying, hey, there's only two
2 species of animal. You've got those with hair and those without
3 hair. You've got two species of animal. You've got mammals
4 and non-mammals. You've got two types of database queries,
5 nonexhaustive and exhaustive. There are hundreds of species of
6 database queries. We identify some of them on slide 95 and 96
7 that are just shown in the prior art.

8 JUDGE PETTIGREW: Counsel, your time has expired.
9 If you would like to sum up in a couple of sentences.

10 MR. DOVEL: Yes, I will. Your Honor, the references
11 fail to disclose, as I've explained, sublinear, nonexhaustive, and
12 neighbor search. In addition, in our papers, we explain why
13 Iwamura fails to disclose an approximate nearest neighbor search,
14 and why Ghias fails to disclose an approximate nearest neighbor
15 search, and in addition, why Ghias fails to meet the identifying
16 elements. So, there are five elements missing in Ghias, four in
17 Iwamura, and two in Conwell.

18 Thank you for your patience.

19 JUDGE PETTIGREW: Judge Turner, I should have
20 checked, do you have any additional questions?

21 JUDGE TURNER: No.

22 JUDGE PETTIGREW: All right, thank you. Thank
23 you, Mr. Dovel.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 All right, Petitioner, you have about 30 minutes left for
2 rebuttal.

3 MR. ELACQUA: Thank you, Your Honor.

4 Your Honor, to escape the prior art here, the Patent
5 Owner asks the Board to basically ignore the broadest reasonable
6 interpretation standard that is used by this Board. And also, the
7 fact that the Cox patents do not define nonexhaustive, they do not
8 define near neighbor. In fact, these are terms that are known,
9 well known in the art, and he didn't invent those, and the fact that
10 the references in the art itself loosely refers to broad classes of
11 searches, not specific algorithms, when dealing with these terms.

12 Instead, what they're trying to do is re-interpret these
13 terms, hypertechnically. For example, they're trying to now say
14 that you can't have a near neighbor if it always finds the closest
15 match. And we've already established that their own patent in the
16 claims dictate that you have a nearest neighbor search that is a
17 dependent claim from identifying a neighbor, and Cox tells us
18 that nearest neighbor search is always finding the closest match.

19 So, they're trying to put hypertechnical additional
20 limitations on the constructions that you've already provided.
21 They're also conflating, if we look at what was said about
22 Iwamura, just at a high level, what they're doing is they're
23 conflating matching and determining an action. The claim calls
24 for both. But yet the way they're approaching it, they're saying,

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 oh, no, the result is just matching to a song and that match is the
2 same as determining the action after the search is done.

3 Now, what they never mentioned was that, for example,
4 in Ghias, why does Ghias have a string of S, Us and Ds? If
5 they're just looking at a song, there's a mechanism, there's a
6 search, and what Ghias tells us is not only is it a search, but it's an
7 intelligent search. It's not just a brute force search.

8 If we look at slide 8, what we're saying here is that
9 Ghias says, this is not a brute force search. Running times have
10 ranged from the order of mn for brute force, to something else.
11 So, it's saying that they have -- they're teaching both there,
12 including an intelligent search.

13 Now, this $n\log(m)$, that's kind of a red herring, because
14 when you're looking at this, whether it's $n\log(m)$ or $\log(mn)$ is
15 really not the issue. What's going to happen is in either of those
16 instances, it's going to be faster and it's going to be intelligent and
17 it's going to be a nonexhaustive search. That's what Ghias is
18 actually teaching us here.

19 Now, the problem with treating each database entry as a
20 possible match is let's assume you have five songs, and you put
21 all five songs into separate database entries. You search three of
22 those entries. You have a nonexhaustive search. But say you put
23 all five of those songs into one file, and you search the first song
24 in the file. Now you've exhausted it? Now it's an exhaustive

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 search? It doesn't make sense to approach it that way, and neither
2 of the references approached it that way.

3 When you're looking at matches, you're looking at
4 matches to segments. So, let's take a look at Iwamura, and let's
5 take a look at what the expert said. It's very interesting that we
6 started Patent Owner's presentation by saying that Dr. Moulin
7 was not credible, but every single slide he put up had
8 Dr. Moulin's name on it.

