George Gilder on Superintelligent AI
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Robert J. Marks:

Are we in an Indian Summer for AI, or is AI advancing to superintelligence that eclipses the intellect of humans? That's the topic today on Mind Matters News.

Announcer:

Welcome to Mind Matters News where artificial and natural intelligence meet head on. Here's your host, Robert J. Marks.

Robert J. Marks:

Our guest today is George Gilder. George Gilder has penned a new monograph for the Bradley Center entitled, Gaming Intelligence: Why AI Can't Think But Can Transform Jobs, and it's available on Amazon.com. George, welcome.

George Gilder:

I'm glad to be here. Thank you, Bob.

Robert J. Marks:

Great. You say there is reason to believe that AI is currently enjoying an Indian Summer. First of all, I would question the political correctness of Indian Summer. And second, why do you believe that we are on the verge of an Indian Summer in artificial intelligence?

George Gilder:

Well, I just think the dreams that AI is cruising toward a singularity, where it will essentially usurp human minds and then transcend the capabilities of human minds, is delusional. And so today, everybody's talking about AI. And part of the mystique is the idea that AI and machine learning, where machines learn to recognize patterns without having the patterns fully specified ahead of time so that the machine can actually learn a subject by identifying repetitive patterns in it. This process, at some point, will allow the machine to design new machines, replicate themselves, and then design ever-better machines that ultimately acquire an intelligence that can be projected off into the universe and can populate the universe with machine mind. And this dream, it's sort of a religion of the nerds. It's the materialist superstition, a belief in a flat universe where there's nothing but material and the laws of chemistry and physics.

George Gilder:

This idea that ultimately human beings can retire to beaches on a guaranteed annual income. Well, maybe Brennan Page of Google and the other AI entrepreneurs fly off to nearby planets with Elon Musk in a winner take all universe. This is the dream of AI, and it's all going to come a cropper. AI can't do any of that stuff. It can do jobs that human beings define. It can perform with tremendous speed and efficiency, but it doesn't begin to threaten human minds, to usurp human minds. It can amplify and

extend human minds and relieve human minds of rote work that is really below human capabilities. But it doesn't pose any kind of threat to human minds or even jobs for that matter.

Robert J. Marks:

You call superintelligence, which I believe requires creativity. And I think that we both agree that AI and computers can't be creative. You have to have software that creates better software that creates better software, and that creativity is beyond the capability of artificial intelligence. You call superintelligence "the rapture of the nerds" is one of the quotes that I really enjoyed.

George Gilder:

Oh, good. Thank you.

Robert J. Marks:

Yeah. You, as I recall, are neighbors with one of these proponents of AI, Ray Kurzweil.

George Gilder:

Yeah. If you look at closely at Ray's statements, they're becoming increasingly modest. We-

Robert J. Marks:

Are they? Okay.

George Gilder:

... Yeah. The singularity is coming, but the singularity won't really displace human beings. We'll become better. And he understands that the idea of usurping human beings isn't a very popular vision or a very good business plan for Google where he now works as Chief of Engineering. So I'm just saying that I detect a certain moderation in Ray since he first pronounced the singularity.

Robert J. Marks:

There's been, in my perception, a decrease in talking about artificial general intelligence. You mentioned Ray Kurzweil, but I also see that from DeepMind. A few years ago, that was just a really hot topic, but now it's been diminished. We don't hear much talk about AGI anymore.

George Gilder:

That's because AI is application specific, essentially. It can be assigned to specific applications governed by specific symbol systems with specific levels of ergodicity and assumptions that given input will always produce the same outputs, determinist expectations. It's the computer system, and all computers are ultimately application specific.

Robert J. Marks:

What's going to be the future of computing technology? And that's covered quite a bit in your book about Google.

George Gilder:

Yeah. Life After Google is... It will end up serving human minds as computers always do. And I like to compare... I've started doing connectome studies, and I started reading about the connectome of the human brain. That's all dendrites and axons and neurons and synapsis and the human brain, all the various components, as they might be called, of this miraculous human brain from which somehow mind is emergent by some means that people don't yet fully understand it all. They scarcely can model a brain of a worm or a fly, so they really are still rather far short of the mind of a man.

George Gilder:

So the connectome, there've been a whole series of books about the human brain and its connectome. And it was familiar to me because I previously had, for decades, been studying the Internet and the connectome of the Internet. And if you take the whole global Internet, until a couple of years ago, to map all the connections in the global Internet, it took about a zettabyte, that is 10 to the 21st power. And the total memory capacity of the entire Internet measures in zettabytes.

George Gilder:

And thus, I was fascinated to discover in these books on the connectome... And there's one from MIT, and there's a number of them. They're cited in my monograph. And it turns out how big do you think the connectome of one human mind is? It's about a zettabyte. In other words, one human brain is about as densely and complex connected as the entire global Internet. But one human brain functions on 12 to 14 watts of energy, while the global Internet takes gigawatts of energy, billions of watts.

