UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC., LG ELECTRONICS INC., and SONY ELECTRONICS INC., Petitioners,	)	
vs.	)	Case No. IPR2023-01127
JAWBONE INNOVATIONS, LLC, Patent Owner.	)	

REMOTE DEPOSITION OF
THOMAS W. KENNY, Ph.D.
Palo Alto, California
Friday, April 19, 2024

Reported By:
CATHI IRISH, RPR, CRR, CLVS

April 19, 2024
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Remote deposition of THOMAS W. KENNY, Ph.D., with all participants appearing via videoconference, before Cathi Irish, a Registered Professional Reporter, Certified Realtime Reporter, and Notary Public of the State of New York.

A P P E A R A N C E S:

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ALSO PRESENT:
ORVILLE COCKINGS

THOMAS W. KENNY, Ph.D., called as a witness, having been duly sworn by a Notary Public, was examined and testified as follows:

EXAMINATION

BY MR. COWELL:

Q. Good morning, Dr. Kenny.
A. Good morning.
Q. Can you please state your full name for the record?
A. Thomas Kenny, K-E-N-N-Y.
Q. And where are you located physically right now?
A. I'm in Palo Alto at the attorney's office.
Q. And that's Paul Hastings' office?
A. That's correct.
Q. Have you ever been deposed before?
A. Yes.
Q. How many times?
A. It's probably around 15, 12 to 15, somewhere in there.
Q. Even though you've been deposed

before, I'm just going to go over a few ground rules for today's deposition; is that all right?
A. That's great.
Q. Do you understand today that I will be asking questions and you'll be answering them?
A. Yes.
Q. From time to time your attorney may object to one of my questions. That's her right, but unless she instructs you not to answer, do you understand that you still have to answer my question?
A. Yes.
Q. If at any time one of my questions is unclear to you, please let me know and I'll do my best to clarify or rephrase it, but if you do answer it, I will assume that you understood it. Is that fair?
A. That's fair.
Q. If you want to break at any time, just let me know but I will ask if there's a question pending that you answer the

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question first. Is that fair?
A. That's fair.
Q. Are you on any medications today that would prevent you from giving full and truthful testimony?
A. No.
Q. Is there any other reason you can't give full and truthful testimony today?
A. No reasons at all.
Q. I see there's a number of materials in front of you. What do you have there?
A. So these are fresh copies of my two declarations. In this binder is a collection of the exhibits so the prior art references, and some legal documents. There's the two declarations by the expert representing Jawbone, Dr. Sayeed. There's a collection of other documents so the petition, the preliminary response, the reply and the reply to the reply, the institution decision, things like that, and I think there's two sets of these

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reflecting the two cases, one the '213 and one the '611.
Q. When you said those are fresh copies, do those copies have any markings highlighting or any other annotations?
A. None. They were prepared by the firm here based, I think, on your instructions so these are new to me, although I've seen other copies of these documents.
Q. Where do you work currently?
A. I'm a professor at Stanford University in the mechanical engineering department.
Q. Are you currently teaching any classes?
A. Spring quarter at Stanford and I'm teaching my course which is an overview of sensors, including things like accelerometers, thermometers, microphones, pressure sensors, gyroscopes. Pretty much the intent of the course is to cover the range of sensors that students and graduates are likely to encounter in their

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employment. Monday morning lecture coming up next week is on pressure sensors and microphones.
Q. Does that class include signal processing related to microphones?
A. So we discuss signals and processing, filtering. We discuss digital processing fourier transforms, the like relationships between bandwidth and signal and noise. The students this week have a lab assignment where they are using the accelerometers on a smartphone as they walk around to capture the acceleration signals that appear due to motion of walking. The signals you see have all kinds of noise added, you know, due to weird movements or background, but if the person is walking with the phone in their pocket, there is within all of that a kind of one hertz periodic signal in all three axes to the accelerometer and the instruction is take a data stream, 10 minutes of data, look for that signature, probably most easily in the fourier

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transform of the raw data, and try to write up an algorithm that will count steps. There's one algorithm like that running on your smartphone so it's the students' opportunity to see what it's like to take those raw signals and try to convert that to a step counter.
Q. Does your class cover any signal processing on acoustic signals?
A. We'll talk about frequency range, bandwidth and some of the filtering you might do with acoustic signals. In fact, we'll refer on Monday rather repeatedly to the lapel mic that I'll be wearing during that lecture and what its characteristics are, how it works. We'll talk about condenser microphones, we'll talk about other kinds of sensors that can pick up acoustic signals and how their signals and noise might present themselves and what you can do in processing to manage all of that.
Q. Do you understand that we are here today for a deposition with regard to

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two IPRs?
A. Yes.
Q. And one of those IPRs is IPR2023-01084; is that right?
A. That's correct.
Q. And that refers to U.S. patent number 8,321,213; is that right?
A. That's correct.
Q. And we're also here for the deposition with respect to another IPR, which is IPR2023-01128; is that right?
A. That's correct.
Q. And that proceeding is about U.S. patent number 8,326,611; is that right?
A. That's correct.
Q. Would you agree with me that the grounds of invalidity between the two IPRs are substantially the same?
A. For these two IPR in my reports, yes, they are the same references.
Q. And each proceeding asserts four grounds of invalidity; is that right?
A. I don't mean to complicate things, but the fourth ground shown in the

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table of contents refers to a combination of Avendano, Visser, Bisgaard, Hou and a group of references called the frequency art in this heading, which is listed as Byrne, Burnett and/or Berglund. And just by that grammatical structure there's a ground within this set that could be based just on Byrne or one that's based on Burnett or on Berglund or any pair of those three or all three. So this is maybe semantics but to be clear on the record, those could represent independent grounds depending on how you count them.
Q. Okay.
A. But they are all grouped in ground four in my report and in the table of contents.
Q. And that was what I was going to say. Within your report and within the petition it's labeled grounds 1 through 4; is that right?
A. I believe that's correct.
Q. And all those grounds are based on the combination of Avendano with Visser

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and for certain grounds with more references added; is that right?
A. That's correct. Within each ground there's a discussion of a set of individual claims which might rely entirely on Avendano for the features that represent the claimed elements, but the Avendano and Visser are part of all four grounds.
Q. And all four grounds are based on obviousness; is that right?
A. That's correct.
Q. There are no anticipation grounds in your reports; is that right?
A. I don't -- in the report I don't believe I in any instance claim that a single reference entirely by itself meets all the limitations of that claim. In the report there are sections where when I describe the limitations of a particular claim, I only talk about the elements from one particular reference, but it's understood the way I've prepared the report that Visser is in combination with

