# Discussing Consciousness and the Mind-Body Problem

https://mindmatters.ai/podcast/**ep175**/

Announcer:

If you're listening to this, then at some point in your life, you have been aware of something, probably many things at many times what someone is saying to you, how fast or slow your breathing is, where you are in the world. On its face, it's a pretty mundane observation. But have you ever thought about it in more depth?

Announcer:

What does it even mean to be aware of something, to be conscious? And why do the vast majority of people only have one consciousness? Will computers ever experience consciousness? This week on Mind Matters News, we have Dr. Angus Menuge joining us to discuss consciousness, split personalities and the fascinating world of the mind-body problem.

Announcer:

Now, here's your host, Robert J. Marks.

Robert Marks:

Are we meat puppets limited to scientific analysis described totally by the laws of nature? The question is addressed in the so called mind-body problem. The mind-body problem dialogue is part of a field called the philosophy of mind. And the debate has a very long history.

Robert Marks:

The debate is especially important today because of artificial intelligence. If humans and our minds can be described by materialism, there is a chance that so-called artificial general intelligence or AGI is possible. AGI is the goal of designing a machine with all of the capabilities of humans. So, discussion of the mind-body problem is of more practical importance now than ever.

Robert Marks:

Our guests today to discuss this, we're honored to have Dr. Angus Menuge, who is a professor and chair of the Philosophy Department at Concordia University. And he's the past president of the Evangelical Philosophical Society. His research interests include philosophy of mind, philosophy of science, apologetics, and one of my heroes, C.S. Lewis.

Robert Marks:

He's the editor of Religious Liberty in the Law. And he is the co-editor along with Jonathan Loose and J.P. Moreland of the Blackwell Companion to Substance Dualism. We will provide links for that in the podcast notes. Angus, welcome. It's good to have you and talk to you.

Angus Menuge:

Thanks for having me.

Robert Marks:

You and I met in 2011. It was a conference at Cornell. And the funny thing, you go to conferences, you have introductions, and often you forget those introductions, but we introduced ourselves to each other and we both remember it because it was kind of unusual.

Robert Marks:

Could you relate that story? It's kind of amusing.

Angus Menuge:

Yeah. Well, the part that I remember is that seeing that my name was Angus, you quickly associated me with Angus Young of AC/DC. And I kind of regret it in light of the compensation which philosophers receive that that simply was not the case.

Robert Marks:

Yeah, that was hilarious. If you're not familiar with AC/DC, they're a heavy metal group and their lead guitarist is Angus Young. He's the front man for the group and very different from Angus Menuge, but they both share the name of Angus. And I guess that Angus is a common name in some places of the world, but you're only the second Angus that I'm aware of.

Robert Marks:

Plus, I think the audience can tell that you have kind of an accent. But Menuge, I think you mentioned is a French name but you have a British accent. What happened?

Angus Menuge:

Well, I grew up in England. My father's parents were both from Normandy, France, however. So that's where the French surname comes from. My grandfather though, his folks were from Dundee, Scotland, and my mother decided to give me a Scottish name. So, I am slightly Scottish as well. So, I'm a bit of a strange mix.

Robert Marks:

I talked to a guy that speaks the King's English. And I mentioned to him that in the United States, anybody that talks with a beautiful English accent sounds like their IQ is about 20 points higher. He interrupted me and he said, "No, no, no. Thirty points." And he's right. So, there's something about the sophistication of the British accent which I think is very impressive for some reason across the United States.

Robert Marks:

Well, let's get to what we want to talk about. I know that you are an expert in the philosophy of mind and including the mind-body problem. What is the mind-body problem? How can you explain it in a high level?

Angus Menuge:

Well, the real question is how two such different realms can relate. The classical mind-body problem is if you think of mind and body as substances in the fundamental category of thing, then it would seem that if something is physical, if it's a body, it's extended in space, it's located in space, it's publicly observable, it's quantifiable and measurable.

Angus Menuge:

But if we think of the mind as a thing, going back to the former idea of the soul, then the soul does not seem to take up space, or at least not in the same way. It doesn't exclude other physical objects from space. It has no definite location in space. And it's not the sort of thing that can be publicly observed as we expect in science. We're acquainted with our mind or our soul most directly through introspection.

Angus Menuge:

And I can introspect my mind and you can introspect yours, but I cannot observe your mind and nor can I introspect your mind. So, you have these two very different realms, these two very different kinds of things. And the obvious question is, "How can such two very different kinds of thing interact?"

Angus Menuge:

And Princess Elizabeth raised this question to Rene Descartes asking, "Well, if the mind, for example, moves the body, it seems that bodies are moved by some sort of impulse or contact. But how can something which is non-physical impart an impulse? How can it touch or contact a body?" And so really, the mind-body problem is a question of what is the medium or intermediary between these two realms.

Angus Menuge:

And if one cannot answer that question, many will argue, "Well, then you have to abandon the idea of dualism that there are these two different kinds of substance altogether."

Robert Marks:

Okay. I think, help me out because I'm not an expert in the field, but it seems to me that we only have empirical evidence of the differentiation of the mind and the body recently through so-called near-death experiences. This has got a lot of play in the last, I don't know, few decades. Because right now, we have the ability to raise people who have been clinically dead and they talk about their minds separating from their body.

Robert Marks:

So, I think this is empirical evidence that the mind and the body are not the same or that there's a part of the mind which is not part of the body. Is there any other evidence? And what do you think of ... Do you think this near-death experience is compelling evidence for the difference between the mind and the body?

Angus Menuge:

Well, there's two kinds of evidence that one could give. One is just from a phenomenological analysis of the mind. What is it like to have an experience? The fact that we can have thoughts about other things, intentionality. So, subjectivity and intentionality are properties that we meet in introspection, but which none of the physical sciences seem to disclose.

Angus Menuge:

When you look at somebody's brain in a brain scan or when you think of a person in terms of chemical or electrical or other physical events, there's no reason ever to postulate either subjectivity or intentionality. Now, the near-death experiences that have recently been studied, it's really only recent

because it's only in the past few decades that there have been a large number of people who have been successfully resuscitated and are able to report these experiences.

Angus Menuge:

The evidence here which is most extraordinary and telling are so-called evidential near-death experiences. That is to say that the patient reports from the time at which there was no measurable brain function, witnessing numbers on medical machines, or the location of items like shoes, or facts that were subsequently independently verified.