George Gilder:

So ultimately, people just don't really understand mind very well, and so when they talk about mind being a machine, they just don't understand it. They don't understand human beings created in the image of their Creator to be creative and conscious. And all these visions just are absent from the AI model, so that the singularity is achieved, not by a giant advance of technology, but by a delusional diminution of the human mind to a binary machine.

Robert J. Marks:

Interesting. You said enthusiasts for connectome studies must face Stretton's paradox of connectome knowledge. I tried to Google Stretton's paradox but couldn't find it. What is Stretton's paradox?

George Gilder:

This is Tony Stretton who worked with the major biological laboratory at Cambridge in Britain and then came to Wisconsin, where he's been a professor of biology for decades and did the first full connectome of the nematode worm. And he started out thinking this was going to be a simple job to really define all the connections in the brain of a tiny worm, which is the smallest. And it's believed to have a full, discreet brain. And he said the more he learned about the brain of a nematode, the less he felt he knew. He was in the Newtonian... This could be called Newton's paradox, that the more he learned, the less he knew. And the oceans of reality lay still far beyond his reach and beyond his ken.

Robert J. Marks:

So the connectome doesn't suffice for the explanation of what's going on totally, I guess.

George Gilder:

Oh, yeah. Once you get this connectome of the human brain, you still don't know how it works. Well, once you have a complete connectome for the Internet, you probably know how it works pretty well because it's mostly binary computer processes concatenated around the world. And if you can really map them in detail, you pretty much have the definition or the schematic for the entire global Internet. But you define the connectome of a mind, and it still eludes you.

Robert J. Marks:

So just because the human brain has a zettabyte in terms of its connectome, it still doesn't come close to explaining everything.

George Gilder:

Yeah. And so ultimately, computers work to the extent that they serve human minds, and that's always been the way they work. Turing's oracle, he said that no computer can function without an oracle that's independent of the computer itself. And Gödel applied this principle first to all logical systems. They're all dependent on axioms that can't be reduced to the systems themselves, whether they're mathematics or algebra or computer algorithms or whatever they are. They still can't be complete. It's called Gödel's Incompleteness Theorem, and Gödel and Einstein used to discuss this as they walked through the streets of Princeton for years. They were best friends at the Woodrow Wilson Institute of Advanced Studies or whatever it was called.

Robert J. Marks:

I understand that Einstein went with Gödel when he got sworn in for US citizenship, which is pretty cool. I guess they were really good friends.

George Gilder:

Yeah. I forgot that Einstein testified for Gödel to get-

Robert J. Marks:

Yes. Yes. Okay, a little different topic. We've talked about artificial general intelligence being reduced on the spectrum and discussion-

George Gilder:

... And the reason for that is a Turing defined that also, because Turing said the Turing machine, which is a computational machine, a computer, could do anything any other machine mind could accomplish, presuming infinite tape, infinite printer's ink, infinite possibilities. And of course, that's a pretty severe condition. The defenders of the ultimate singularity think you go down to Fry's Computer in Silicon Valley and buy various infinite tapes and infinite memory systems for-

Robert J. Marks:

That's cost too much.

George Gilder:

... But they cost quite a lot.

Robert J. Marks:

You mentioned the Turing's buddy, Jack Good. And I learned from your monograph that again, he was a colleague of Alan Turing, but he first voiced the idea of a singularity in 1965-

George Gilder:

Yeah. He did.

Robert J. Marks:

... He called it an ultra intelligent machine. Was he the first, do you believe, to talk about this idea of an intelligence explosion?

George Gilder:

This goes all the way back to Babbage and Ada Lovelace. And it's all the people building computational machines, always imagined that in some way they were reaching toward the simulation of a human mind. It's really been a dream of computation virtually from its origins. And so lots of people through history have speculated on if you can build a calculating machine that can add subtract numbers, can't you imagine in some future era it will be possible to create a gigantic calculating machine that can simulate a human mind?

George Gilder:

And now we're here, and we are producing these giant binary calculators and imagining that they can simulate or in a singularity reproduce the human mind. And once again, they're failing, but the more they fail, the more they uphold the ultimate goal. It's the religion of the nerds, the rapture of the nerds, as I call it.

Robert J. Marks:

Rapture of the nerds, I love that. Okay. Excellent. I want to talk to you more about some other things. I want to talk to you about what's happening with blockchain today. That's something that you've talked about in your book. Life After Google. I want to talk about carbon computing, but we're going to do that on the next episode, with your permission.

George Gilder:

And quantum computing...

Robert J. Marks:

Okay. Quantum computing, that's a good effort. Thank you, George. Our guest today is George Gilder. George Gilder has penned a new monograph for the Bradley Center entitled, Gaming Intelligence: Why AI Can't Think But Can Transform Jobs. So until next time, be of good cheer.

Announcer: