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

LIBERTY MUTUAL INSURANCE COMPANY,	)	
	)	No. CBM2012-00002
	)	CBM2012-00004 (JL)
Petitioner,	)	Patent 6,064,970
	)	
vs.	)	No. CBM2013-0004 (JL)
	)	Patent 8,090,598
PROGRESSIVE CASUALTY INSURANCE COMPANY,	)	No. CBM2012-0003
	)	CBM2013-0009 (JL)
Patent Owner.	)	Patent 8,140,358

VIDEOTAPED DEPOSITION OF SCOTT ANDREWS
Palo Alto, California
Tuesday, September 24, 2013
Volume 2

Reported by:
LESLIE ROCKWOOD, RPR, CSR 3462
Job No. 65807

(Exhibit Liberty Mutual 1004, Japanese Unexamined Patent Application Publication, H4-182868, 11/19/90, pages 1 - 42, having been previously marked, was referred to.)
BY MR. WAMSLEY:
Q. We also have Liberty Mutual Exhibit 1021 in that matter, which is an excerpt from a book on fuzzy logic by Yen and Langari.
Am I correct?
A. That's correct.
(Exhibit Liberty Mutual 1021, Fuzzy Logic, Intelligence, Control, and Information, Yen and Langari, pages 1 - 55, having been previously marked, was referred to.)
BY MR. WAMSLEY:
Q. And then finally we have a paper called "Black Magic," which is Liberty Mutual Exhibit 1008 in this matter; is that correct?
A. That's correct.
(Exhibit Liberty Mutual 1008, An Interest in Black Magic - Motor Technology, pages 1 - 2, having been previously marked, was referred to.)
BY MR. WAMSLEY:
Q. Okay. I'd like to direct you to your rebuttal

declaration, Mr. Andrews, Exhibit 1019.
A. Okay.
Q. And in particular to paragraph 6. And in the first sentence of that paragraph, you testify that fuzzy logic was well-established and fairly common by 1996.
Do you see that?
A. I see that.
Q. Okay. And is the basis for that opinion the existence of the book by Wang called "Adaptive Fuzzy System and Control," dated 1994?
A. Well, actually the basis for that is described in the subsequent paragraph. Part of it is the book by Wang. Let me find it here. Yes, part of it is the book by Wang. Part of it is the book by Langari and Yen. Part of it is from my own experience leading a group of engineers that were doing work with fuzzy logic.
Q. All as described in this paragraph; is that right?
A. Yes.
Q. Okay. The book that you cite which is Exhibit 1021 by Langari and Yen --
A. That's right.
Q. -- what you have quoted there indicates that the book takes the view that fuzzy logic is an emerging technology; correct?

MR. MYERS: Objection. 402, 403. And for the record, as in previous depositions, I'm simply going to cite the number of the Federal Rule of Evidence going forward in the deposition rather than make a full citation or state a full grounds for my objection, I'll simply state the rule number.
MR. WAMSLEY: Well, let me just follow up to clarify. You're not intending to reserve the right to assert a different objection later to my question, are you?
MR. MYERS: I'm not going to assert a different rule.
MR. WAMSLEY: Okay. So any objection within that rule is what you're saying?
MR. MYERS: Correct.
MR. WAMSLEY: Okay.
MR. MYERS: I -- it's my --
MR. WAMSLEY: Now we understand each other.
MR. MYERS: Right. My understanding is the Patent Trial and Appeal Board doesn't want speaking objections or a full explanation on the record, and as a consequence, I'm going to give you the rule number of the Federal Rule of Evidence that I'm objecting under. And then if that comes up, then I'll have the opportunity to explain the basis for that objection in

either in front of the board or in a paper that's filed with the board if it becomes necessary.
MR. WAMSLEY: We understand each other, then, Jim. Thank you for the clarification.
Could I ask you to read the question back, please.
(The record was read by the reporter as follows:
"QUESTION: What you have quoted there indicates that the book takes the view that fuzzy logic is an emerging technology; correct?")
THE WITNESS: I wouldn't characterize it that way. Actually, it says that it's been accepted as an emerging technology since the late 1980s.
BY MR. WAMSLEY:
Q. And this is as of 1999, when this book was published; correct?
A. That's correct, I think, yes.
Q. Now you say in the next sentence that by 1996, you had studied several fuzzy logic systems and supervised many engineers with similar fuzzy logic experience.
Do you see that?
A. I see that.

identify these particular parameter values associated with Kosaka's membership functions.

Do I have that right?

A. I think almost. I think I said that last time we did this.

I think the way I've stated it here in the declaration is not that a person of skill in insurance would have that ability. I've stated that in order to determine these values, you would need someone who was a person of ordinary skill in the insurance aspects of this kind of system.

Again, it's not just any old person who knows something about insurance; it's somebody who is actually knowledgeable about, for example, understanding the risks associated with following distances and swerving and the other parameters that Kosaka identifies here.

So you'd need a person who was knowledgeable about risks associated with that so that they would then be able to actually determine what these values are. And that's what I mean by a person skilled in the insurance aspects of the '970 patent.

Q. But in fact, you have no expertise that would allow you to testify whether that person knowledgeable about those risks that you just referred to would be an expert or instead someone with lesser skill, do you?

MR. MYERS: Objection. 402, 403.

THE WITNESS: Are you asking me if I would be able to determine whether a given person was an expert versus a person of ordinary skill in those aspects?

BY MR. WAMSLEY:

Q. That's a different question than the one I asked.

A. Okay.

MR. WAMSLEY: Let me try having it read back, and if it's still not working, we'll rephrase.

(The record was read by the reporter as follows:

"QUESTION: But in fact, you have no expertise that would allow you to testify whether that person knowledgeable about those risks that you just referred to would be an expert or instead someone with lesser skill, do you?")