Angus Menuge:

They actually recall things which we know objectively are true, which they could not have observed from their position when they were unconscious, certainly could not have seen through their eyes because their eyes were closed. And they cannot be written off by hallucinations or a waking brain phenomenon as the person returns. Because, of course, if it were a hallucination, the chances that that hallucination would line up with something we know independently to be fact are next to nothing, especially when somebody accurately reports all the serial numbers on a medical machine. And those numbers would only be observable in the normal way if you were many feet above where the patient's body was.

Angus Menuge:

They seem to provide evidence that there is a possibility of a consciousness which is separate from, distinct from normal brain functioning.

Robert Marks:

That's just fascinating. I find this topic just very fascinating. You mentioned Descartes, and so this mind-body problem has been around for a long time. What's some of the history of the mind-body problem?

Angus Menuge:

Well, one can probably go back further. If you think about the history of thinking about the soul, initially the soul was thought of as the form of the body, what gives a body its life, as well as in rational beings like ourselves, our consciousness. This was the understanding that you have in Aristotle and Aquinas, for example.

Angus Menuge:

But the mind-body problem starts to become severe when you get to the point of Descartes, because Descartes does an analysis of the essence of different kinds of substance. And he's very careful about this. When he looks at the mind, he sees that what's distinctive about the mind is that its states and activities cannot be separated from it. So that you can be wanting something and thinking about something and feeling about something but it's one eye that's doing all of them.

Angus Menuge:

And likewise, you can have multiple experiences at the same time, yet they all belong to one subject. And so, he recognizes that his thoughts and experiences cannot be separated from him. What's different about physical things is they seemed to be aggregates of separable parts. So, if you think about a table, for example, it's made up of parts. The tabletop and the legs, or you could keep on going down to the level of molecules and atoms and all the rest of it.

Angus Menuge:

And it's possible for those parts to be detached and for them to exist separately. But it doesn't seem that thoughts and experiences are like that at all. It doesn't seem that one person's pain could actually exist outside their mind or be transferred to anybody else's mind, either. Part of its identity is tied to the one who is feeling the pain. And the same thing for thoughts in general. And so, his analysis seems to show that mind and matter are fundamentally different kinds of thing or substances.

Angus Menuge:

And so, from that point on, we seemed to have an interaction problem. Many philosophers, materialists like Hobbs, but even people sympathetic with Descartes, raised this issue that they couldn't really see what was the mechanism or the medium by which mind and matter could interact. So, when I wanted to raise my arm, my wanting seems to be something, an immaterial property of my mind. And yet my arm raising is obviously a physical, physiological, measurable activity.

Angus Menuge:

How do we get from one to the other? Likewise, if I damaged my toe and the nerve signals are sent through my nervous system, eventually I have a quale. That is to say, there's an experience of what it's like to be in pain. How is it that there is a kind of a translation between the purely physical and objective and the mental and subjective?

Angus Menuge:

And by the way, people have thought you can solve this problem. Later on, they say, "Oh, well, I can believe an organism is purely physical as a substance, but we have two different kinds of properties." We have physical properties and mental properties. However, Jaegwon Kim, I think rightly points out that here, there is what he calls Descartes' revenge.

Angus Menuge:

People who think they can solve the problem this way haven't thought hard enough because the fact remains that mental properties, like subjectivity, intentionality, that your thoughts are about things, are so different than physical properties that the mind-body problem arises all over again at the level of properties.

Angus Menuge:

In other words, why should my thinking about something or my wanting a drink of milk, why should that mental property have any ability to produce changes in physical properties in my body such as opening the fridge? So, the mind-body problem actually is much harder to get out of than people think. And so, this of course led in the 20th century to many philosophers embracing physicalism and saying, "Well, really, the only way that we can answer this problem is to somehow show that the mental either reduces to the physical or at least it's entirely determined by the physical, so that we don't really end up giving this independent causal power to the mind."

Robert Marks:

Yeah. I've done a lot of work in artificial intelligence on emergence. And I think if you're a materialist, you have to believe that evolutionary-wise, that the mind developed as an emergence of the brain. Yet, there's all of this evidence that indeed, this is not the case, that the mind is much greater than the body

can ever be. So, I'm sure that there's a number of different models of the mind-body problem. What are some of the main mind-body problem models that are popular and discussed today?

Angus Menuge:

Well, there are some like Richard Swinburne who is really a defender of a modified form of Cartesian substance dualism. And he, along with other substance dualists has gone back to this original challenge and argued that it's not compelling. So, one solution is simply to point out that in fact, in general, there doesn't have to be a conceptual or logical connection between causes and effects. That isn't even true at the physical level.

Angus Menuge:

There isn't really any logical connection between a drop in temperature and water turning to ice. Nonetheless, that we discover that there is a reliable connection between the two. And so, some dualists have argued that we don't have to have a theory about how mind and body interact to accept that we have good evidence that they interact.

Angus Menuge:

And so, Swinburne, for example, gives the example that we've known for centuries, that if you stick a pin in someone, it causes pain. So, there is a clear path between the physical event and a psychological reaction. And it appears, all our evidence says that there is a clear causal connection between a mental volition to raise one's arm and the arm being raised. So, one solution is just to say, "We will go with the facts. This is what happens," even if we cannot give a fully satisfying explanation.

Angus Menuge:

Others though would try to say, "Well, we'll have to re-conceive the mind. We'll have to view it as supervening or emerging from the brain." This though ends up with a serious difficulty which again, Kim addresses. If you want to take the physicalist line and say that the physical really is where the causal power resides, and then you say, "Well, from that, these thoughts emerge," it seems that those thoughts have to be epiphenomenal. They can't really cause anything because they're preempted by the states of the brain.

Robert Marks:

That's a big word. Could you define epiphenomenal?

Angus Menuge:

Yeah. Epiphenomenal means that something is caused by something else. So, for example, your desire to open the fridge is caused by a brain state. But on this view, your desire is not what causes your body to open the fridge, your brain state does. And you see this outrageous view, for example, in Daniel Wegner's book, The Illusion of Conscious Will, where he says that in reality, your desires to do things are just causally powerless previews of what your brain is going to make your body do.

Angus Menuge:

Now, most physicalists don't want that. They would like to have a view of mental causation because after all, if we don't do things because of our beliefs and desires, it looks like our behavior isn't rational. If I don't, for example, write down the answer to a logic problem because I could see that that's what

followed from certain premises. In other words, because of my mental reasoning, then it looks as if I'm not really reasoning. Rather, I am doing much the same as most of our computers do.

