Neurosurgeon Michael Egnor Why Machines Will Never Think

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SPEAKERS

Michael Egnor

00:04

Our next comments come from Dr. Michael ignore. He's the tenured research professor of neurosurgery at Stony Brook University. He majored in biochemistry at Columbia College and attended medical school at Columbia College of Physicians and Surgeons. He trained in neurosurgery at the University of Miami and joined the neuro surgical facility faculty at Stony Brook in 1991 is director of pediatric neurosurgery at Stony Brook Medical Center, and as director of neurosurgical Education and Research at the medical school is research entails investigation of pulsatile cerebral blood flow and cerebral spinal fluid dynamics and normal physiological physiology and hydrocephalus and head trauma. He has published and lectured extensively in North America and Europe on his scientific research and on the philosophical foundations of neuroscience. He has a strong interest in the mind brain relationship and in the philosophical underpinnings and cultural consequences of our understanding of the mind is published on this topic and evolution news and views in first things and in plow. And hopefully in the future on the Walter Bradley Center website, Dr. Ignore.

M Michael Egnor 01:32

Thank you very much. It's a privilege to be here at the inauguration of the Bradley Center. And to honor Dr. Bradley. And I want to thank Bill, and John and Bob, for this opportunity. over 30 years of neurosurgical practice and reflecting on neurosurgery. The questions that I've had mirror the questions that the Bradley Center is asking. The questions include what is thought? And are humans unique? What is artificial intelligence? And can machines think? And what will artificial intelligence do to us? How will it change us? Neuroscience offers considerable insight into what human thought is, and that insight is not what one would take from the materialist perspective. There are three seminal research projects in the 20th century that give us a deep insight into what human thought is. The first is of Wilder Penfield. Dr. Penfield was a neurosurgeon at the in Canada, and he was a pioneer in the mid 20th century on epilepsy surgery, and he did open craniotomy is with patients awake, he'd use local anesthesia, so they felt no pain, the brain has no no sensation of pain. And he would study their brains by

stimulating various regions of the brain to find epileptic Fossati that he could then treat. So he had experience with 1000s of people who were awake while he was stimulating their brains. And he began his career as a devout materialist. He was a scientist, materialism, he felt explained all of the mind. And he ended his career as a passionate duelist. And this was based on two observations that he made. The first was that when he was stimulate people's brains, he could cause all manner of experience for the patient, he could have the patient raise their arm, you can have the patient moved there lay he could have them move their face, or even say a word, or see a flash of light, depending on where he stimulated the brain. I've had that experience myself, not only as a surgeon, but as as a volunteer, and in a project that used and a magnetic stimulator that just held outside of my skull. And I had my own arm move that same way by stimulating my cortex. And what Penfield found, much to his consternation, was that he could not simulate agency on the part of the patient. That is, when he would stimulate the brain, he would ask the patient who just did that, because the patient would move their arm, they couldn't see what he was doing. So he didn't know they were stimulated. They would always say you stimulated me, You made my mark, my arm move, he would have them move their arm on their own, and then he would make it move, they could always tell the difference. He searched for agency using his electrodes and over 30 years he couldn't find it. So he said the agency is not material. The actual movement is mediated by a circuit, but the agency is something different. The other thing he noted which is a fascinating ops observation that remarkably has gone completely on unquestioned in medical science. Is he asked why are there no intellectual seizures. We've, we know about seizures, people can fall down, they shake all over or you can have milder seizures where you just move a limb, or your face twitches or whether you are you have an abnormal smell or have visual phenomena. But you never start doing calculus when you have a seizure. And you've never contemplate justice and you you never contemplate political science. And the question is, well, if the brain if large portions of the brain are devoted to higher intellectual functioning, why don't seizures occasionally make you do make you take second derivatives instead of just jerk your arm? And they never, ever do. In 30 years of practice, I've never seen a seizure have any intellectual evocation? And Penfield asked, why are there no intellectual seizures? So his answer as to why he could not find agency by stimulating the brain and why he never observed an intellectual seizure was that the intellect and the will in human beings is not in the brain. It's not material, the brain mediates it, but doesn't give rise to it. The second line of research was that a Roger Sperry, who was a Nobel Laureate was a Nobel Laureate working at Caltech, and Sperry studied split brain patients who may have heard of these people and their patients who have had surgery in which the hemispheres of their brain are surgically disconnected, we actually cut through a fiber bundle between the hemispheres. So that the brain now really is two brains, essentially, there are connections deeper down, but they don't connect the hemispheres very effectively. And this is done to stop seizures, there are rare kinds of seizures that start in one hemisphere and spread to the other that if you can disconnect the hemispheres, the seizures are much milder and much easier to live with. So these operations have been done really since since the 1930s. And they work very well. And Sperry took these patients and he studied them in detail, because he wanted to ask what happens to someone's mind when you cut their brain in half. And the remarkable result of sperrys work isn't what he won the Nobel Prize for it when the Nobel Prize because he found a whole bunch of subtle perceptual changes very, very interesting things. The remarkable thing was that he had to do Nobel Prize level research to find any difference at all. That is, I've known many of these patients, I've done the surgery, these have normal people, they meet you meet them and talk to them, their brains are cut in half. But there's still one person, they're completely unitary, they don't have two minds. They don't have two intellects or two wills, none of that. The only differences they have are subtle perceptual things. For example, the left hemisphere is usually the speech hemisphere. And if you have your brain cut in half, only something presented to the your right visual field, which is