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Avendano through all four of these grounds.
Q. Are all of your obviousness opinions included in your two reports?
A. That's always a question I wrestle with a bit. These reports were written almost two years ago. In the time since then I've prepared for depositions on a couple of different occasions. There's also been a number of institution decisions and responses and documents prepared by other parties at various stages. I'm aware of those, I've learned from those, so nothing in any of that has changed my opinions, but I can provide additional explanation based on that two years' accumulated additional information and that may help clarify portions of the report depending on the questions that are asked.
Q. Did you yourself conduct a prior art search in connection with these IPRs?
A. I looked for some prior art references. The attorneys at that time

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which were representing Apple had already done some of their own prior art searching. They shared some of those references with me. I found some and shared back and we worked together to build the report.

Q. About how much time did you spend on your own prior art search?

A. It was two years ago and sorry, it's going to be hard to give a precise answer. There were -- in addition to these two IPRs, there were a number of other IPRs involving even several other Jawbone patents. I'd say probably 10 hours, maybe in the aggregate. I can't parse out which were for these two IPRs.

Q. Did you discover the Avendano reference in the course of your own prior art search?

A. I don't think so. I can't be a hundred percent sure but I don't think so.

Q. Did you discover Visser in the course of your prior art search?

A. Again, I can't be a hundred

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percent sure but it's unlikely, I would say.

Q. What about Bisgaard?

A. The same answer. I think most likely that was a reference that the attorneys had located prior to reaching out to me.

Q. And how about Hou, H-O-U?

A. Most likely that came from the attorneys. I'm actually a little bit less sure in that case but again I apologize, this is two years ago. I had a few other things go on in that period, as I'm sure you can imagine.

Q. Of course. I just want to know what you know today.

A. Sure.

Q. Are you aware of any references that anticipate any claim of the '213 patent?

A. (Witness perusing document.)

So in my report there are no such statements that any single patent anticipates all the elements of any claim.

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With reference to claims in the case of the '611 patent, for example, let me make sure I've got that right, we describe the Avendano, Visser, Bisgaard and Hou references and then describe the combination of Avendano and Visser before we begin discussing the individual claims.

Q. Are you done with your answer or are you still looking?

A. Just so -- just with the first challenged claim of the '611 patent, for example, there are elements of the claim that my report identifies entirely elements from Avendano to meet the limitations, but before the completion of that claim, we begin to incorporate elements of Visser and so, at least as far as my report and the analysis I've done so far, all of the combinations are obviousness combinations throughout my report, and those are the opinions I'm prepared to defend today.

Q. My question was -- I understand what's in your report. My question was

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are you currently aware of any references that anticipate any claim of either the '213 or the '611 patents?

A. Are we focusing on references outside of this group, other references I might have come across?

Q. Any references that you're aware of.

A. I'm not aware of any references outside of the references listed here that I would consider anticipate the claims of either of the patents.

Q. Okay. Now, focusing first on the '213 patent, the proceeding relating to that 1084 is only challenging a subset of the claims in the '213 patent. Do you agree with me on that?

A. That's correct, yes.

Q. You also filed a declaration on claims 1 to 13 of the '213 patent in a separate IPR, do you recall?

A. I believe that's true. For discussion of that IPR today, frankly, I don't think there's a copy of it here. I

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might be wrong about that but yes, I recall that there was such a thing.

Q. Do you recall why there were two IPRs filed for a single patent?

A. I believe there were legal reasonings for that, perhaps relating to the way the combinations were presented and the rules of how such things can be packaged together or need to be separate. I don't know the details.

Q. And is your answer the same with respect to the '611 patent as well?

A. Yes, I think so. There might have been a conversation with the attorneys two years ago about that tactical or logistical decision, I just don't remember what the framework or restrictions were that we were working with them.

Q. Are you aware of what the difference in scope is between claim 1 and claim 14 of the '213 patent?

A. I haven't looked at claim 1 of that -- of the '213 patent recently with

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that kind of care. If you'd like me to, I can spend a few moments reviewing it and maybe make a statement about that, but it's not in this report and frankly wasn't part of my preparation for today.

Q. Okay. And if I asked you the same question relating to the claims of the '611 patent that are not in this current proceeding, would you have the same answer?

A. I'm just looking to see which ones were skipped over. It would be the same answer, I'm sure.

(Witness perusing document.)

I'm looking through this stack of documents and I think we might not have the two asserted patents here. Of all the things that were included, those might have been left out.

MR. COWELL: Counsel, on a break can we get him copies of those? It will be really hard to put them on the screen.

MS. WANG: Let's take a break.

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THE WITNESS: The '213 and the '611, unless I'm missing them, I don't think they're in these binders.

MS. WANG: Let's go off the record real quick.

MR. COWELL: Let's do that.

(Discussion off the record.)

BY MR. COWELL:

Q. Dr. Kenny, after the break, do you now have both the '611 and '213 patents in front of you?

A. I do, thank you.

Q. Now, in your declaration relating to the '213 patent, you opine that claim 37 is obvious; is that correct? Starts at about page 86, if that's helpful.

A. Um-hum. Yeah, Avendano in combination with Visser render that claim obvious.

Q. As part of that you conclude that Avendano's virtual microphones would have approximately similar responses to noise. I'm looking at paragraphs 199 and 200.

A. Yes, so in paragraph 199 it says

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that a person of ordinary skill would recognize that according to Avendano's configuration, Avendano's virtual microphones would have approximately similar responses to noise.

Q. And you didn't have any trouble determining that those microphones would have approximately similar responses to noise; is that correct?

A. So the phrase approximately similar response to noise is vague, I would say. The precise boundary between where something is approximately similar or not approximately similar would be hard for me to know but I think in Avendano's cases, the geometric patterns of the two virtual microphones are almost completely opposite to one another so that any possible definition of approximately similar in terms of how those two microphones recognize noise in the far field, which is assumed to be kind of uniformly present and bouncing around, that the two microphones would have,

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regardless of the details of the orientation being omnidirectional microphones combined to form virtual microphones, would have approximately similar response to noise within the understanding of what that phrase means. There's some boundary between what is approximately similar and what is not, I suppose. I don't know where that is exactly. The Avendano microphones are well within that boundary. So I think in my opinion and a person of ordinary skill in the art would understand that that's the case.