Angus Menuge:

I look as if I'm reasoning because the engineers put in an arithmetic and logic unit which guarantees that my operations agree with reasoning. But it's not that we think the ordinary computer at least has any insight into logic. It doesn't see that that conclusion follows. It's simply designed so that it will reach the correct conclusion.

Angus Menuge:

So, there's problems with these kinds of physicalist solutions. And it's interesting that over time, they have moved more and more in non-reductionist directions. There are more and more who will use the language of emergence. And yet, they seemed to be in an unstable place. They want the mind to be able to do something because they recognize that if your thoughts don't really direct your actions, they're no longer rational. We can't make sense of why you do things.

Angus Menuge:

Trouble is, there are people like Jaegwon Kim waiting to say that it's hard to see how the mental qualities, the mental properties, of you could cause anything. And he calls this the exclusion problem. Because everything about your states is really caused by the brain, aren't those brain states also sufficient to cause the next state of your nervous system and also everything that your body does? And if they are, then there really isn't any room for your mind to do anything. It becomes a redundant sort of rider, kind of like the surf on the top of a wave. So it's thrown up by the brain, but there's no work for it really to do.

Angus Menuge:

Or Huxley's analogy was, with a steam locomotive, the steam drives the engine and it also is used for the whistle. But the whistle's blowing doesn't contribute anything to the motion of the locomotive. And that's where you seem to end up with that sort of problem. And then, it's amazing now that there are oppositions that are being endorsed which would have seemed quite desperate. Such as panpsychisms, such as the idea, "Well, maybe everything physical has something mind-like about it, and so that eventually mind-like properties emerge."

Angus Menuge:

So, there's been extraordinary proliferation of theories. And about the only thing that people can agree on in philosophy of mind is that all of them have problems. The one thing they have in common is that they all seem to have serious difficulties and are unsatisfactory in one way rather than another.

Robert Marks:

So, that leads me to the question, what is your take? Where do you fall in these different models?

Angus Menuge:

Where I would fall on this is I think there is some truth to substance dualism, although I don't myself entirely like the Cartesian approach. I think that Augustine was right that we can think of the soul or the

mind as being present in space, it's just we have to think in terms of different ways things can be present.

Angus Menuge:

After all, when God is ... we speak of Him as being omnipresent. We don't think that that is by way of being a physical object. Or by excluding other physical objects, he can be present wherever physical objects are. And Augustine's view is that the soul is present in the body wherever sensation is, so it isn't somehow this bizarre entity that Descartes seemed to describe that had no real location.

Angus Menuge:

But I think as well, it's unsatisfactory to just say that, "Well, mind and body interact, that's it and it's a mystery, but we have good evidence that they do." I would hope that we can say something illuminating. My own view and I hear I'm influenced by my background in computers is that I see all the time evidence that there is transmission of information between two realms.

Angus Menuge:

So, when a computer scientist thinks of an algorithm in the abstract such as, say, the quicksort. Well, then once he has that idea ...

Robert Marks:

Describe this quick sort. I guess it's a way of arranging random numbers in order, is that right?

Angus Menuge:

Yeah. The idea of the quicksort is just that you have a list of elements in random order. It selects a pivot. And then, it is a kind of amazing recursive function that partitions the set. And then for each of those subsets, it partitions them. And it's really a brilliant, brilliant algorithm. And when it's all done, everything has been sorted just by dividing them into the categories of pivot, things less than the pivot and things greater than or equal to the pivot, over and over again. It's a thing of real beauty.

Robert Marks:

So, you have an algorithm now that is a step-by-step recursive procedure to do something.

Angus Menuge:

Yeah. I mean, the point is that it's a universal procedure. It transcends any physical embodiment in this way. That once you have that correct algorithm and you have verified it, you can write an indefinite, potentially infinite number of programs to implement it. It could be encoded at the hardware level an indefinite number of times.

Angus Menuge:

So, the idea is very abstract and it can be encoded physically over and over again. Or what's interesting is we just went from something which is intangible and abstract, the algorithm to an implementation which ultimately is a machine switches being on and off which is thoroughly physical. And yet information exists in both forms. So, my view is the information has the right sort of Janus-faced quality to be the intermediary between mind and body.

Angus Menuge:

Simple everyday example is reading and writing. When I read, my eyes interact with physical marks on a page. And yet as a result, I have thoughts then I can store memories. And it seems that these engrams in my brain, they're physical as well. And likewise, as I'm thinking about an essay, I have ideas in my mind. They're translated into things that I can write down.

Angus Menuge:

So, my thinking is that we need to think of the human being as an integrated system. And that integrated system has within it an automatic translation function. And what that means is that we can go from, for example, an abstract volition where you notice that when you want to raise your arm, you don't have to have taken a PhD in Physiology and know what's really going on, right?

Robert Marks:

Right.

Angus Menuge:

You have an incredibly abstract specification. Raise my arm. And every time you do it, it's probably different. And yet, a motor program or probably a suite of motor programs takes over. So, what happens? I think what happens is that your volition is translated into a physical instruction that then implements that volition.

Angus Menuge:

Likewise going the other way, when you stub your toe and signals are sent back to the brain, there is an automatic translation that then gives you a subjective feeling of pain which we say is in the toe. It's kind of interesting. It points to where the damage is which is what you need to know. But it doesn't tell you all about the specific neurological events that have gone on. And you wouldn't want to know that anyway because what really guides your action are very general things.

Angus Menuge:

It would be a very poorly-designed system if every time we wanted to raise our arm, we'd have to know how to adjust each and every molecule in our arm or what specific pattern of nerve signals we would have to send. Well, then we'd be unable to act. And likewise, if what matters is that I don't stub my toe again, all I've got to remember is, "Don't push your toe like that." Rather than worrying about how I did it this time because the odds are I'd never do the same physical movement again.

Robert Marks:

Yeah. Some of us are slow learners, I guess.

Angus Menuge:

Yeah, you're right.

Robert Marks:

Okay. Well, this is great. We've gone for a long time here, but I still have one more question that I want to ask you. And I wonder if you've thought about this. Artificial intelligence and artificial general intelligence now is pushing towards a machine that can totally duplicate the functions of the human.

Robert Marks:

Now, if dualism is true and the mind is not totally contained in the brain, there's something non-algorithmic which is happening external to the human mind or the human brain, if you will. And that seems to have great implications on whether or not artificial general intelligence can ever be implemented. If indeed dualism is true, doesn't that mean that we will never be able to have artificial general intelligence where we have a strict duplication of human performance?