MR. MYERS: Objection. 402, 403.

THE WITNESS: I guess probably not because the delineation of a person of ordinary skill versus expertise in insurance isn't really my field.

BY MR. WAMSLEY:

Q. Okay. Let's move on to paragraph 9 of your rebuttal declaration. And here, among other things, you testify as to the risk evaluation value in Kosaka;

correct?

A. That's right.

Q. And in your opinion, you say a person of ordinary skill would understand that risk evaluation value to be a single crisp value; correct?

A. That's what I said.

Q. And that's because of what you describe in the next sentence there of the process called defuzzification.

Am I right?

MR. MYERS: Objection. 402, 403.

THE WITNESS: The process called defuzzification is the process that would take the membership -- the output membership values, membership function values, and convert them into a single crisp value.

BY MR. WAMSLEY:

Q. And with that understanding, am I correct that it's because of that, the existence of that defuzzification process, that you are of the opinion that Kosaka's risk evaluation value would be a single crisp value?

MR. MYERS: Objection. 402, 403.

THE WITNESS: I'm not sure that I would characterize it that way. It's not because of the

defuzzification process. The issue is that there would be no usable output until you defuzzified it.

BY MR. WAMSLEY:

Q. In your testimony in your declaration about defuzzification, you cite to the Langari book; correct?

A. That's right.

Q. So let's look at that. That's Exhibit 1021.

And you particularly cite a couple of pages there. Let's look at the first such citation at page 38. Tell me when you're there.

A. I'm there.

Q. And you see the reference to defuzzification in the middle of the page there; correct?

A. Yes.

Q. And according to this text, this is an optional step in fuzzy logic; correct?

A. That's what it says here.

Q. So in that respect, a designer would be free to not use defuzzification as part of the fuzzy logic system.

Am I right?

MR. MYERS: Objection. 402, 403.

THE WITNESS: I don't think it really says that. I mean, he says for applications that need a crisp output, for example, in control systems. So any

time you are going to ultimately try to make use of the output in some specific way, you need a value that you can use. You don't need percentages of membership in a membership function.

I don't know what you would -- in '970, I don't know how you would determine an insurance premium based on the notion that someone was 20 percent low risk and 50 percent medium risk and 70 or 30 percent high risk. You would ultimately have to calculate what is the aggregate risk from that, which is ultimately getting a crisp value out of the fuzzy system.

I think the fact that he says these are optional is more if you were having cascaded fuzzy logic functions, you don't necessarily have to defuzzify and refuzzify and defuzzify and refuzzify every single time.

But at the end of the day, having an output of a fuzzy system that isn't a value that you can use isn't very useful.

BY MR. WAMSLEY:

Q. You made a reference to control systems in your last answer. You'd agree with me that the way fuzzy logic is used in Kosaka is it's not controlling anything, is it?

MR. MYERS: Objection. 402, 403.

THE WITNESS: I think it's ultimately

controlling the insurance premium.

BY MR. WAMSLEY:

Q. You -- so, in your opinion, coming up with risk evaluation values that are then used in insurance premium calculation is an example of a control system?

A. I mean, I could take you through my logic on that, but it's not a control system as in a -- you know, a stability control for an airplane or something like that or a cruise control system, but in fact, it is --

Q. Or an elevator control system?

A. Right. But it is in fact something of a feedback system. If you consider that you are going to measure risk and the associated potential for loss associated with that and then decide what factors in driving contribute to that, you are actually ultimately building a system that is a control system. Because if you base your premiums on the -- on these factors in the right way, then eventually new drivers are going to drive in that way, and you'll be able to assess their risk accurately.

So at the end of the day, you have to have a crisp value to assign some level of risk. You just can't think that a system that has real-world application is going to end up with a membership set function and you're going to use that. So somewhere you

have to defuzzify this.

Q. And in your rebuttal declaration in paragraph 9, you say: "Kosaka explicitly describes using defuzzification."

Do you see that?

A. Yes, I do.

Q. So you've still got Kosaka in front of you; right, Mr. Andrews?

A. Uh-huh.

Q. Would you agree with me that the mention of defuzzification that you've cited to at page 8 of Kosaka is with respect to Kosaka's first fuzzy logic part 62 as shown in Figure 9?

A. That's correct.

Q. Would you also agree with me that nowhere else does Kosaka mention using defuzzification processes with respect to any other output?

A. Well, he says the logical output level says the -- this is in the right-hand paragraph of page 8, second paragraph down. So the risk evaluation value resulting from a comprehensive determination carried out at this third fuzzy logic part 65 is then output to the output controller, 66, where the logical output level and the output in accordance with hold time level are sent to the warning device and the monetary amount file.

So he's talking about an output level. He's not talking about a series of membership function values. I'm not sure what a warning device or what the controller would do with a series of membership values.

And you asked about a control system earlier in relation to Langari, and he's actually saying you output it to an output controller. So maybe it is a control system.

He doesn't say explicitly here that the output of the -- or the resulting membership function from fuzzy logic unit 3 is defuzzified, but I don't think he needs to say that.

Q. You understand in looking at Figure 9 -- and feel free to consult the accompanying text -- you agree with me that the inputs to Box 65, which is fuzzy logic unit 3, are themselves fuzzy values?

A. He talks about that in the top of page 8. So you'll see these are also input as fuzzy input values.

Q. And that's what you would expect; right? Because fuzzy values are -- being used in fuzzy logic unit 1 and 2; right?

A. That is what you would expect. You could have them be completely freestanding. So you could implement fuzzy logic 1 as a standalone unit that takes analog inputs or even digital representations of analog input