Why Computers Will Never Understand What They are Doing

Announcer:

Robert J. Marks has been interviewed across the United States on a number of radio stations about his book, Non-Computable You. The most enthusiastic interviews are from talk show hosts who have actually read all or part of Dr. Marks's book. Bill Meyer, who broadcast from KMED KCMD in Medford, Oregon is one such host. His podcast can be streamed at billmeyershow.com. And here is his interview with Dr. Marks.

Bill Meyer:

I started reading a book over the weekend that I am going to continue to eagerly devour because it cut against some of my preconceived notions. Let me tell you a little bit about this because the other day I was watching these stories and I was reading this story about how a worker at Google was talking about this artificial life, this software. Essentially this software, I guess they're calling it a being, and software developer thinking like, yeah, this software is actually self-aware and they're making a big deal about this. I think he ended up getting bounced out of Google because of this. Maybe it's because of talking out of school rather than actually just saying that the software was alive, but is there a possibility that software replaces us? I wanted to talk with Dr. Robert J. Marks, the second PhD.

Bill Meyer:

Let me tell you a little bit about him. Distinguished professor of electrical and computer engineering, School of Engineering and Computer Science Department of Electrical and Computer Engineering, Baylor University. So he is a pretty big brain on such things, and serves as the director of the Discovery Institute's Walter Bradley Center for Natural and Artificial Intelligence. He hosts the Center's Mind Matter podcast. He's also a fellow of both the Institute of Electrical and Electronic Engineers and the Optical Society of America. He's written a book about these various subjects, like the Google being, I guess, that they're calling, and it's called Non-Computable You: What You Do That Artificial Intelligence Never Will.

Bill Meyer:

Bob, it's great to have you on. I guess you're okay with being called Bob, right?

Robert J. Marks:

Yes. Yes. That's my name, Bob. Yep.

Bill Meyer:

Okay. So did you have pretty much the same response that I did when there was this talk about the Google software sentient being of sorts? What was your general impression when you saw that?

Robert J. Marks:

Oh, my goodness. Well, there are so many ways to push back on that claim and it's hard to choose which one to go down. We can explore one of them if you'd like to, why that software is not sentient, why it doesn't understand what it's doing, for example. The computers can add numbers. They can add numbers like 12 and 13, but they don't understand what the number 12 and number 13 is. So the question is in this Google chat bot is whether or not that chat bot understood what was talking about. I think in order to be sentient, you need to understand what you're talking about.

Robert J. Marks:

The argument against this is beautiful. It goes back to a philosopher named John Searle who didn't know Chinese. What he decided in his little parable, very short parable, is that he would place himself in a room called the Chinese room. In this room, there would be little slips of paper pushed through the door that were written in Chinese. They were questions. Searle, inside the room, didn't understand Chinese, but fortunately had a bunch of file cabinets and he was able to look at the question and he was able to go to the file cabinets until he found a match to the question. Then in the file cabinets was the answer to the question. So he wrote down the answer to the question on the card. He refiled the card. He went back over and slipped it outside the room.

Robert J. Marks:

Now, the interesting thing is that Searle inside the Chinese room didn't understand Chinese. He couldn't read it. He couldn't write it. He couldn't speak it. Yet from the outside, it really looked like John Searle knew, or what was ever in that Chinese room, knew Chinese. I mean, my goodness, they could respond to the questions and it sure looked from the outside.

Robert J. Marks:

That's exactly the same thing that's happening with the Google robot. This software has looked at millions and millions of files, including, I would suppose, all of Wikipedia plus some. They have done correlations, word relationships, and things of that sort. And so in the background, there's a bunch of number crunching and that number crunching is going to spit out an answer, and that answer is going to look like it means something and it can mean something, but it's like the people external to the Chinese room. That computer has absolutely no idea why it responded. It has no understanding of what it did or what it's saying.