9 So, let's take a look at, first let's continue with Ghias,
10 because I would like to talk about this Ghias issue on slide 48, if
11 you would. When we're looking at this first search, second
12 search, third search, which is something that we could quickly
13 look at 9, just to set the stage here for this. When we're looking at
14 this, the database, we have a database. That's what the claim calls
15 for, a database. Then we do the first search and we come up with
16 something that is less than the database. And what's happening
17 here is, there's a new query. If you use the same query, you're
18 going to get the same results. So, you have to use a new query.
19 So, we went and we asked, what does the new query look like?

20 Go to 48 now, please. The new query is on the
21 restricted list. If we go to 49, please. Forty-nine, we asked could
22 the new query be a completely different song? The segments can
23 perform -- this is, again, on 49, and we asked Dr. Karypis, and he
24 says the segments can perform -- the segments can perform a new

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 query and put no restrictions on the type of query. So, there's no
2 restrictions on what this could be. It could be an entirely new
3 query, completely different song.

4 We'll go to slide 50. Now, this is Dr. Karypis'
5 declaration and he says, there could theoretically be a different
6 portion of the same song or a better hummed version of the same
7 portion of the same song. So, then we went, again, if we go to
8 slide 52, and now we see that when we're doing this second
9 search, if we have a different song, a totally different song,
10 because Dr. Karypis says there's no restrictions on this, that
11 totally different song could have been left behind in the database.
12 It's not in the restricted list.

13 By leaving it behind, what you've done is you have a
14 nonexhaustive search. It's not all possible matches. That's the
15 definition. Is the search against all possible matches? All
16 possible matches are what's in the original database. And that's
17 what the Board initially found when it looked at this and that's the
18 correct interpretation of this.

19 JUDGE PETTIGREW: But why would that second
20 search be with a completely different song?

21 MR. ELACQUA: The second search is not limited.
22 There is no dispute on that. Even their expert is telling us, it
23 doesn't have to be the same song, it can be a different song. It has
24 to be different because if you run the same search, you're going to

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 get -- against the second restricted list, you're going to get the
2 second restricted list back again. You're not going to get the third
3 list, you're not going to get the results that you see the arrow on
4 slide 52, search 2, the result is you get A and C as the matches,
5 after the search. If you put the exact same query in, you're going
6 to still get A, C, D and E. So, it's a different one.

7 There's another reason, though. If we look, Ghias
8 cannot even identify the closest match from a list of close
9 matches. So, if we look at slide 53, here, remember, Ghias is
10 using S, U and D. So, if we have a reference SSU, and we have
11 two -- the reference is SSS and SSD, and you do the comparison,
12 we asked Dr. Karypis if SSU is the query, and the two references
13 are SSS and SSD, as on 53, will Ghias rank those equally as good
14 matches? And he says yes, I believe so.

15 And the reason is, because what Ghias does is, Ghias
16 actually looks and says, is there a character mismatch. They're
17 not looking for the quality of the match. If they were looking for
18 the quality, they would say the closest match is SSS.

19 So, again, when you're looking at their interpretation
20 that a -- and this is in the context of a neighbor, they're saying that
21 it has to be -- it can't be the closest all the time. Well, here we
22 have a situation where Ghias cannot give us the closest match. It
23 doesn't even identify when you have equal matches.

1 So, again, we don't encourage the Board at all to adopt
2 this additional -- you've heard Mr. Dovel say it several times, that
3 oh, no, neighbor searches cannot always identify the closest
4 match. That's not true for two reasons: One, it's not true because
5 when looking at the closest match, the claims itself dictate that it
6 can't be that; but the second is that even if you were to adopt that,
7 the references do not always find the closest match. And Ghias is
8 a perfect example of a reference that cannot find the closest
9 match.

10 JUDGE PETTIGREW: I think his argument, though,
11 was with regard to Conwell, that the specific search there was
12 always finding an exact match.