Q. And for claim 38, which starts on page 88, here you're also able to conclude that the first virtual microphone and second virtual microphone have approximately dissimilar responses to speech; is that right?

A. Again that's true and without attempting to determine the exact boundary between what's approximately similar and what's almost approximately similar,

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Avendano microphones, virtual microphones have one that's directed towards the source of speech and one that's directed away, so I would say my opinion and what any person of ordinary skill in the art would interpret is that the Avendano microphones are -- have very dissimilar responses to speech and therefore meet the requirement to be at least approximately dissimilar.

Q. So even though you didn't quite understand what approximately similar means, you are able to apply it for this proceeding; is that right?

A. That's correct. Again, if you had a whole bunch of examples and they were more or less dissimilar, I think it would be pretty hard to draw the boundary in between the ones that are and the ones that are not exactly between that last pair, but the Avendano and Visser combination are clearly very dissimilar and therefore, they are at least approximately dissimilar.

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Q. So let's talk about Avendano a bit then. Have you ever seen Avendano before you started working on these IPRs?

A. The reference Avendano?

Q. Yes.

A. I don't think so.

Q. Do you consider Avendano to be a VAD?

A. VAD being that includes voice activity detection?

Q. Right. Let's agree for the purpose of this, VAD means voice activity detector or detection as appropriate; is that okay?

A. That's fine. Yes, thank you. So Avendano describes a process of measuring the response, the energy in the two channels of the two virtual microphones and comparing the energy levels as a way of determining the presence or absence of speech, so I think one of ordinary skill would recognize that as voice activity detection.

Q. And is Avendano in its totality

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of VAD or are there components within it that form that VAD?

A. I think the answer is there's more to Avendano than just voice activity detection. It includes voice activity detection but there's other things that are done that are useful for extracting and conditioning signals and not just turning on an indicator whether there's voice present or absent.

Q. And so let's take a look at Figure 4A of Avendano. Do you have that?

A. Yes.

Q. And that's the figure that you rely on generally for your opinions in this case; right?

A. It is referred to repeatedly through my report, yes.

Q. So what components within Figure 4A make up the VAD of Avendano?

MS. WANG: Objection to form.

THE WITNESS: So there's the step in Avendano of looking at the signals from the two virtual microphones and

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computing the energy of the signal in those two channels and using that threshold of that energy to determine the presence of voice activity. That element doesn't function on its own without all the microphones and the construction of the two virtual microphones so the blocks to the left of the energy module 306 and ILD module 308 are -- you need those blocks to take the microphone signals and prepare them for the voice activity detection. So maybe I'm just -- this is a semantics question. The VAD happens in 306 and 308, but the preparation of the signals for the VAD in the prior blocks is necessary in order for 306 and 308 to do their job.

BY MR. COWELL:

Q. Okay. Let's just walk through how Avendano works as shown in 4A; is that all right?

A. Sure.

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Q. Okay. So in Figure 4A, we have acoustic signals received at two microphones which are labeled X 1 and X 2; is that right?

A. That's correct.

Q. And then those two signals are passed into the DMA module 302; is that correct?

A. That's correct.

Q. And so within the DMA module, each signal goes through boxes 402 and 404; is that right?

A. So the signal from the first microphone X 1 goes through box 402. The signal from the second microphone X 2 has some gain applied to it and then it goes through the box 404.

Q. And box 402 and 404 are both labeled with Z to the negative tau 2 and 1 respectively; correct?

A. There's a tau 1 and a tau 2 in those two boxes.

Q. And that tells us that those are delay filters; is that right?

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A. That's how they are described in Avendano.

Q. And one of ordinary skill in the art would understand that a box labeled with a Z to the negative tau is a delay; is that right?

A. I believe so.

Q. You're one of ordinary skill in the art. Would you agree that's how you would understand that?

A. Yes, that's my understanding.

Q. Do those boxes perform any other function other than delaying the respective signals?

MS. WANG: Objection to form.

THE WITNESS: Would you repeat that? Sorry.

BY MR. COWELL:

Q. Do those boxes 402 and 404 perform any function other than delaying the signal?

A. So column 5 of Avendano around line 20 describes this figure as one implementation of the DMA module 302. In

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this implementation the acoustic signal received by the microphones 106 and 108 are processed by the DMA module. This -- the exemplary DMA model 302 delays the primary acoustic signal X 1 via delay node 404 and DMA module 302 delays -- actually, there's I think a mistake in Avendano in this description that describes both modules with 302, but I think we understand the meaning here, that those modules delay the primary acoustic signal and there's no disclosure of any other effect of those modules on those signals.

Q. So Avendano describes those two modules being used solely for delay; is that right?

MS. WANG: Objection to form.

THE WITNESS: There's no disclosure of any other use in this paragraph referring to this embodiment relative to Figure 4A, that's correct.

BY MR. COWELL:

Q. And with respect to your opinions relating to the two patents we're talking

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about, you opine that delay filter 402 is a filter that describes a relationship for speech; correct?

A. Yes, so paragraph 137 in my report referring to the claim element of a processing component forming a filter that describes a relationship for speech between the first physical microphone and the second physical microphone, I say that Avendano discloses processing a component that forms a filter that describes a relationship for speech. Specifically in Avendano this filter is a delay node 402 formed within the DMA module 302 and describes a relationship for speech between the first physical microphone and the second physical microphone.

Q. Do you rely on any other portion of Avendano to be the filter that describes a relationship for speech required by both patents?

A. You're asking me about all the claims of both patents?

Q. Yes, relating to this one

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specific element.

A. Let me just be sure.

(Witness perusing document.)

In my report there's also a mapping that includes the combination of Avendano and Visser in which Visser also provides a filter that provides a relationship for speech between the two microphones. This is paragraph 143 through 148 of my report.

Q. But I'm just asking -- continue if you still have more to say.

A. Go ahead.

Q. I'm aware of that and we'll talk about that in a bit. I just want to ask with respect to Avendano itself.

A. And the question again, sorry?

Q. The question is do you identify any other portion of Avendano besides 402 as the filter that describes the relationship for speech?