Bill Meyer:

But it is associating and coming up with... Well, I guess what you talk about is how computers are essentially nothing more but everything is an algorithm, right? Everything is algorithmically because everything is computational within the computer. Is that kind of the short way of putting it?

Robert J. Marks:

Yes. In fact, we have known that there's things which have been non-computable way back since the 1930s. Alan Turing, the founder of computer science, he was in the movie The Imitation Game. Alan Turing was played by Benedict Cumberbatch. They're the ones that cracked the enigma code that helped win World War II. But Alan Turing was also a genius. He was a mathematical genius. He was able to show back in the 1930s that there were things which are definitely not computable. Now this was not something which was conjecture. This was a mathematical fact.

Robert J. Marks:

One of his first papers was on numbers which were non-computable. Then he went on to show some other things, the Turing halting problem, and there's also since then a number of different things which have been shown to be non-computable.

Robert J. Marks:

Now, if a computer can't compute something, you have to ask the question, are there things that humans do that are also not computable? And the answer, which is talked about more deeply in the book is, yes. Now there's the obvious ones such as love, empathy, and compassion, anger. I don't think that those will ever be duplicated in a computer. But even more important are the idea that we just talked about. Computers will never understand. They will never experience sentience, and they will never be creative. These are things which are brick walls that artificial intelligence will never go through. Now, artificial intelligence is doing incredible things. We certainly don't want to diminish the accomplishment. But there are also-

Bill Meyer:

Yeah. Certainly. I was hoping if maybe you could touch on here briefly, if you could, Dr. Marks, what is the difference between artificial intelligence and artificial general intelligence? Because you do talk about this, AI and AGI. If you could.

Robert J. Marks:

Yes. Yes. Artificial intelligence is what we see lauded in the news. For example, the sentient chat bot that Google has is an example of artificial intelligence. You got to define things before you talk about them. If you come into my world, there's people tease against the difference between machine intelligence and artificial intelligence and computational intelligence. But I think in terms of the media, artificial intelligence is anything that a computer can do which you look at and you say, "Oh, gee whiz. That's amazing." I think that that's the way the media treats it. That's a good way to talk about it since the common denominator there is that everything is being done by a computer.

Robert J. Marks:

Artificial general intelligence is the belief, and it's actually a faith. There's actually an AI church around this, believe it or not. It is the belief that artificial intelligence will someway and someday duplicate everything that humans can do. Now, if the premise that there are non-computable things that humans do, then this will never be achieved. I like to say that artificial intelligence is written in computer code like Python and C++ and all these other esoteric languages. AGI or artificial general intelligence is mostly written in PowerPoint slides and news releases. We don't see any indication that artificial general intelligence will ever happen. It'll never understand. It'll never be sentient. It will never be creative.

Bill Meyer:

The book is Non-Computable You: What You Do That Artificial Intelligence Never Will. Where do you think that what humans do that artificial intelligence never will? What do you believe here, Dr. Marks, is the source of that non-computable side of humanity?

Robert J. Marks:

Well, we're getting above and beyond computer science and more into the area of philosophy, even though this area of philosophy is being illuminated now. That's the mind-brain problem. And, in terms of humans, the question is is the mind the same as the brain? This has been a debate which has been going

on for years now. If one is a materialist and believes that everything can be described by natural laws and equations and things of this sort, you have no other place to go than artificial general intelligence. In other words, we're all a bunch of meat computers. Yeah. Everything could be done algorithmically. But I think computers-

Bill Meyer:

Are these the same people that think that you can literally take the human brain and upload everything about it into a computer?

Robert J. Marks:

Yes. That is really curious because since part of you is non-computable, the non-computable part of you will never be uploaded to a computer. So only the computable part of you is able to be uploaded to a computer. I tell you, just the computable you is pretty boring.

Bill Meyer:

Just the computable you. I really like that. This is a fascinating book and it really got me thinking and also learning some words that I had never heard of before. I was hoping you could define one of them that I was bringing up to you before we came on, and it had to do with called qualia. Qualia. You say this is something that artificial intelligence just is not capable of. What is qualia?