Angus Menuge:

Yeah, I think it does. I mean, I think that there will be artificial general intelligence in the sense that there are very sophisticated learning algorithms that can generalize and so they can move from their initial training domain to work in new areas. So, at the level of just being able to formally solve problems, that's to say that there is a transformation from a problem to a solution, I think that in that sense, you could say there'll be artificial general intelligence.

Angus Menuge:

However, what you're asking about is will it really duplicate everything about the human mind? And there I think, no, because I don't see any reason from these amazing enhancements of the complexity of these systems to think that the system would move from not having subjective awareness to having it or from moving to its states having true intentionality to be about anything beyond themselves.

Angus Menuge:

So, I think that the fundamental issues are metaphysical. We're aware that there's something it's like to be us and that we can think about the world. And we can also think about things which is arguable, no physical system ought to be able to think about, abstract principles like the laws of logic or when we prove theorems about prime numbers. Well, no physical system has ever physically interacted with any of these things.

Angus Menuge:

So, the very contents of our thoughts seem to suggest that we have access to a realm. In a way, it's a somewhat platonic realm. But without getting into that issue, that's certainly a realm of things which are not purely physical. We know, for example, lots of things about the set of integers. There's an infinite number of integers and we can prove theorems, for example, by mathematical induction that apply to every one of them. But all physical causal interactions seemed to be finite.

Angus Menuge:

How then can an AI physical system ever get to the point where it can truly be said to understand or know things about these sets? Yes, it will be able to follow through rules that will come out with the right output that agrees with the mathematicians' output. This is true. But I don't think it can be said really to understand what an infinite set is or what prime numbers are.

Robert Marks:

Even on the most fundamental level, a computer can add the numbers two and three, but it has no understanding of what the numbers two and three is nor does it really understand addition. It can do the operation but has no understanding of what's going on. And so, yeah, I agree with you.

Robert Marks:

I don't think artificial general intelligence, where we have a strict duplication, not a mimicking, I think mimicking is possible, but a strict duplication of human performance, I don't think that that's going to be possible. I think that that is a hard ceiling for artificial intelligence.

Robert Marks:

There is a lot of research happening in modeling consciousness. Panpsychism, quantum consciousness and the integrated information theory are examples of consciousness models that have been getting a lot of press and visibility lately. Before talking about consciousness, it's important to define consciousness. I have been in arguments with people and we go for a long time. And then at the end, we take the time to define the terms we're talking about and find out that, heck we agree, we wasted all our time arguing.

Robert Marks:

So, it's important I think before talking about a topic to define it. So, first, what is the definition of consciousness? Is there a widespread agreement to this definition?

Angus Menuge:

Well, the problem is it's an ambiguous term that is used to denote distinct ideas. There is one kind of consciousness which philosophers of mind have spent a lot of time on called phenomenal consciousness which is basically experience, your awareness. So, it comes along with the idea of what it is like to see a red rose or to smell that red rose or to feel pain.

Robert Marks:

Is this what would be called qualia?

Angus Menuge:

Yes.

Robert Marks:

I think you pronounce it different than I do. Qualia.

Angus Menuge:

Yeah. Qualia or qualia.

Robert Marks:

Qualia, okay.

Angus Menuge:

So, the idea, they once called raw feels because there is something it is like when somebody steps on your toe or if you get an unexpected check from someone, for example. There's a subjective experience that you have. And it seems to be directly accessible to you. You're aware of it. You can't really deny that you're having the experience. And in some sense, although some philosophers question this, you have privileged access to it.

Angus Menuge:

In other words, we take a dim view when somebody is writhing in pain if somebody else says, "Oh, no, you're not really in pain." Because they could be acting but if they feel that they are in pain, they're not going to listen to anybody else telling them that they're not, because they're aware of it directly through introspection. However, it's not the only notion of consciousness. Ned Block tried to distinguish what he called access consciousness. And here, the idea is more cognitive. It moves from experience to representational content.

Angus Menuge:

So, for example, if you're solving a problem in logic or mathematics, there is a content to your thinking. That content might not come with any particular qualia or subjective experience. And yet, it is accessible to your reasoning. So, his idea was that you could perhaps have some qualia that has no particular content. So, you just have a vague pain but it's not a pain that is pointed to anything. And you could also perhaps have thoughts with no associated qualia or experiences or you could have both.

Angus Menuge:

So, a lot of times when you're thinking about something abstract, you might write something. So, you're thinking about prime numbers but you actually use a symbol to indicate them. So then, you would have both at the same time. But they do seem to be distinct.

Angus Menuge:

And then, the other kinds of consciousness appear it seems particularly in human beings, we are also self-conscious so that we are aware of our own awareness. You can, for example, enjoy a sunset but you can also step back and think about your awareness.

Robert Marks:

I've never thought of that being self-conscious is kind of a meta-consciousness, isn't it?

Angus Menuge:

Yeah.

Robert Marks:

That's fascinating. Yeah.

Angus Menuge:

And in fact, there seems almost to be no end to the levels of it. This is something actually that Hegel noticed. So, for example, assuming that we have good reason to believe that other people have minds, I can ... First of all, perhaps I've noticed you and then I'm aware that I'm noticing you. So now, I am self-conscious. But then I start to think that you're conscious. So now, I'm conscious of your being conscious of me being conscious of your being conscious. And there seems to be almost no end to the levels that you could add.

Angus Menuge:

Thankfully, we normally don't. But we, in principle, can become aware on many, many levels. And maybe one of the most interesting is what the late Lynne Baker called the first person perspective. She

noticed that we can be aware, as it were, from the inside of what our life will be like. So, when you're thinking to yourself, "Will I cry at my son's wedding?" That's very different than saying, "Will Angus Menuge cry at his son's wedding?" Or using either a name or a definite description, "No, I'm thinking about what it will be like to be me going through that."

Angus Menuge:

And that shows I have an understanding of myself persisting over time. And likewise, when we regret things that we did in the past or we think about vacations, if such things ever come back again, that we are thinking about what it is going to be like for us to be in those perspectives. And we have a pretty good ability of mental simulation that allows us to empathize. We can't introspect other people's mental states, but we can, to some degree, think what it will be like to be that poor person who is suffering now.

Robert Marks:

I have this experience all the time. I think so much about my consciousness in this meta-state that I don't enjoy life as much as I think I should. I think, "I'm enjoying life," and then I think, "Hey, I'm enjoying life," and I start thinking about my consciousness experience and the entire joy of the experience disappears. It's fascinating.

Robert Marks:

You mentioned qualia. In artificial intelligence, I use this as an example of why artificial intelligence will never exist in the general sense, where you're going to have a duplication. Qualia for example is our perception of the color red. And I use the example that how are you going to explain the color red to a person that has had no sight since birth? You can't do it. You can explain its properties, its wavelength, that apples are red and other things, but the actual experience is cannot be communicated.

Robert Marks:

And if that is the case, how the heck are you going to be able to write a computer program to explain to a computer what the color red is? Qualia is not algorithmic, it can't be computed.

Angus Menuge:

Right. And that ties in well with the famous example of Mary, going back to Frank Jackson. He imagines a woman Mary in a room where everything is black and white and she is black and white as well. And she has studied and knows every scientific fact that there is about the physiology of color vision. Trouble is she's never actually seen anything red.

Angus Menuge:

And then one day, she leaves the room and for the first time sees a red rose. It does seem that she has acquired some new knowledge. She knows now what it is like to see red. And it's interesting one can get around things indirectly. So, colorblind people can stop at stop signs even though they don't have a red quale because they know what the function of that stop sign is.

Angus Menuge:

And they can, in a sense, talk about red things and they know what somebody means in a sense when they say that blood is red, for example. But they don't have that same direct intuitive understanding as the person who has actually seen red.

Robert Marks:

One of the evidences of near-death experiences is people who are blind from birth. They have the ability in their near-death experiences to go outside of their body and actually see. So, they experience qualia that they have never experienced before in their life. I find that fascinating and really a strong evidence of the mind-body problem of dualism.

Angus Menuge:

Yeah. Blind near-death experiences are absolutely extraordinary because they recount information using color terms for colors which they have never actually seen with their eyes. And that's quite extraordinary because it seems as if they had some kind of independent access to them, because it's a difficult question. How could we know what was it like to have that experience?

Angus Menuge:

That's an almost unanswerable question I suppose. But it is remarkable that they can recount things using language that describes things which they have never witnessed.

Robert Marks:

Okay. Let's get back to some of the models of consciousness here. You mentioned this in the last podcast, panpsychism. This seems to me to be a cop-out to people that can't define consciousness in materialistic form.

Angus Menuge:

Yeah. Panpsychism does seem to me a rather desperate move. It wants to say that within all of matter, it either has a mind or in panprotopsychism that it's incipiently mind-like. And that therefore, the mind is somehow a potentiality that's built into matter. And it's just a matter then of getting the right configuration and you will get all the wonders of mind appearing.

Angus Menuge:

One of the problems with this though is, of course, the unity of consciousness because if these individual particles are mind-like and then they formed together, what you would predict and expect is the emergence of many consciousnesses. And in fact, we find the most striking fact about consciousness is that it's unified.

Angus Menuge:

So, that problem which is also a problem for physicalism ... Because, I mean, physicalism has this very complex brain and we now know for certain that the different parts of the brain are used for processing information about different parts of an object, and yet in consciousness, that object is one thing like a blue bowl. It's not as if there is a consciousness of blueness and a consciousness of being a bowl and they're separate from one another. There's this objectual unity.

Angus Menuge:

And I think that that combinatorial problem is a strong problem for panpsychism just as it is for materialism.

Robert Marks:

Yeah. I think the idea of assigning a consciousness to matter the same way you assign mass or energy or something like that is really stretching things. So, there are still people that are really backing the concept of panpsychism. And I suppose if you're a materialist, you don't have a lot of options but that's one of your options.

Robert Marks:

Another model of consciousness is so-called integrated information theory. I had a chat with one of my mathematical heroes, Gregory Chaitin, and we talked about this and I confessed to him I did not understand integrated information theory as being popularized today by Christof Koch. He wasn't the originator, but he's the popularizer of it.

Robert Marks:

And he admitted to me, and I was surprised, he says, "Yeah, I don't understand it either." This brilliant man didn't understand integrated information theory. In his case, he probably hasn't dug into it as much as he could. Do you know anything about integrated information theory? And do you have any opinions on it?

Angus Menuge:

Yeah. I've looked at it. It's a somewhat interesting approach. It admits the hard problem of consciousness, namely that from nothing we know physically, can you predict or explain consciousness. So, it suggests that we go about it in the opposite direction.

Angus Menuge:

What it basically says is that we first do an analysis of the essence of conscious experiences. And we call them, in the theory, the axioms. This is where we're going to begin. And we're going to accept consciousness as it presents itself. Now, that side of it I think is admirable. I get disturbed by eliminative materialists like Paul Churchland who seem to deny that we're really conscious, that we even have beliefs and desires. But these phenomena are there and that's denying the facts.

Angus Menuge:

So, he starts by accepting that there is an accessible intrinsic character of consciousness. And then, from that, tries to infer, "Well, what would the physical correlates of consciousness be like to support these characteristics of consciousness?" So, it's like a reverse engineering project. And what's interesting, too, is that it wants to be a scientific account. It wants to make scientifically testable claims about what the state of the cortex would have to be in order for you to have a conscious experience.

Angus Menuge:

And the idea is that it's correlated with the ability to have integrated representations of a certain kind. And so that when you're comatose or drifting off to sleep, what's happening is that ability to form those representations breaks down. And that's the point at which consciousness breaks down.

Angus Menuge:

So, I think it's worth following and looking into it. I tend to think though, there are going to be some obvious problems with it. It is offering, in effect, an allegedly causal account of consciousness. But the problem is that there is nothing about those physical substrates that really gives you any reason to expect subjectivity to arise. And there is nothing about those stakes that really explains intentionality.

Angus Menuge:

So, you'll see sometimes it will talk about the structure or even the geometry of these representations. I'm not sure what's being said anymore because it seems like there are now physical metaphors being used of our thoughts. So, when I think about a triangle, my thought is not triangular. And intentionality, it really doesn't reduce to anything physical for some fairly obvious reasons. I can think about the future, but the future cannot be physically causing me to think about it. I can think about the Eiffel Tower right now, and it's not closely influencing me. And I can also think about non-existent objects like elves and hobbits.