A. (Witness perusing document.)

I'm pausing just in the -- there's a similar structure in, for

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example, Figure 4B, one of several other embodiments in Avendano. There's a block 414 D sub Z which describes a delay line or I think a delay filter. That block in that version or that embodiment in Avendano, I think one of ordinary skill would say performs the same function as block 402 in Figure 4A. My report doesn't ascribe that detail to that particular embodiment, but I think one of ordinary skill reading Avendano would recognize that the various embodiments include delay filter locations similar to 402, but that there might be different labels in different embodiments.

Q. But your opinions don't rely on those other similar blocks that may exist in Avendano; correct?

A. I think that's correct. In my report, we -- I rely on that filter block for that claim element in claim -- claim number 1 of the '213 patent -- sorry, of the '611 patent and claim 14 of the '213 patent.

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Q. Turning back to Figure 4A of Avendano, we're still in the DMA module 302 and there are -- after the delay blocks, there are two circles with minuses within them. Do you see those?

A. Yes.

Q. And those are subtracters, is that the right term?

A. They could be called summation notes where one element has a minus in the sum and the other not. I think the understanding of Avendano is that there's a subtraction between those elements. For example, the equation shown on line 30, column 5 of Avendano describes the CF, which is the forward cardioid primary signal as consisting of the signal X 1 minus the delayed signal X 2 with a gain factor G. So the minus sign is representing that you're subtracting the delayed X 2 signal with gain from the X 1 signal in that embodiment.

Q. Okay. And I think you already hinted at this. So in coming out of the

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subtracter on the top there we have the CX signal which is the cardioid forward signal, is that right, or from?

A. That's how Avendano describes that output of that summation.

Q. On the bottom we have CB, which is the cardioid for the back; is that right?

A. Yes, so the backward cardioid, that's correct.

Q. When we say cardioid, what does that mean?

A. So it's a description of that signal of that node in the circuit. Calling it a cardioid is representing the response that would appear at that node is a function of position of the signal source as represented, I believe, in Figure 6 of Avendano. The left part of Figure 6 shows the two cardioid patterns, one forward and one backward, and what's being represented is the strength of the response is a function of angle from the forward axis all the way around to the

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reverse axis.

Q. Is cardioid generally -- is a cardioid microphone generally a directional microphone?

A. I think that's the objective of forming the cardioid. You're trying to create a microphone that has a stronger response in one direction than in other directions.

Q. Turning to Figure 6, as you just mentioned, we see the two responses plotted on the same polar plot; right?

A. That's correct.

Q. And so the CF signal would have the strong response in the zero degree direction; is that right?

A. That's correct.

Q. And essentially a no response in the 180 degree direction; is that right?

A. That's what's represented in this figure, yes.

Q. And the CB signal shows a strong response at the 180 degrees; is that right?

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A. That's correct.

Q. And a null essentially in the zero direction of the CB; correct?

A. That's correct. I think one of ordinary skill would understand that this is an idealized representation. A real system with real microphones might have some distortion in these patterns, but that the general shape would be consistent with what's shown here.

Q. It would be approximately similar?

A. More or less, I would say. There's -- there are things that could be done depending on the delay that's applied in those delay nodes that would change the shape of these patterns. For example, if the delay node applies zero delay, then these patterns would both reflect the difference between a pair of omnidirectional microphones with no phase shift and I think you would see something that was more isotropic. So it depends on the delay chosen with the appropriate

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choice of delay. With the two microphones along the single axis with the voice source also along that axis, you would expect these patterns if everything was chosen properly or something approximately similar to what's here.

Q. Okay. And Avendano expects to have one microphone facing the speaker and one microphone facing the back; is that right? When I say the back, the back of the device?

A. So one -- Figure 1B in Avendano, which has that physical arrangement, the speaker, the first microphone and the second microphone along a single axis is, I believe, the representation that applies to the embodiments described with respect to Figure 4A.

Q. Turning back to Figure 4A, we now have the CF and CB signals coming out of the DMA module 302 and those go into the two frequency analysis modules 304; is that right?

A. That's what's shown in the

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figure, yes.
Q. What do the frequency analysis modules do?
A. So column 5, around 45, line 45, says the output of the frequency analysis module 304 may comprise a filtered cardioid primary signal and a filtered cardioid secondary signal. There's a later description in the patent of what those filters might be doing.
Q. What's your understanding what those filters are doing?
A. So there's a number of possibilities described in Avendano. Column 9, for example, says that the frequency analysis module 304 takes the acoustic signals X 1 and X 2 and mimics a cochlea implementation using a filter bank such as a fast fourier transform. Alternately, other filters are described in the patent and a number of possibilities that could be present at that location.
Q. What's a cochlea implementation,

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what does that mean?
A. A cochlea is a structure in your ear, your inner ear that transforms acoustic signals into electrical signals that you perceive. You're listening to me, you're hearing a spectral response associated with the pattern of noise that I'm creating when I speak. And the cochlea has a frequency response that is unique perhaps to each person but in general, there's a pattern of frequencies where there's strong response and other frequencies where there may be lesser response. So I think the idea here is to mimic the sort of typical human cochlea in terms of its ability to transform acoustic signals into perceived sound.
Q. Back on Figure 4A, following the frequency analysis module, the signals go to an energy module and what happens in the energy module?
A. So back to column 5 of Avendano, around line 50, the energy module 306 takes the signals from the frequency

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analysis module 304 and calculates the power estimates associated with the cardioid primary signal and the cardioid secondary signal. In an exemplary embodiment, the power estimates may be mathematically determined by squaring and integrating an absolute value of the output of the frequency analysis module.
Q. So in your -- if you were explaining this to one of your students, how would you explain what the energy module is doing?
A. So at the very highest level it's estimating the acoustic energy in each of the two cardioid microphone signals. It's doing that by looking at the signal as a function of time, taking it square and integrating over that interval of time to get an estimate, a number that is related to the acoustic energy during that interval in that signal and comparing -- further on comparing those two energy levels to determine whether there's a stronger signal in the voice channel, the

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forward cardioid relative to the backward cardioid.
Q. When you say later on, is that done in the ILD module?
A. Yeah, so you calculate in the energy module the calculated energy levels in each channel and the ILD module determines taking a ratio of those two energy levels and as shown in the equation around line 15, and by combining those energy levels in that way, I'm just going to summarize, so further down column 6, it says if the ILD is less than a threshold or greater than a threshold, it uses that as a way to determine the presence or absence of speech.
Q. Can you point me to the line you were looking at just so I can follow?
A. It's around line 60, column 6. Shows the use of a threshold in comparison with that ILD signal, the ratio that comes from the equation around line 15, and if it's greater than or less than a threshold, for example 0.5, that is

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associated with the presence or absence of speech.