Robert J. Marks:

Yes. Well, qualia is a type of sentience, and it deals with the perceptions that you have from your senses. When you bite into a lemon, you have a certain taste. When you see the color red, you see a certain color. When you feel pain, there's a certain experience that you had. This goes back actually to the Google bot, this idea that it's sentient. If it's sentient, it better have qualia.

Robert J. Marks:

Let's go through a thought experiment. If you look around your room, you can probably see something that's red. And if you look at that redness for a second, you are experiencing something. You are experiencing red. Now, Bill, you and I can talk about red because we've both experienced red. But imagine explaining red, your experience to a person that's been blind since birth. Now, you can tell them all sorts... What?

Bill Meyer:

That would be next to impossible. That'd be next to impossible to explain.

Robert J. Marks:

Well, you can't. Yeah, you could explain the wavelength. You could say blood is red. You could give all sorts of examples, but duplicating that experience in the blind man through you just talking to them is never going to happen. So indeed, if that's the case, how are you going to write an algorithm, a computer program to have a computer experience the qualia of red. You're never going to be able to duplicate that in a computer.

Bill Meyer:

Or the taste of a lemon to a human biting in-

Robert J. Marks:

Or the taste of a lemon.

Bill Meyer:

Yeah. Okay.

Robert J. Marks:

Exactly.

Bill Meyer:

So is not the weakness in the thought of a sentient artificial intelligent being, let's say, is that every aspect of that individual's programming or of that computer programming was written and encoded by a human? Is that not the case?

Robert J. Marks:

Yes. Yes. And a computer will only do what it's programmed to do. So the problem's [inaudible 00:12:25]

Bill Meyer:

What do you think-

Robert J. Marks:

Go ahead.

Bill Meyer:

Okay. Yeah. What do you think happens, then, as artificial intelligence increases in complexity to the point where it begins to program itself, which is already happening. I'm wondering if that is not a form of consciousness, ultimately?

Robert J. Marks:

Well, there's an assumption and that is that artificial intelligence will be creative because it has to be creative to write something that wasn't intended by its original programmer. There are no cases of artificial general intelligence. Here, you have to go back to the definition. What does creative mean? Creative is defined by a guy named Selmer Bringsjord at Rensselaer, follows something called the Lovelace test. And that asks the question, does the computer program do something which is beyond the expectations or beyond the intent of the programmer? Now this doesn't mean you can't be surprised. I think computer programs surprise us all the time. I think that you might get unexpected results, but it can all go back to the input and the creativity of the computer programmer. If indeed the computer program is limited to the creativity of the programmer, it itself is never going to create artificial intelligence which is better than it is. To date, there has been no computer software that has passed the so-called Lovelace test of creativity. So AI writing better AI is never going to happen in accordance to the Lovelace test definition of creativity.

Bill Meyer:

Is there a possibility, though, that as computing power increases though, in spite of the fact that it may not know what it's doing as far as we're concerned, we don't know the difference. We can't detect it. That-

Robert J. Marks:

Well, II think the computers can simulate a lot. I don't know if you've seen the movie AI with this little boy, I think it was by Stanley Kramer and Steven Spielberg put it out. But this little boy robot was just incredible, a humanoid form. And he was standing there and there was this love button that you pushed. The mother pushed the love button because she wanted a little boy. Of course. The little boy played by... Oh, what was his name? Osment, I think. The same guy that appeared in the-

Bill Meyer:

Yeah. Haley Joel. Yeah.

Robert J. Marks:

Yeah. Yeah. Just an incredible child actor. All of a sudden he came from totally emotionless into an idea of love, of snuggle hugging it. It was just amazing to watch that transition. But the fact that he did that, does that mean that he was experiencing love or was it all computing, which was being done under the hood?