Angus Menuge:

So, the difficulty is even if you could find some of these causal correlates, most likely, they are just preconditions. It may very well be that normally, if your brain is not in a certain state, you won't be conscious of various things. That's the kind of thing I would expect scientists to be able to give good evidence for. But there's going to be a gap between these causal preconditions for you to be conscious in explaining what it is that you are thinking about or what it is that you are feeling. There's a content there.

Angus Menuge:

And that intentionality doesn't seem to me to reduce to anything physical or be explained by those states of the brain.

Robert Marks:

Okay. I think I have a better understanding now of integrated information theory than I did before. I read a report that Christof Koch gave his theory of integrated information theory to an audience of computer programmers who were very hopeful of a future of artificial general intelligence. And they did not like Christof Koch's claims that this would be not computable in the near future, that we had a long way to go into development of the future. So, that's rubbing people the wrong way, I guess, in some cases.

Robert Marks:

Okay. Another model of consciousness of which I am aware is so-called quantum consciousness. I'm really interested in this because reading the works of Roger Penrose, he maintains that the humans can do non-algorithmic things. And he looked around at the entire universe and he says, "Where do things happen in our universe that are not algorithmic?" And his conclusion was only in quantum mechanics when you have a collapse of a wave function to a specified outcome, do we have something which is non-algorithmic.

Robert Marks:

So, I don't know if this relates to quantum consciousness, but there is a theory and a lot of work done in that area. What's going on in quantum consciousness?

Angus Menuge:

Yeah. So, the idea of quantum consciousness is that quantum phenomena don't seem to develop in the same deterministic or algorithmic way as things in classical physics. And that this might explain human creativity and freewill and other powers of the mind which seem to be incompatible with classical deterministic physics.

Angus Menuge:

So, one view in this area, you mentioned Penrose, his work is rather speculative because he's looking at quantum gravity and those ideas have not really been sorted out and resolved to this point. But Henry Stapp, following a particular interpretation of quantum mechanics, takes the view that perhaps what's going on is that the brain is a quantum system at the level of the ionic activity. And what that means is that there can be a superposition of possible states of the brain. Each one of them, for example, could represent a template for a different action.

Angus Menuge:

So, you're deciding let's say which of five movies to go watch or watch at home. And there all these templates exist in superposition. They all have a certain probability of being selected but no one of them has been selected. What is it that explains why in the end, you watched one movie rather than the others? Well, going back to von Neumann, von Neumann had the idea that what's remarkable about quantum physics is that it seems that the observer makes a difference to the evolution of the system.

Angus Menuge:

So you can have this system where you have all of these possible states and you've got this wave function. What is it that makes the wave function collapse? Why is it that one of these states actually becomes actual? Well, von Neumann suggested that maybe it's the act of measurement. Now, he himself didn't distinguish between a mental act of measurement or a machine doing the measurement, but Stapp does. Stapp speculates maybe the brain is a quantum system and what consciousness adds is selective attention.

Angus Menuge:

So, when you're thinking of five things that you can do, the one that you end up focusing on and selecting is fixated. And then that ends up being the one that is realized and you end up actually doing. So, perhaps it is as it were that your mind measures your brain and that your consciousness causes this collapse of the wave function. And that goes on to explain the particular action that you do.

Angus Menuge:

And that would be compatible with a very strong view of free will called libertarian free will because no physical state of your brain determined what you were going to do next. It was just your conscious attention that really decided in the end which of those possible actions that you did that you weren't simply robotically forced to do it by states going on in your brain as in vagueness system.

Robert Marks:

Is quantum consciousness rooted in materialism? Can you look at a materialistic model of consciousness appeal to quantum consciousness and say, "This is materialistic?"

Angus Menuge:

Gosh. Well, that's a tricky question. Most materialists, their paradigm is really set by older 19th century views of physical science. And so by definition, this goes beyond that. However, of course, if one defines materialism in terms of the latest theories of physical science, then you could say that, "Well, if physical science starts to allow a realm for consciousness, then I can embrace it."

Angus Menuge:

But notice what it does, it will end up in a way trivializing one of the big debates between dualists and materialists. Because if we allow that consciousness is something in itself, sui generis ...

Robert Marks:

Sui generis?

Angus Menuge:

Not reduced with anything else. In other words, it is something of its own type or genus. So, it's analogous to in the history of physics. When they thought that electromagnetic radiation required the medium of the ether and then you had the Michelson–Morley experience that showed that, "No, it doesn't require that, it's its own thing," and we no longer regard electromagnetism as somehow reduceable to something that's mechanical.

Angus Menuge:

Well, likewise, what if physics will conclude finally, "Yeah, this is just hopeless. We can't reduce consciousness to any ordinary physical phenomena, but we just recognize it as its own kind of thing." And in fact, we need it in order to have a complete physics. Because after all, if you want that theory of everything that Stephen Hawking wants, in the end, as Thomas Nagel said, the theory of everything has to include the scientist as well as the world the scientist observes.

Angus Menuge:

Well, if I am going to have an account that fully explains what's going on when a scientist measures a system in quantum physics and deals with entanglement and all these other things, what if it turns out that that account must appeal to consciousness? Does consciousness then become part of physics? If it does, then in a way, the debate between physicalists and dualist dissipates because the physical has just absorbed consciousness.

Angus Menuge:

But the dualists would have won in this sense that they would have cried uncle and admitted that, "Yeah, consciousness doesn't reduce to any of these other things," which is what they'd been claiming for a few centuries.

Robert Marks:

Here is the big AI question. This is what I'm interested in. I know that I am conscious. Is there a way we can test for consciousness in others? And if we can, could we apply this test of consciousness in others to artificial intelligence? Can I test for consciousness in you? How would I do that?

Angus Menuge:

Well, it's a difficult question, but it begins I think with how we are going to generalize on the basis of our data. We find that all individuals naturally, as they develop as children, they develop the theory of mind and that leads them to naturally believe that other people have minds like they do. We are also aware that we do have a mind directly through introspection. And we can see that other people are relevantly like us in every other respect.

Angus Menuge:

So, it's very reasonable to conclude, because it's our natural judgment but because other people are like us in every other respect to conclude that they have minds. The problem is that when you move to artificial intelligence, artificial intelligence is so different from human beings, that now it is not an obvious or reliable extrapolation. So, when I test your consciousness by seeing if you produce pain behavior, part of the reason that that is convincing to me is I'm already convinced that you're the kind of being that could have a mind.