13 MR. ELACQUA: I think their argument was for all, he
14 didn't get to them, but I think for all neighbor searches, they're
15 saying neighbor search cannot always find the closest match.
16 And what we're saying is, that limitation was not in the Board's
17 construction and it shouldn't be added, but if it were added, these
18 references do not always find the closest match. And this is an
19 example of why Ghias doesn't find the closest match, and in a
20 moment, I'll show you why Iwamura does not always find the
21 closest match.

22 But we don't think that's the proper construction.
23 Because the claims itself say that identifying a neighbor includes

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 a nearest neighbor and a nearest neighbor is always the closest
2 match.

3 JUDGE TURNER: Counsel? Before you go on, can
4 you go back to slide 52 for just a second.

5 MR. ELACQUA: Sure.

6 JUDGE TURNER: Please. So, in search 2, is work B a
7 possible match?

8 MR. ELACQUA: In search 2, work B is not a possible
9 match, because -- work B was left behind as a result of the query.

10 JUDGE TURNER: So, it would seem like it would
11 have to be exhaustive of the possible matches, though, wouldn't
12 it?

13 MR. ELACQUA: The possible matches --

14 JUDGE TURNER: It may not need to look at B, but if
15 B is not a possible match, isn't it really looking at all the possible
16 matches, then?

17 MR. ELACQUA: No, because all the possible matches
18 are what the claim calls for in the database. The database has A
19 through E in this particular example. It's not F --

20 JUDGE TURNER: I'm getting slightly confused
21 because I asked you in search 2 if work B is a possible match and
22 you tell me no, so maybe I'm not following.

23 MR. ELACQUA: As a result of in the first search,
24 there is a first query, say it's query number 1.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 JUDGE TURNER: Sure.

2 MR. ELACQUA: And as a result of that search, work
3 B is eliminated. So, as a result --

4 JUDGE TURNER: Right.

5 MR. ELACQUA: So, now you have a more restricted
6 list and that restricted list is A, C, D and E. And now you have a
7 new query, query number 2. So, if query number 2, the exact
8 match for query number 2 could, in fact, be work B, but it's never
9 going to be compared to work B, because there's a restricted list,
10 and --

11 JUDGE TURNER: So, B is not a possible match, then?

12 MR. ELACQUA: It is a possible match because when
13 you're looking at all possible matches, the universe of all possible
14 matches is what was in the original database. That's what the
15 Board found in its institution order, in looking at it, is that when
16 you look at the second match, the second match doesn't run a
17 search on all the possible matches, because it left behind some of
18 them as a result of the first search.

19 JUDGE TURNER: Right, but is search 1 exhaustive?

20 MR. ELACQUA: In search 1, yes, search 1 would be
21 an exhaustive search, under the way the Board was looking at this
22 in its institution proceeding, yes.

23 JUDGE TURNER: But B -- but for search 2, B is not a
24 possible match?

1 MR. ELACQUA: Yes, search 2 would be
2 nonexhaustive, and the Board found because that there was
3 comprising language, you could have a search where one search
4 was exhaustive, and the next subsequent search was not. Because
5 of the comprising language of the claim.

6 JUDGE TURNER: Well, I understand that because I
7 wrote it, but thank you. But I'll let you move on.

8 MR. ELACQUA: I would like to talk just for a moment
9 about melody segments versus the entirety of the song. If we
10 look at slide 60 -- thank you -- we see here in Iwamura, on slide
11 60, it says, "In this manner, the entered melody is shifted to each
12 peak in each reference melody and compared." Now, what
13 they're trying to tell the Board is that oh, no, we're only looking at
14 songs, but here we're nowhere near are we shifting the query
15 against the song, we're shifting it peak to peak. So, it's a
16 peak-to-peak algorithm.

17 Well, what did the experts tell us about this? If we look
18 at slide 61, Dr. Karypis says, in his deposition, "and then I, you
19 know, shift the query by one to the right, and I repeat the
20 process -- this is the segments -- and keep on doing that until the
21 end. And at the end I return the score of the match, the best
22 scoring subsegment or the highest scoring subsegment." So, Dr.
23 Karypis is talking about segments, he's not talking about the
24 entire song when he's talking about matches.