Bill Meyer:

Yes. When humans fall in love, is it a mathematical computation that we're engaging in when a human falls in love?

Robert J. Marks:

Yeah. And I maintain that's non-computable. You can program a computer to say, "I love you." Or you can write a computer program to show empathy, for example, but it doesn't mean that it's showing love. It doesn't mean that it's experiencing empathy.

Bill Meyer:

Elon Musk, I think others like Henry Kissinger, Stephen Hawking's not big fans of artificial intelligence or are they? I know Elon Musk isn't. But why do you think they're wrong about this?

Robert J. Marks:

Well, the interesting thing is that the colleague of Stephen Hawking, who was Roger Penrose, just won the Nobel Prize last year in physics, just a brilliant, brilliant man. Agrees with me. He agrees that there's things within the human that are non-computable. In fact, he wrote this wonderful book, which influenced me a lot. It was called The Emperor's New Clothes or The Emperor's New Mind, I believe it was. Just a wonderful book, which outlines some of the thoughts that I'm talking about here.

Robert J. Marks:

But a lot of these people, including Elon Musk and Steven Hawking, come to this problem from a total materialistic point of view, which is that everything that exists can be explained by science. I think a sub-paragraph of that is that if that's the case, then we are computers made out of meat and everything we do in our mind is computable. And I challenge that. I believe that Roger Penrose challenges that. The

CEO of Microsoft, Satya Nadella, in his book and his biography challenges that. There's a number of people that do challenge that idea that we are 100% computable. So it comes from one's ideology. If you are a firm materialist and you believe everything has to be described by mathematics and physics, well, then you're inescapably in this idea of artificial general intelligence occurring eventually.

Bill Meyer:

All right, Dr. Marks, aren't we just dancing around the subject of the human soul or the spirit? Isn't that really what we're dancing around when we talk about this right now, what's non-computable?

Robert J. Marks:

You know, you can, and here we're getting into theological-

Bill Meyer:

I know.

Robert J. Marks:

-topics, which I guess is fine. I am a Christian and I do believe that there is something which is external to the brain. I think that we have evidence of this. I think that we're starting to get evidence from neuroscience. We're starting to get evidence from different places, out-of-body experiences and such, which are now being documented more than ever, that there is something there beyond the brain. Indeed, this is something which goes back to Descartes. So this is not a new thing, but it's something which has been around for a long time. We're starting to get evidence that indeed the mind is greater than the brain.

Robert J. Marks:

One of the great experiments is something called Libet's experiment, where he showed, and this is really remarkable, that before you want to do something, there is a signal in your brain that occurs before your brain tells you you want to do it. Now, that sounds kind of materialist, but Libet also discovered something interesting: that you can take that inclination, that idea that you want to do something, and you can say, "No." He called it free won't. So it's not the idea that we have free will, but we have free won't and we can turn off those signals from our brain. And that looks to be something which is external to the brain.

Bill Meyer:

That is an absolutely fascinating take on that. I really enjoyed this book. I'm only about a fourth way through. I'm going to get the rest of it through, and I hope to have you back and talk about it further at some point. Dr. Robert J. Marks, his new book is Non-Computable You: What You Do That Artificial Intelligence Never Will. And he expands way beyond what we've talked about in just this 15, 20 minute conversation. Dr., available at all the usual suspects, this book here, Non-Computable You?

Robert J. Marks:

Yes, yes.

Bill Meyer:

And do you have a website? Any social media feeds? People can find out more about you?

Robert J. Marks:

Yeah. As I mentioned, I'm the director of the Walter Bradley Center of Natural and Artificial Intelligence for Discovery. We maintain a bunch of posts and a bunch of podcasts at mindmatters.ai, mindmatters.ai. So that's a good place to go to read more about these things. We have people who are neurosurgeons, psychologists, economists that are all writing and are supportive of the place that I am.

Bill Meyer:

It's a very thought-provoking book in your work. Thank you so much for having joined us today. Be well.