Angus Menuge:

With AI, the problem is I'm not already convinced of that. And because the system is so different than us, we run the problem that it might produce all the same behavior. It might simulate all of the behavior you would expect from someone who is conscious. Surely it's easy to program a robot for example that says, "Ow," and withdraws its hand when it touches something that's hot. It can have heat sensors and it can be programmed to do all that stuff. But that doesn't give me enough reason to think that it's really in pain.

Angus Menuge:

And part of the problem is is because it is so different from me in terms of its makeup. It's different from me in all these other respects. And therefore, I'm not confident that it's a reliable extrapolation.

Robert Marks:

Yeah. That seems to me to be the problem is differentiating between whether or not consciousness is being duplicated or mimicked. And I think that that would be a hard frog hair to cut.

Angus Menuge:

I think so. Yeah. And it is an odd situation because theoretically, it could be that there is something it is like to be this robot or AI system, and yet we would be in a position of being permanently agnostic about it.

Robert Marks:

We hear of Dr. Jekyll-Mr. Hyde dual personalities, but most of us only have one consciousness. What's the deal here? Why do we display a so-called unity of consciousness? Let me start out the questioning. What is the so- called unity of consciousness? It's an area in philosophy, is that right?

Angus Menuge:

Yeah. Going back a very long way, it's mentioned by Plato and Aristotle and later on by Kant, some of the great minds. It's the issue that there seems to be a remarkably singular conscious field. So, we can have many experiences concurrently. So, when you see a sunset, you hear the whooping of cranes go by, you smell the aroma of coffee and you feel the wind going through your hair, and yet all of those are unified in one conscious field.

Angus Menuge:

So, it's not as if there is one consciousness witnessing the sunset, another consciousness hearing the cranes, another one feeling the wind, another one smelling to coffee. No, they are all experiences metaphorically located within one field of consciousness. And this problem has become even more remarkable as we know more about the brain because we now know that the brain is a highly distributed, it's a parallel-distributed system.

Angus Menuge:

And we know that even with just one object, I mentioned before the example of that blue ball that's bouncing, well, the part of the brain that's concerned with color, and the part of the brain which is concerned with shape, and the part that's concerned with motion are all different. And yet, we integrate that and we are conscious of one object. So, there's a unity both in the sense that many experiences belong to one consciousness, but also that we experience objects and activities as integrated halls within that experience.

Robert Marks:

That is fascinating. I've learned about, what was it, it's called a split-brain operation where people that are epileptic sometimes go in for operations. The neurosurgeon goes in and separates the right and left hemispheres. Because I guess what happens as I understand it is that the signal for the epileptic fits starts on one side and it's communicated to the other side.

Robert Marks:

But by splitting the brain, you eliminate that path from one side to the other and therefore get rid of the epileptic fits. The part I found fascinating in the split-brain experiments, according to talks with Michael Egnor, is that the peoples don't change their personalities very much. And it seems like they don't change their consciousness. That to me is astonishing. That really seems to contribute to this idea of unity of consciousness in a very strong way.

Angus Menuge:

It does because early on when those experiments were first done or treatments for patients, it was thought that, "Oh look, we can split consciousness, and now there will be two consciousnesses, one for each hemisphere." But Tim Bayne who is an expert on the unity of consciousness says, "No, really the best explanation of what is going on is that there is one consciousness that can split its attention and it's doing two different kinds of processing depending on the hemisphere involved."

Angus Menuge:

And so, it might be that one hemisphere doesn't have everything it needs for certain kinds of cognitive tasks. But it's really one consciousness that's splitting its attention two different ways. It's not two different consciousnesses, according to him.

Robert Marks:

We hear about, at least in the movies and this is about all I understand about it, of split personalities. People who turned into a Dr. Jekyll, Mr. Hyde. Sally Field starred in a, I forget what the name of the movie is, but it was about a girl that had numerous split personalities. And would we say here that this is an exchange of consciousness? Is this just something in psychology as opposed to philosophy? Or what's going on here?

Angus Menuge:

Well, it seems to me the best explanation of what's going on is that there is a change in the access to certain information. There's really one subject, but just as in a split-brain cases, it can switch its attention. So, in these different modes, what you find is that one personality finds memories and experiences of another personality inaccessible much like the Jekyll and Hyde account that you gave.

Angus Menuge:

But there isn't really a reason to think that there are multiple subjectivities or conscious subjects. It's just that this one subject can enter different modes and the kind of information and experiences they have in one mode then is not necessarily accessible in another mode.

Robert Marks:

That's interesting. So, the single dose of consciousness is always applicable, but it's like a little switch is thrown to switch you from a Dr. Jekyll to Mr. Hyde and you don't relate to the other one while you're doing the switch. I remember the name of the Sally Field movie. It was Sybil, S-Y-B-I-L. It was in 1976. And she goes through, because of abuse as a child, all of these split personality traits. So, that is really interesting stuff.

Robert Marks:

What is the idea of too many thinkers? That's also a field in philosophy, too many thinkers. What's going on here?

Angus Menuge:

The too many thinkers problem is one that arises for what are called complex views of personal identity. The simple view of personal identity is that your soul or your mind is always you. That's a kind of a dualist view. The complex view is, no, it's based on some kind of continuity, either continuity of brain states, physical continuity or continuity of memories, mental states. And in the scenarios that are described, they create problems for this view.

Angus Menuge:

Here's a few examples. Suppose that there is an ontological three-dimensional copier. It can duplicate people physically. So then, you and your doppelganger which is just like you in every way physically, you kind of share a common origin. This copy was made from you and there's continuity. Since the

continuity is there, it would seem that there's now two of you. The problem is there can't be two of you because two things cannot be one thing.

Angus Menuge:

There's another problem raised by Richard Swinburne. He imagines that he's going to have an operation where each of his cerebral hemispheres is placed in another person. So, you've got to think that there are two other people. One of them has a missing left hemisphere. The other one has a missing right hemisphere. Your left hemisphere goes into the first one, your right into the other one. Well, they are continuous with the original you.

Angus Menuge:

And so, it would seem that if you based identity on continuity, they both have to be you. But they can't both be you because two things cannot be one thing. The options really are either that you don't survive at all or you survive as one of them rather than the other one but you can't survive as both. And this has been developed even further when we consider what's necessary for consciousness according to materialism. It must be that it is having the right kind of neurological complexity.

Angus Menuge:

Well, the problem is that we see that someone can continue to be conscious even though their brain is being changed by an operation or something has been added to it. And yet, they're the same consciousness. Secondly, that over time, your brain from the point of view of physics, looks mostly like a cloud of particles. And yet, you remain the same person.