1 Let's go to slide 62. Dr. Moulin was asked this question
2 on redirect, "and what is the purpose of taking that difference?
3 What was the purpose in taking this absolute difference of these
4 numbers in the peak-to-peak algorithm? And he says, "To see
5 whether there's a match." Again, they're both using the word
6 match -- "between the user query and a segment of the musical
7 work." So, both of the experts agree that we're dealing with
8 segments, we're not dealing with the entirety of the song.

9 Now, let's -- and again, in dealing with the issue of
10 nonexhaustive in Iwamura, if we go to slide 63, we see that the
11 question is, are we skipping anything? Are we doing all the
12 matches? All the possible matches? Well, we look here, and if
13 we take the Patent Owner's response paper 17, shown on page 63,
14 they acknowledge that they skip what would have been
15 intermediate comparisons. I believe you heard Mr. Dovel say
16 that as well. And you can see that, again, in doing the lineup with
17 the peak notes, there are certain notes that are shifted away from
18 because they're not lined up with the peaks.

19 Let's go to slide 64. Here, the Patent Owner again
20 admits that Iwamura teaches the shifting can be done peak to
21 peak, and it reduces the number of comparisons. Again, it's in
22 their own response papers.

23 There's no doubt here that in dealing with the issue of
24 nonexhaustive searching, that there are possible matches skipped.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 They've admitted it twice here, they were dealing with segments,
2 but let's go to the example that we referred to earlier, I think this
3 is really telling. When this was placed before Dr. Karypis, we
4 specifically asked him about these comparisons.

5 If we go to slide 65. So, in the peak to peak, the
6 comparisons number 1 through 4 wouldn't take place. He agreed,
7 yes, that's correct. We also asked him about 6 through 10, that
8 they wouldn't be -- they wouldn't take place, and 12 through 16,
9 and he agreed each time that all of those comparisons would not
10 take place.

11 Let's go -- if we could go back to 65. So, we could see
12 looking at the chart on 65, if we were doing brute force, we
13 would be going through 1 to 16. Dr. Karypis acknowledged that
14 in a peak algorithm matching, you do not do all of the
15 comparisons except for 2, 5 and 11.

16 So, that tells us that it's nonexhaustive. But it also tells
17 us that this issue of whether it's a near neighbor search is involved
18 in the same issue here, because does Iwamura always -- using the
19 peak-to-peak algorithm, always find the closest match? Well,
20 from this same table, we can find that it doesn't. Because we
21 asked, again, we asked Dr. Karypis about this particular chart and
22 we asked him about comparison 12.

23 So, if we look at slide 71, comparisons 12 through 16
24 would not take place. That would be correct. And then we asked

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 him if comparison 12 represented the exact match, and he said
2 that it did. This is representative of an exact match. And we
3 know that because it has a total difference of zero in that right
4 column.

5 So, as far as even under their interpretation that
6 neighbors cannot always find the closest match, the reference is
7 Ghias and the reference is Iwamura do not always find the closest
8 match. But they are nonexhaustive, and they are neighbor
9 searches.

10 Now, I would like to speak for a moment about the
11 issue of sublinear. It has always been the Petitioner's position
12 that Iwamura discloses a sublinear search. In Google's petition,
13 we did recite the Boyer-Moore search algorithm as one example
14 of what Iwamura disclosed as a sublinear search. And if we look
15 at what Dr. Moulin said on slide 77, it is true that in his
16 declaration, he said it's my opinion that Iwamura further teaches
17 how this search can be sublinear. And he says, "for example,
18 Iwamura discloses that different algorithms," and he goes on to
19 identify the Boyer-Moore algorithm.

20 In his deposition, he admitted that this was incorrect,
21 that this was an error on his part. That the Boyer-Moore was not
22 the correct place to point to in Iwamura, but that's not all he said.
23 He also said in his deposition, Exhibit 2006, at page 70, line 17 to
24 20, "as I said, there are many ways what Iwamura teaches that the

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 search is sublinear. We don't even have to go to Boyer-Moore,
2 there are many other ways in that pattern that show sublinearity.
3 He was not asked any follow-on questions. They could have
4 probed and asked him that and they chose not to.

5 He also said in his deposition, Exhibit 2006, page 130,
6 lines 4 to 9, "are we going to be producing a sublinear time
7 search" is what he was asked? And he answered, "I don't know,
8 if that's the way you do it. I don't know. All I know is, if you do
9 it the other way, by increasing the size of the songs, the answer
10 would be yes."

11 And again, there was nothing that was asked of
12 Dr. Moulin on that issue where he tells them exactly what he's
13 thinking on the other possibilities of sublinearity. So, they had an
14 opportunity to cross examine on this issue and they just chose not
15 to take that opportunity.

16 However, if we look at Iwamura, it actually does teach
17 and discloses both the use of MIDI files and WAV files, and it's
18 not disputed that MIDI files and WAV files have different sizes
19 on the disk. And it can't be disputed that WAV files are
20 substantially larger than MIDI files.

21 So, what they're now trying to say is that even if you
22 look at the reference, because they're in two different columns,
23 that, you know, somebody wouldn't understand that you could put
24 these two sizes into the same file, but again, you have to look at

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 the reference for what it teaches. And it tells us that the MIDI file
2 has certain pitch and duration values, its size is very compact, and
3 it's just the opposite for the WAV files.

4 So, in Iwamura's embodiment, using both MIDI and
5 WAV files, and it doesn't say anything here that it cannot be
6 done. They didn't point to anything that said, oh, no, this is
7 absolutely it can't be done. That's not what they're saying.
8 Iwamura's embodiment, using both these files, is sublinear when
9 the WAV files are added to the database that has the MIDI files,
10 for the following reasons: First, the search time is dependent on
11 the peak note references, not the size of the files; and when we
12 add a WAV file to a MIDI file, it's sublinear for this reason. And
13 I am going to use as an example, if we could put up exhibit or
14 number 79, please.

15 If we take a MIDI file that has a size S , which may be
16 searched in a time T , if the single WAV song is added to this
17 database, then the size will increase more than $2S$, because the
18 WAV files are just larger. But because the MIDI files and the
19 WAV files, the songs are represented by the same number of
20 peak notes, and they tell us in Iwamura that it's 64, then the
21 search time depends on those peak notes and will only increase to
22 $2T$.

23 So, when we look at whether or not it's sublinear, we
24 can see that the time with respect to the size of the database is

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 clearly sublinear, and this is taught in Iwamura. This is an
2 example of what is taught in Iwamura. So, Google did identify
3 Iwamura as a sublinear search from the beginning, and the
4 foregoing proof here using WAV and MIDI files is a disclosure --
5 as a disclosure is proof of that sublinearity.

6 Now, this graph, actually on page 79, actually teaches
7 exactly what Dr. Moulin was saying in his deposition. In his
8 deposition, again, he said, all I know is if you do it the other way
9 by increasing the size of the songs, the answer would be yes, it
10 would be a sublinear time search. So, that's reflective of exactly
11 what he was saying.

12 Now, they had an opportunity after their reply to ask for
13 a surreply. They decided not to do that. Instead, they asked this
14 Board if they could identify new argument issues. And in doing
15 that, we were very surprised to find that they were presenting
16 argument in this identification of issues that we received the other
17 day, which is an improper surreply. But now, they cannot claim
18 that they're prejudiced in any way, because they could have asked
19 for a surreply and did not, and they actually did get a surreply last
20 week, but they improperly filed one. So, there's prejudice here on
21 this issue, and the fact is that we can't walk away from the fact
22 that the Federal Circuit has actually given the Board broad
23 authority to actually look at references that are before it.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 And, in fact, there is a case in *Belden*, which we cited,
2 where the patent was a related patent. It wasn't even the patent
3 that was considered to be the reference. And the Federal Circuit
4 approved the Board, looking at even a different patent. Here
5 we're asking you to look at the patent that was actually before the
6 Board and was identified to be teaching a sublinear search. So,
7 there is no prejudice here, and this clearly teaches a sublinear
8 search.

9 I would like to move on to Conwell. Network-1 is
10 arguing that Conwell does not disclose a neighbor search,
11 because it may have the result of an identifying the neighbor of a
12 work, but since that neighbor search must find neighboring
13 features, and not neighboring works. So, what they're saying is
14 that when you look at the extracted features, you have to find the
15 neighbor of the extracted features, you can't find a neighbor of the
16 work.