the visual field that your left hemisphere sees. Can you speak about, you can't speak about things in your left visual field that your right hemisphere sees because your right hemisphere doesn't have speech. Now what people do is they'll look and they'll they'll they'll cheat even unconsciously. So there are perceptual differences in their differences, that one Sperry a Nobel Prize for figuring out but they're very subtle, your intellect, your will, your sense of self is still unitary, even though your brain is split in half. So what Sperry showed in the same way that Penfield showed that agency and intellect in human beings is immaterial Sperry showed that the mind is metaphysically simple. It can't be cut. You can't split the mind. But you can split the brain but not the mind. The third line of research was at a Benjamin live it Live but as a researcher, I think should have won won the Nobel Prize is a brilliant man worked at the University of San Francisco in the mid 20th century. And live it studied the timing relationship between brainwaves and thoughts. When you think you get brainwaves, usually, and he wanted to know what was the timing between them was that very difficult research because it's hard to time. But he did. And he particularly was interested in the question of free will. So lie but asked volunteers to make a decision to do something and then do it like push like, push a button. And he put electrodes on their scalp. And he found consistently that when you make a decision, a simple decision to do something a yes or no decision that about half a second before you make the decision. A half a second before you're aware of making a decision. You will have a brainwave. The brain fires and then half a second later you say ah I'm gonna push the button. It made it seem as though freewill wasn't real. It may didn't seem as though unconscious brain activity drove you and your thought you chose to push the button but your brain really chose told you to do it and you mistakenly think you have free will. But lie but being afraid Straight scientists didn't stop at that. What he did was rather clever. He asked his volunteers then make your decision to push the button and then immediately veto that decision. Decide I'm gonna push this button. No, I'm not. No, I'm not. And he recorded their brainwaves when they did that. And he found that when you veto the decision, there's no brainwave at all. So you have brainwave awareness of decision veto decision is silent in the brain, but you would veto the decision. So live it said, we might not have free will, but we have free won't. And he was very well well versed in theology. Actually, it was it was rather rather deeply philosophical and theological man. And he said, This is a beautiful scientific example of temptation and sin. He said, We are constantly presented with unconscious brain motives to do things. But we have the immaterial free choice as to whether or not to do it, we can veto it, or we can accept it. So he said the original sin is a real thing, and he measured it in his laboratory. So live, it showed that freewill is real. Sperry showed that the mind is metaphysically simple. And Penfield showed that at least the intellect and Will are immaterial. The second question that I've had is Can computers think? My answer is no. Of course, they can't, machines can't think they will never be able to think. And the reason I believe that is actually a fairly fairly simple line of reasoning. It's a line of reasoning that's been used by philosophers for quite a while. And as a fairly simple way to put it, the first question you can ask is, what is computation? And the answer is pretty simple. I'm not a computer guy. But I'm sure my colleagues who are computer experts will agree, computation is the matching of an input to an output. According to an algorithm. Something goes in comes out, there's an algorithm that determines how what goes in is transformed into what comes out. And that's computation. If you type an essay on your word processor, you're using computation. There's a keystroke, there's a letter that appears the input the output, and the algorithm is the word processing program. If you type an essay making one argument, you use the program and use the computation. If you type an essay making the opposite argument, you're using the exact same computation, the computation could not care less what you're saying in the essay. computation is blind to meaning. It pays no attention to meaning at all. Meaning means nothing to a computer. When you take a photograph, if I take a photograph of a brilliant, sunshiny day, I don't have to use a different camera to take a photograph of a dark night. Because the camera doesn't care what is taking a

photograph of meaning means nothing to the computer in the camera. Now, what is thought? As opposed to what is computation? The best answer to what is thought I think that's been given was given by a guy named Franz Brentano, who's a German philosopher of the 19th century and Brentano. asked, is there any one quality of thought that utterly distinguishes it from matter? Because it seems that the thought is different from matter? He said, Yes, there is said every thought is about something. Try to think of something that's not about something. Can I I'm thinking about Seattle, I'm thinking about how I'm thinking about justice, I'm thinking about a concept. Thoughts always are directed. And he called that intentionality. It's actually a very old term that the Scholastic philosophers used, every thought points to something. He said, matter never points to anything matters just matter. It just exists. For example, this pen, this pen isn't about anything. It's just a pen. Now I can describe aboutness to it and kind of think about it, but the pen itself is just an object. So thoughts, inevitably, always the hallmark of a thought is that it has meaning. The hallmark of computation is that it is blind to meaning. So not only is computation not a form of thought, it's the antithesis of thought. It's the opposite of thought. Computers can never think, not just because computers aren't your mind, but because of the opposite of your mind. Now, interestingly, computers can absorb your mind because they don't care about meaning. So you can represent then on a computer, all kinds of thoughts, all kinds of meanings. Anyone who's searched the internet knows, every possible thought out there is on that is on those computers. But the computers don't know those thoughts. They couldn't care less because they don't think we think. So. This way of looking at thought actually has a long history. It dates back to Thomas Aquinas. And um, I think the best way to understand AI is to say that artificial intelligence is the most important thing that has happened to humanity. I'm not downplaying its importance, but it is not fought. It is an incredibly powerful way to leverage our thoughts. And specifically I like to to paraphrase Pogo, that we have met AI and AI is us