Q. And to finish up how Avendano works, it takes that determination and uses that to cancel noise in the noise reduction system; is that right?

A. So now we're getting into the details in the noise reduction system. This may be better described with respect to Figure 3.

Q. I wasn't really asking for a detailed description, although if you want to give one, that's perfectly fine. My question is just whether -- we know we have this ILD 0 or 1 and the system uses that to cancel noise in the noise reduction system; is that right at a high level?

A. It uses that -- I think it's fair to say that it uses the output of the ILD module and compares the number that comes from that with a threshold and that affects the way the filter and signal processing takes place through the rest of

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the system and the noise reduction system.

Q. As part of the noise reduction system, Avendano uses a Wiener filter; is that right?

A. That's one possibility, yes. I don't think it exclusively requires that but it's one way to process the signals.

Q. It discloses using a Wiener filter although it allows for other types; right?

A. Yes, that's correct.

Q. What is a Wiener filter?

A. I'm trying to think what would be the right general definition.

(Witness perusing document.)

So the Wiener filter in this, in Avendano is described in column 7, first as sort of an approximation and then describing the function of how the Wiener filter is implemented. I think in the general sense it's an adaptive filter that is in the system like this, relies on coefficients associated with the power estimates of the input signals can be

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adapted over time. There's some -- there's some information here about the time scale for the adaptation and how you want to go more quickly during the periods when there is not speech present and you would like to slow the Wiener filter down during the periods when there is speech present. I don't know if that's the sort of answer you were look for but as it's described in the Avendano patent, it's adaptive filter that can be applied to the acoustic signals associated with the power spectral density and speech and noise channels to enhance the contrast.

Q. Is that the same as the general understanding of what a Wiener filter is in the art?

A. I believe the Wiener filter is one of the category of filters that has a fairly general set of applications. In the context of these patents, it's associated with processing the signals from one or more microphones in an acoustic system and it's used to

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preferentially enhance certain components, in this case the components associated with speech by applying coefficients that amplify those components in an adaptive method.

Q. All I'm asking is what makes a filter a Wiener filter as opposed to any other kind of filter?

MS. WANG: Asked and answered.

THE WITNESS: (Witness perusing document.)

I don't think I'm going to give you a very clean definition of what is a Wiener filter relative to other adaptive filters that are used in the acoustic signal processing world. My understanding is that it's in that general category of adaptive filters, that it takes input coefficients associated with power estimates in the two channels and provides a process for amplifying the portion that's associated with the signal of interest, in this case the voice, that

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it's adaptive based on the dynamics of the signals that arrive at the inputs and that it's one kind of filter in a category of filters. There may actually be a very particular characteristic that is specifically associated with the way the Wiener filters apply those processes. I'm just not remembering as I sit here today what that specific characteristic is.

MR. COWELL: Understood. Why don't we take a 10-minute break.

THE WITNESS: Okay.

(Recess taken from 11:19 a.m. to 11:27 a.m.)

BY MR. COWELL:

Q. I'd like to turn to Visser now, Dr. Kenny.

A. Okay.

Q. Did you ever see Visser before working on this case?

A. I don't believe so.

Q. Would you agree with me Visser is

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directed to improving a speech signal extracting it from noisy environment?

A. So column 1 of Visser under field of the invention says the present invention relates to processes and methods for separating a speech signal from a noisy acoustic environment.

Q. Is that a yes?

A. Yeah, I think that's a yes.

Q. Take a look at Figure 1 of Visser. And that's setting out the general high-level process of the entire Visser reference; is that right?

A. Um-hum, that's correct.

Q. And now you, if I understand correctly, you focus in on what's described in Figure 10 of Visser for your opinions. I'll give you a moment to catch up.

A. I think it's fair to say that Figure 10 is -- appears in more than a few locations in my two reports and specifically the description of the two cross filters that are within Figure 10.

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Q. Taking a look at Figure 10, within the context of Visser, what is Figure 10 describing?

A. So column 17 of Visser around line 30 is the text describing Figure 10, which is one embodiment of the ICA or BSS processing function, and just describes this architecture is well suited for allowing the speech processing from a pair of microphones. The cross filters are applied to each of the input signals to produce a channel of separated signals U 1 and another channel of separated signals U 2. Channel 630 in this illustration is the speech channel, contains predominantly desired signals that are, I think, associated with speech, and channel 640 contains predominantly noise signals.

Q. So I think you may have mentioned it but what does ICA stand for?

A. Through this patent, ICA is, I believe, independent component analysis filtering. Let me look at the first sentence of that just to be sure. Yeah,

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column 9 around 20.

Q. What does BSS stand for?

A. (Witness perusing document.) All the way back in column 2 -- sorry for taking time, I just want to be sure I didn't misstate this -- the BSS is a blind source separation process.

Q. What's the difference between ICA and BSS?

A. (Witness perusing document.) Sorry for the delay here. I think the right answer to your question is -- I just want to be sure here -- I think the independent component analysis method is a kind of BSS, it's kind of within the category of blind source separation method processes. It's a particular version of that as described in column 3 around line 15. The paragraph is describing the ICA process generally known in the field and because the ICA technique doesn't require information on the source of each signal, it is known as a blind source separation method. I think it's

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within the category of the BSS and I took some time to read through the rest of what's here. I think that's consistent with the way ICA and BSS are referred to through the text of the Visser patent.

Q. I appreciate that explanation. If we look back at column 17, line 29 where you were just reading a few questions ago, let me know when you're there.

A. Um-hum.

Q. It says Figure 10 illustrates one embodiment 600 of an ICA or BSS processing function. Is that sentence telling us that it's one function, you could call it either ICA or BSS?

A. Again, I think ICA is a particular embodiment of a BSS. There might be others within the family of BSS that are not described as ICA.

Q. Is Figure 10 -- I guess maybe a simpler question. Strike everything.

Is Figure 10 showing us an ICA process?

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MS. WANG: Objection to form.

THE WITNESS: I believe so, yes.

BY MR. COWELL:

Q. And Figure 10 is part of the overall signal separation process that Visser is disclosing; is that right?

A. (Witness perusing document.)

Sorry, yes, that's correct, Figure 10 is describing a portion of the process that I think is outlined in Figure 9, process 500.