17 That's just not the case. Let's look at the patent. The
18 patent specifically envisions identifying a work. That's what the
19 patents are about. And if we look at the claims, slide 86, the
20 claims are about identifying the work. Again, that's the emphasis
21 of the claims here. What's happening here is what they're saying
22 is a matter of claim construction this doesn't work, or as a matter
23 of just reading the claim, it doesn't work, but I think that's
24 actually in error.

1 An algorithm that identifies near matching works is a
2 neighbor search even if it operates by forming exact match
3 comparisons, because recall that in Conwell, they're using a hash,
4 that if it's similar, if the work is similar, it gives the exact hash
5 identifier. So, when you're matching the identifier to the
6 identifier in the database, that identifier represents the neighbor
7 because you could have a song, for example, say you had the
8 song *My Way*, using their example, and then say that the query
9 was a noisy version of *My Way*. Say somehow you took it off the
10 radio and you somehow recorded it and so it was a noisy version
11 of the same song.

12 It would render the same hash value, the same hash
13 identifier, representative of a neighbor of the reference work in
14 the table. And the claim does not preclude that at all. The claim
15 actually allows for that and is very consistent with the invention
16 of identifying a work.

17 So, in sort, Network-1 is trying to tell you that a search
18 that admittedly identifies a neighbor, because they have admitted
19 that, it identifies a neighbor work, is somehow not a neighbor
20 search because it doesn't identify the neighbor by finding features
21 that are close, but find features that are exact matches but that
22 represent the neighbor. This is so convoluted in nature when we
23 read these claims, which are cast in a very broad tone as to what
24 they mean.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 Now, here we have, in fact, the neighbor search, it's a
2 very broad term. Ghias and Iwamura locate neighbors by finding
3 similar features. Conwell locates neighbors by finding exact
4 matching features representing the neighbor. All three are
5 neighbor searches. Now, I would like to talk for a moment about
6 Conwell's nonexhaustive search issue. You heard that it's not
7 definitive in the language that we presented to the Board from
8 Dr. Cox on the issue of data query actually being nonexhaustive.
9 I think that we're skipping over some of the important points here.
10 I would like to put that back up again. Slide 36.

11 It's important to look at Dr. Cox and what he says in this
12 patent specification, and what we've put up here on slide 36 is the
13 '441 patent, Exhibit 1001. Dr. Cox is actually stating that in these
14 databases, and I'm not sure why anyone would think that the
15 databases that we're dealing with, the claims are not restricted to a
16 database that's 5, or 10, or 10 million. The claim reads on all of
17 them. So, actually, when you're dealing with this, you know, it's
18 really not informative to say, well, you know, you could have a
19 small database. But Dr. Cox is telling us, these databases are of a
20 significant size, and that's common, he says. And to do an
21 efficient search, do not do a linear search. It teaches away from
22 using a linear search.

23 A binary search of 90 million requires 20 comparisons.
24 Why is he telling us that? He's telling us that because if you use a

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 linear search, it's 45 million, with an exclamation point. That's
2 the clearest teaching away when someone is trying to do a
3 database query, of using any kind of an exhaustive search. And
4 in Conwell, that's what a person would understand a database
5 query to be, a nonexhaustive search. Literally.

6 Now, if the Board nevertheless is convinced that a
7 database query is nonexhaustive, you're just not convinced, you
8 know, the Board has a discretion here to move the ground from a
9 102 ground to a 103 ground. Now, we believe it's very clear from
10 this and for the statements that Dr. Karypis made in his
11 declaration, Exhibit 2005, at paragraph 371, that it's probable that
12 one skilled in the art would use a nonexhaustive approach to
13 conduct this database query.

14 Now, putting that aside, the Board nonetheless has the
15 power, if it wants to, to move to a 103 and say that a person of
16 ordinary skill in the art would find that a database query, it would
17 be interpreted that way as a nonexhaustive search, understanding
18 that. And there's precedent for that. In the *In Re: Cuozzo Speed*
19 *Technologies* case, which is IPR2012-1, paper 1 at 5, the petition
20 sought review of claim 10 under 102, over one reference,
21 Aumayer, and later, in the final written decision, IPR2012-1,
22 paper 59 at 49, the Board instead held the claim under Section
23 103 and found it invalid. And on appeal, the Federal Circuit

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 confirmed it. And that cite is *In Re: Cuozzo*, 793 F.3d 1268 at
2 1273.