Angus Menuge:

Or here's the difficulty. There are many candidates for the brain that could generate consciousness at one time. So, in other words, your whole brain or many, many subsets of it would all be sufficient according to materialism to generate consciousness. So then, why aren't you many consciousnesses at one time? Likewise, over time, if your brain is this constantly changing cloud of atoms with bits of matter being added and removed all the time, why don't you keep changing from one consciousness to another? In other words, why do we even stay the same person over time at all?

Angus Menuge:

And it would be a total fluke to say that all these different clouds of atoms would always produce the same consciousness. Whereas if you take the simple view, well, it's because there's something constant. You have this one soul at and over time, and that explains why you are one consciousness at and over time. The physicalism seems to implausibly predict that you should be many consciousnesses at one time and many over time. And this is just not what we observed.

Robert Marks:

I looked up some information because one time I heard that the entire mass of your body changes every seven years or something like that. And looking deeper into it, that isn't the case. I guess there's cells that change quite a lot. And then there's cells that don't change a lot. And one of them, for example, is the neurons that you keep the same neurons.

Robert Marks:

One that I was really dismayed to hear about was fat cells, that they last forever. And they have kind of an immortality associated with it. But it did not address what you alluded to which was the idea that they are probably replaced maybe one atom or something at a certain interval of time. And the fact that you remained still the same person is frankly astonishing.

Angus Menuge:

Yeah. Because if 100% of your neurons are sufficient to generate consciousness, and so are 99.9% and 99.8%. When you look at all of those subsets, why doesn't each one of them generate a different consciousness? And the same thing as, yeah, over time, lots of parts are being changed in various ways, why don't they keep generating different consciousnesses instead of what we see is there's continuity?

Angus Menuge:

And we notice from our own experience because when you're listening, for example, to a phrase in a symphony that you are listening to, you have the sense, "Oh, yeah, here is that theme coming around again." That presupposes that you are the same person who heard that theme the first time. There are experiences that we have ... Likewise, when you do a demonstration in mathematics and logic, you're reliant on the fact that you're arguing from premises that you previously understood. And you know where you are in the proof based on lines that you have already proved and know what you're moving on to.

Angus Menuge:

All of those kinds of thinking presuppose that you're the same person from beginning to the end of the proof. Otherwise, you wouldn't really be the one drawing the conclusion. It would be like one person was studying the problem and another person, the conclusion occurred to them, but they didn't reason from the premises to the conclusion.

Angus Menuge:

Same with our actions, I mean, what's the point of doing all that work in pre-med or pre-law if it's somebody else who goes to law school or med school? Because given the debts, you might want to do that, right? But nonetheless, that's not actually how we think. We are planning our own future based on our current actions assuming all the while that it is going to be us that does these things.

Angus Menuge:

If we can't account for that kind of identity over time properly, we actually undercut the rationality of human action. Why is the scientist bothering to do these experiments to confirm or refute his theory if it's not going to be him or her who ends up discovering the results?

Robert Marks:

Let me end our discussion together by asking you an outlier question. Elon Musk is developing something called Neuralink. It's a chip which goes into the brain. And it seems to me that its immediate application is going to be to those that are handicapped. It is going to be able to allow them to communicate directly to objects that they can't control normally because of their handicap.

Robert Marks:

Do you see something like Neuralink or augmentation of the human brain ever changing our consciousness and what we consider it to be conscious?

Angus Menuge:

Well, it's going to depend on what we mean by consciousness because it could change our access consciousness. What it can do is it can repair deficits in the flow of information so that now, a person is able to say or do something because there was a problem in sending that information to their organs and they were not able to do it.

Angus Menuge:

And likewise with hearing, there are going to be chips that will actually repair some of the neurological damage and that may restore hearing to people. But it's not that the basic ability to be aware of something has been changed, that phenomenal consciousness, either you have it or you don't, it's just that what you're able to access and do with that consciousness will be improved by improving the flow of information to and from your consciousness.

Robert Marks:

But it won't change the consciousness per se?

Angus Menuge:

Yeah, not what it is in itself, just its contents. In other words, you'll be able to be conscious of some new things. I mean, this is not surprising really. When you think about it, if you put on infrared goggles, you can see things in the dark that you couldn't see before. That didn't give you some consciousness that you didn't have in the sense that you went from not being aware to being aware. It's rather that now, you are aware of different things. So you've got access to information which you didn't have before.

Robert Marks:

That's interesting. When I do mathematics, for example, I can only add or multiply two numbers at a time. That's the reason if I multiplied like 619 by 413, I have to write it down because that paper is my short-term memory on what I'm doing. I can only do one multiplication and then a carry at a time.

Robert Marks:

And it doesn't seem to me that Neuralink is going to improve that. I think that people think that we are going to be super people with super abilities to think and create. But I cannot comprehend that improving what I do which is kind of one thing at a time with, of course, a short memory. You mentioned about doing a proof. You have to have that short-term memory about where you're going and what you're trying to accomplish. But I don't see that as helping very much. Do you have any thoughts on that?

Angus Menuge:

Yeah. I mean, the instruments will obviously speed up the time before we get to a result. But really, what we're doing is we're delegating something to a machine. Just like when we use a calculator or a computer, it doesn't in and of itself make us any more conscious. So, we will be aware of the answer more quickly, but we won't be aware of thinking to the answer more quickly because, in fact, this device is going to be doing that transformation for us.

Robert Marks:

Yeah, that's interesting. I think probably with the Neuralink, I could say what's 438 times 528 and just refer it to a search engine and they'll give me the answer without me going through all of these steps at a time. So, I can see acceleration in that sort of sense. Great.

Robert Marks:

We have been talking to Dr. Angus Menuge about some fascinating things on the unity of consciousness and the idea of too many thinkers, some philosophy that I think has some great applications in artificial intelligence. And we thank Dr. Menuge for the time that he spent with us.

Robert Marks:

Dr. Menuge is a professor and chair of Philosophy at Concordia University. And we're going to have a lot of information in the podcast notes about links to his books and some of the other things that are going on in his world. And we will continue this next time on Mind Matters News. Until then, be of good cheer.

Announcer:

This has been Mind Matters News with your host Robert J. Marks. Explore more at mindmatters.ai. That's mindmatters.ai. Mind Matters News is directed and edited by Austin Egbert. The opinions expressed on this program are solely those of the speakers. 