Q. And that would be -- would that be part of the signal separation process that's shown in a box in Figure 1?

MS. WANG: Objection, form.

THE WITNESS: Yes, that's correct.

BY MR. COWELL:

Q. Turning back to Figure 10, we see on Figure 10 there's two boxes labeled W 21 and W 12; right?

A. That's correct.

Q. And those are filters, if I remember correctly; correct?

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A. Visser describes those as cross filters.

Q. Are those Wiener filters?

A. (Witness perusing document.)

So Visser doesn't describe those as Wiener filters explicitly. With respect to Figure 11, there's a paragraph most of the way down in column 20 that describes the post-processing filters in Figure 11 as Wiener filters, or at least that those could be Wiener filters to provide additional speech processing to remove the remaining levels of background noise after the completion of the cross filtering process. So from what's here, the post-processing filters could be Wiener filters. The spec of the patent doesn't describe the cross filters as Wiener filters explicitly. There's a lengthy description of all the things that might be taking place in the cross filters. I wouldn't know for sure whether it's possible for one of ordinary skill to consider a Wiener filter as part of the

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cross filters or not.

Q. Do you know if denoting a filter with the prefix W would connote to a person of skill in the art that it's a Wiener filter?

A. (Witness perusing document.)

So I didn't make that assumption when I read this patent. I agree now that you've asked the question that that could be true. The description of what the cross filters are doing through columns 18 and 19, as I said, is consistent with some of the description of what a Wiener filter is from the Avendano patent, so I think the answer is possibly, yes, but it would depend on the particular experience of that person whether they maybe have used those filters extensively and have adopted that shorthand. As far as I remember reading Visser, it doesn't state that explicitly but that could be a strong implication.

Q. Okay, I understand. I want to turn now to your combination of Avendano

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and Visser. So I'm going to refer to your declaration for the '213 patent, the 1084 proceeding, if that's okay with you.

A. Sure.

Q. And as we're going through this, if you think anything is different between the '213 and the '611 patent, can you please just point that out to me?

A. Okay.

Q. So let's go to paragraph 120. Are you there?

A. Yes.

Q. Right in the middle of the page here we have a modified Figure 4A of Avendano that you've created; correct?

A. That's correct.

Q. And looking at the figure, you've added Visser's cross filter W 21 and Visser's cross filter W 12 into Avendano. Is that a fair reading?

A. That's a fair description of this annotated Figure 4A representing one way of combining the cross filters with the disclosure of Avendano.

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Q. Does this annotated figure show the modification, slash, combination that you're proposing for Avendano plus Visser?

A. It's an example of a proposed modification. I would say one of ordinary skill would understand that the cross filters could be implemented in a format that is representing what is a finite impulse response architecture as described in Visser or it could be implemented with a infinite impulse response architecture that you would change a few of the wire connections in that diagram around, but one of ordinary skill would know how to do that. So for example, if the intent was to implement the infinite impulse response architecture, the outputs of cross filters W 21 and W 12 would be connected back to the inputs to those cross filters that would be the outputs of the two delays from Avendano, in that kind of a, call it a crisscross arrangement. Drawing it here would be complicated. You would have lines crossing over each other. It might

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be a little inartful, but one of ordinary skill would know how to construct that architecture based on the disclosures of the two patents.

Q. Okay. So what we're looking at right now is the combination but with a finite impulse response; is that right?

A. That illustration is consistent with a finite impulse response implementation of the cross filters.

Q. Other than the two ways you've illustrated that you could implement those cross filters, is there anything else in your combination you're proposing that's not shown in this figure?

A. So in general, one of ordinary skill would look at the disclosure of Visser and the disclosure of Avendano and consider a variety of ways of implementing the improved filters from Visser to improve the performance of the system when it's combined. I don't want to say that there's only two possible ways to implement cross filter architecture into

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the system of Avendano. There could be more and one of ordinary skill would consider those options. Visser provides several pages of description of different embodiments of the IIR and FIR filters that one might consider, both interior details and the way they interact, so there's a broad range of possibilities that one of ordinary skill would appreciate and consider. What's shown in the report is, I think, one example. It's I'd say chosen mostly because it's the most easily drawn and perhaps and useful for supporting the conversation, but a person of ordinary skill would understand that there's a lot of options consistent with the detailed description of Visser.

Q. I just want to know -- what's disclosed in your report is what I'm asking about right now. And other than essentially dropping in those two cross filters, however they are implemented, are you proposing to take anything else from Visser and put it into Avendano?

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MS. WANG: Asked and answered.

THE WITNESS: I think there's lots of possibilities within those two boxes, the cross filters associated with the lengthy description in Visser, and there's at least two possibilities for how those boxes would be connected into the architecture of Avendano. It could be more. The ones I've shown, so I do show Figure 10 with the cross filters in the infinite impulse response arrangement and in the case of the annotated Figure 4A of Avendano, I show the cross filters implemented in a finite impulse response arrangement. Those are examples that meet the limitations of the claims, but a person of ordinary skill would certainly consider other possibilities based on the lengthy disclosure of Visser.

BY MR. COWELL:

Q. But that's not my question, sir.

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I understand all that. Let me think of a way to ask it that I think will make this clear.

Accepting for the purposes of this question your contention that the cross filters could be implemented in any number of ways, besides the cross filters themselves and the necessary connections for them, is there anything else you're pulling from Visser to put into Avendano?

MS. WANG: Objection to form.

THE WITNESS: So I agree, I think admitting that the details within the W 21 box and the W 12 box that I'm showing could be a range of choices within those boxes, and there's at least two ways that those boxes could be connected to the disclosure of Avendano, either in the finite impulse response arrangement that I show in that annotated Figure 4A from Avendano or looking at the feedback version, the infinite impulse response consistent with Figure 10, those are

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both considered as options that are explicitly disclosed in the report. If the question is am I implementing or considering implementation of other elements of Visser --

(Witness perusing document.)

I'm looking through the other claims in my report and looking for places where Visser is explicitly included to make sure.

(Witness perusing document.)

Just to be clear, I'm looking for places where the voice activity detection that's in Visser might have been used to support my arguments and I don't believe I explicitly rely on the VAD in Visser to meet the limitations where that's required. So I think without wasting a lot more time leafing through, I think the answer to your question is the components of Visser that I rely upon for my opinions are associated with Figure 10 and the structures within

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Figure 10, and the description of what goes on inside of the cross filters and components around them.