3 JUDGE PETTIGREW: Can you point to something in
4 the record that would support an obviousness determination?
5 Expert declaration?

6 MR. ELACQUA: I think the two things that are
7 currently in the record are -- that would support an obviousness
8 determination is the statements that were made by the inventor on
9 this issue, which is slide 36 in the '441 patent at column 20, 67 to
10 column 21, line 1. And the second is in the Dr. Karypis
11 declaration, which I had mentioned is Exhibit 2005, paragraph
12 371.

13 Now, there's one other issue that was raised that I would
14 like to just touch on quickly, and again, another possibility here in
15 discussing this issue of nonexhaustive for Conwell is the genus
16 species argument. When they first in their Patent Owner response
17 said, look, it's possible that this could be exhaustive, that's when
18 they were arguing against inherency, which we never raised to
19 start with. It was kind of a strawman that was put up and
20 knocked down.

21 But the fact is, is given the limited number of species
22 here, and the species are not that list of searches, we're talking
23 about database queries. There's two kinds, exhaustive and
24 nonexhaustive. Not that list of searches that there's no evidence

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 on as to what they are in the record. But there's two -- there's two
2 species, and the Federal Circuit tells us in *In Re: Gleave*, G L E
3 A V E, 560 F.3d, 1331 at 1337 to 38, "when a genus is so limited
4 that a person of ordinary skill in the art can at once envisage each
5 member of the limited class, a reference describing the genus
6 anticipates every species within the genus."

7 Here, there are two species, exhaustive and
8 nonexhaustive, a person of skill in the art could easily envisage
9 both, and there would be that anticipation by the disclosure of the
10 genus, the database query.

11 I believe my time is up.

12 JUDGE PETTIGREW: Counsel, yes, your time is up.

13 MR. ELACQUA: Yes. Thank you very much for your
14 attention.

15 JUDGE TORNQUIST: I have one question. I would
16 like to go back to the question of the reply evidence possibly
17 being outside of the scope and one of the arguments you made is
18 essentially they put a lot of arguments in this filing and
19 essentially it was a surreply.

20 MR. ELACQUA: Yes.

21 JUDGE TORNQUIST: My guess is if you asked Patent
22 Owner, they would say, well, wait, we didn't get new evidence,
23 we would have put testimony in. Is it really fair that because they
24 put a little extra argument in there that they are not prejudiced? If

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 we were to determine that there was argument outside the scope
2 of the reply?

3 MR. ELACQUA: The reason I think that is fair, that
4 they're not prejudiced is because everything that we have raised
5 here is not -- does not fall within the purview of expert testimony
6 or expert opinion. It only falls within the purview of this Board
7 to take a look just at the reference itself. There's no explanation
8 needed. The reference itself teaches everything that we have laid
9 out. So, there's -- it's not like it's something that needs
10 explanation or it needs opinion. In fact, it would be improper
11 expert opinion to have someone get up and try to say something
12 about WAV files and MIDI files and how they work within the
13 confines of that reference, because it's very obvious just by
14 looking -- reading it.

15 So, we didn't -- notice, we did not put in a supplemental
16 declaration for that exact reason. We didn't see that there was a
17 basis for putting it in, because it wasn't the subject of expert
18 opinion.

19 JUDGE TORNQUIST: Thank you.

20 MR. ELACQUA: Thank you.

21 JUDGE PETTIGREW: All right. We thank counsel for
22 your arguments today. The final written decisions will be issued
23 in due course. And with that, this hearing is adjourned.

Case IPR2015-00343 (Patent 8,640,179 B1); Case IPR2015-00345 (Patent 8,205,237 B2); Case IPR2015-00347 (Patent 8,010,988 B2); Case IPR2015-00348 (Patent 8,656,441 B1)

1 **(Whereupon, at 4:14 p.m., the hearing was**
2 **adjourned.)**