BY MR. COWELL:

Q. Okay.

A. That's more in line with the question you're asking but please, let me know.

Q. Why don't I re-ask it just so it's all clear because I know you spent a lot of time making sure your answer was correct, which I appreciate.

Other than the cross filters and the description of what could be within the cross filters and how the cross filters may be connected, do you rely on any other components of Visser for your opinion?

MS. WANG: Objection to form.

THE WITNESS: I don't think there's any explicit references to other elements of the entire system of Visser in support of my opinions. Just to be clear though, one of

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ordinary skill would read the entirety of Visser and think about what's taught in Visser when thinking about ways that one might combine the features in order to obtain the combined benefits of the two systems. There's a lot of teaching in Visser that would be on the table, but my report doesn't explicitly rely on any of those other components in support of my positions.

BY MR. COWELL:

Q. So the combination you're proposing is Avendano with those cross filters added as you described several times now; is that about right?

MS. WANG: Objection to form.

THE WITNESS: Yeah, the combination that I'm referring to when discussing the Avendano plus Visser combo is the majority of the Avendano system with cross filters as taught by Visser as a component to be added into that system or the details of how it's

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added, there's some options in variability, including architecting as a infinite impulse response or a finite impulse response filter at least, maybe more.

BY MR. COWELL:

Q. In this Avendano/Visser device, with the microphones, they would still be positioned as they are described in Avendano; is that right?

MS. WANG: Objection to form.

THE WITNESS: (Witness perusing document.)

Avendano has Figure 1A and 1B as possible arrangements for the two microphones. Figure 1A shows what looks like a hand-held cell phone of around 10 years ago where there's a primary microphone and a secondary microphone and the axis of the speaker's voice, their mouth and the two microphones is not aligned along a single axis. Figure 1B shows that alignment along a single axis. A lot

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of the disclosure of Avendano is associated with Figure 1B because the math is simpler, makes it easier to provide a compact description of the features and benefits, but the arrangement in 1B and 1A is contemplated and could be implemented based on these disclosures.

BY MR. COWELL:

Q. In your combination are you proposing to change the orientation or the arrangement -- I'm sorry, let me strike that.

In your combination are you proposing to change the arrangement of the microphones from how it's disclosed in Avendano?

A. I don't think so. I think the disclosure of Avendano is -- includes quite a range of arrangements, so outside of within the scope of what's described by Avendano I think covers what I would consider for the combination.

Q. Let's turn to I believe it's

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paragraph 143 of your declaration and again I'm looking at the '213, but if there's any differences between that and the '611, please point them out. Actually, let's start at paragraph 137 rather.

A. Okay.

Q. A couple pages before.

A. Um-hum.

Q. If I understand your combination correctly, you propose two different ways that the limitation forming a filter that describes the relationship for speech can be met by your combination; is that right?

MS. WANG: Objection to form.

THE WITNESS: I believe that's correct, yes.

BY MR. COWELL:

Q. So the first one you set out here is that that filter describing the relationship for speech would be delay node 402 as you state in paragraph 138; right?

A. That's correct.

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Q. But you also realize the Board may not agree with you that that delay node would be a filter that describes the relationship for speech and so you added in Visser; is that right?

A. Visser was added in in the version of this report written almost two years ago before any commentary from the Board was on the record. So it wasn't because of the Board's commentary, it was the opinions presented almost two years ago prior to any Board commentary.

Q. Let's take a look at paragraph 143. So here you say to the extent that Avendano alone does not describe that the processing component forms a filter that describes a relationship for speech between the first physical microphone and the second physical microphone, it would have been obvious to modify Avendano's system in view of Visser to include such a feature.

Do you see where it says that, sir?

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A. Yes.

Q. So when you wrote this report, you were cognizant that the Board may not agree with you that 402 was the necessary filter; is that right?

MS. WANG: Objection to form.

THE WITNESS: I suppose every paragraph in the report is written in the context that the Board may have a different opinion than my opinion. I'm offering my opinion. So I don't think this is special in that regard.

BY MR. COWELL:

Q. So is that a yes?

A. You know, I would say every paragraph in my report I suppose is written with the awareness that the Board might disagree with any paragraph in the entire report, this being one of hundreds. In my mind it wasn't, I think, particularly singled out for that reason. We threw out this ground, we considered the combination of Avendano and Visser, and the properties of the Visser filters

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were a thing that a person of ordinary skill would consider combining with the system of Avendano to provide the characteristics that would be desirable.

Q. So when you wrote paragraph 143 though, you were aware that someone may contend that Avendano alone does not describe forming the filter that describes the relationship for speech?

MS. WANG: You can answer.

BY MR. COWELL:

Q. Is that right?

A. As with every other paragraph in the report, someone might disagree with every paragraph one by one or any single paragraph or the entirety. At least one expert I know on the record more recently disagrees with me on some of these paragraphs, but I wouldn't say that at that particular moment that I was especially concerned with the Board on that matter. It was more that the characteristics of Visser's filters would be interesting for a person of ordinary

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skill in the art when considering the construction of the virtual microphones, and that as discussed in some of these later paragraphs, the opportunity for the filters to be adaptive, allowing the performance of the system to be adjusted in response to the particular user's speech or the acoustic environment, would be attractive to one of ordinary skill in this context and would consider applying them.

Q. You knew when you were writing this report that you had to find a teaching in the prior art that disclosed forming a filter that describes your relationship for speech, correct, in order to prove the claim obvious; correct?

MS. WANG: Objection to form.

THE WITNESS: So the general assignment I was asked to complete was to consider the claims of the '213 patent and the prior art references that we considered in combination and look for evidence that the claims of

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the '213 patent were anticipated, or I would say rendered obvious by the combinations of the elements in the prior art references. And in my report I present a number of examples of elements from Avendano, from Visser, from Bisgaard and Hou and the other references that show that the limitations of the '213 existed in the prior art. I think that's the general exercise.

BY MR. COWELL:

Q. Right. And so specifically as I just asked but I don't think you answered, you understood that you had to find this limitation 14 E disclosed in the prior art; correct?

MS. WANG: Objection to form.

THE WITNESS: I think my assignment was to look for such things and if I find them, then I find them. I might not find them in some cases and then my opinion would be that the elements were not anticipated. It

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isn't my job to find them. My job is to look for them and if I find them, then that forms the basis of my opinion for the invalidity of these claims, but it isn't -- it's not a march to the death. The elements are present or absent. In this case they are obviously present. I'm sorry, I'm just sort of parsing your question because it implied that my task was to find the elements and I think my task is to look for them and if I find them, that I report on that. If they are not present, it isn't my job to march on forever and ever and ever. My job is to look for them and if I find them, I report on them.

BY MR. COWELL:

Q. Okay, I understand the distinction you're making.

Let me re-ask it under that lens that now you've provided for me.

You understood with respect to limitation 14 E that you were looking for

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a disclosure in the prior art forming a filter that describes your relationship for speech; is that right?

A. That's correct.

Q. And as we discussed earlier, you proposed Avendano disclosing it alone as well as an alternative that Avendano plus Visser discloses it; is that right?

A. That's a fair description of this part of my report.

Q. So it included the Avendano/Visser part as in 143 that this element would be met even if Avendano alone did not describe forming the filter that describes the relationship for speech; is that right?

MS. WANG: Objection to form.

THE WITNESS: Paragraph 143 says to the extent that Avendano alone does not describe that the processing component forms a filter that describes the relationship for speech, it would have been obvious to modify Avendano's system in view of Visser to

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include such a feature.

BY MR. COWELL:

Q. Is that a yes?

A. I think so.

Q. Now, in the Avendano/Visser combination, let me make sure I have it in front of me, and I'm looking at 144 here. You say each of Visser's cross filters W 12 and W 21 describes a relationship for speech between a first physical microphone and a second physical microphone. Do you see that?

A. Yes.

Q. What is that relationship for speech?

A. So the Visser cross filter W 12 would be applied to Avendano's second signal to further increase the speech content in the first virtual microphone and the complementary filter could be applied to the other signal to decrease speech content in that microphone. Further, Visser discloses that the different physical microphones may have

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different responses to speech. Depending on the location of the audio source and since the microphones, quoting Visser, since each of the microphones is separate from every other microphone, they will generate somewhat different composite signals. For example, the relative content of noise and speech may vary as well as the timing and delay for each sound source. So the filters are addressing the different composite signals which include the relative content of noise and speech as well as the timing and delay for each sound source.

Q. Where do you get that last part? I'm having trouble seeing it.

A. It's right at the end of paragraph 146.

Q. Oh, I see it. What is the relationship that's described in those filters then?

MS. WANG: Asked and answered.

THE WITNESS: In that sentence there's relative content of noise and

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speech between the two channels, between the two microphones as well as the timing and delay of the signals for each sound source. There's -- all of those are part of what could be considered to be a relationship for speech.

BY MR. COWELL:

Q. I'd like to skip ahead now to paragraph 229. Here we're talking about adding in Bisgaard as well; right?

A. That is correct.

Q. Now, is it correct that what you're taking from Bisgaard is the amount of delay to apply in the Avendano/Visser system?

MS. WANG: Objection to form.

THE WITNESS: So paragraph 234 as an example of applying Bisgaard's teaching regarding delays to Avendano's system, a person of ordinary skill in the art would have found it obvious to configure each of Avendano's delay nodes to, quote,

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delay the digitized sound signal, close quote, received by each of Avendano's physical microphones and then, quote, again by the amount of time used by a sound signal to propagate in the zero degree azimuth direction from the front microphone to the rear microphone in order to account for the amount of time used by a sound signal to propagate from the front to rear microphone.

BY MR. COWELL:

Q. So is that a yes?

A. So that, we're referring to Avendano's teaching that the delay applied to the cross -- to the signals at Avendano would be consistent with the time used by the sound to propagate from the front microphone to the rear microphone.

Q. And that's the modification you're making from Avendano/Visser to Avendano/Visser/Bisgaard; is that right?

MS. WANG: Objection to form.

THE WITNESS: So just looking

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through the claims in that ground.

Can I have that question again just to be sure?

BY MR. COWELL:

Q. The modification you're making to Avendano/Visser that makes it into Avendano/Visser/Bisgaard is to implement the amount of delay from Bisgaard into Avendano as delay nodes 402 and 404; is that right?

MS. WANG: Objection to form.

THE WITNESS: I think that's correct for the claims in this ground, that the teaching of Bisgaard regarding the time delay is what's being incorporated into the Avendano and Visser combo.

BY MR. COWELL:

Q. And therefore, is it true that you're not taking any of the other components of Bisgaard and putting them into the Avendano/Visser combination?

MS. WANG: Objection to form.

THE WITNESS: I think that's

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correct.

MR. COWELL: Why don't we take about a five-minute break.

THE WITNESS: All right.

(Recess taken from 12:24 p.m. to 12:30 p.m.)

MR. COWELL: So those are all my questions so I pass the witness.

MS. WANG: Sorry, give me five minutes to look at my notes. I may or may not have any redirect.

(Recess taken from 12:30 p.m. to 12:35 p.m.)

(Continued on next page.)

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MS. WANG: I have no questions so we can conclude.

MR. COWELL: Great.

MS. WANG: Let's go off the record, Cathi.

(Time noted: 12:35 p.m.)

_____

THOMAS W. KENNY, PH.D.

Subscribed and sworn to before me this ___ day of _____, 2024.

_____

KENNY

C E R T I F I C A T E

STATE OF NEW YORK)
: ss.
COUNTY OF NASSAU)

I, CATHI IRISH, a Registered Professional Reporter, Certified Realtime Reporter, and Notary Public within and for the State of New York, do hereby certify:

That THOMAS W. KENNY, PH.D., the witness whose deposition is hereinbefore set forth, was duly sworn by me and that such deposition is a true record of the testimony given by the witness.

I further certify that I am not related to any of the parties to this action by blood or marriage, and that I am in no way interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto set my hand this 19th day of April, 2024.



CATHI IRISH, RPR, CRR, CLVS

KENNY

---------- I N D E X ----------

WITNESS	EXAMINATION BY	PAGE
THOMAS KENNY	MR. COWELL	4

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*** ERRATA SHEET ***

NAME OF CASE: Meta Platforms vs. Jawbone Innovations

DATE OF DEPOSITION: April 19, 2024

WITNESS: Thomas W. Kenny, Ph.D.

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THOMAS W. KENNY

Witness and sworn to before me
this ____ day of _____, 2024.

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(Notary Public) My Commission Expires:

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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