

Redefine Your Reality & Unveil the Secrets of Your Conscious Mind

Dave Asprey:

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Announcer:

A state of high performance.

Dave Asprey:

I've reached into the thousand legacy episodes of the podcast to bring you this incredible conversation because it's changed so many lives. You're going to get a lot of value from the ideas in this episode, and if you're hearing it for the second time, you're going to get more than you did the first time. And frankly, a lot of people don't hear every episode. This is one of the greats.

If you like the show, I'd like your advice. Go to daveasprey.com/podcast and let me know what's working. And I'm sending a quick note of gratitude to you for being a Human Upgrade listener. Thanks for spending your time and your energy here with me, expanding your knowledge, exploring your performance, and figuring out what you're actually capable of. I think we're all nicer when we do that. Stay connected with the podcast and with me on Instagram or Facebook. The handle is @TheHumanUpgradePodcast. Thank you.

Announcer:

The Human Upgrade with Dave Asprey.

Dave Asprey:

Today's guest is Anil Seth. He's a leading researcher, writer, and public speaker on consciousness science, neuroscience, and artificial intelligence. He's a professor of cognitive and computational neuroscience at the University of Sussex and Founding Co-director of the Sackler Centre for Consciousness Science, and he's working to understand the biological basis of consciousness by bringing together neuroscience, math, AI, computer science, psychology, philosophy, and psychiatry.

Anil, welcome to the show.

Anil Seth:

Oh, thanks for having me. It's a pleasure.

Dave Asprey:

Your TED Talk in 2017 about how your brain hallucinates your conscious reality went nuts and has 7.4 million views. Did you expect that when you went on stage at Ted?

Anil Seth:

Definitely not. When I went on stage, I was just worried about getting through it without forgetting what I was going to say and getting this whole terrifying experience behind me. I don't think anybody really expects their video to be viewed that many times, so it was definitely a surprise. A very pleasant one.

Dave Asprey:

What did you mean when you said, "Your brain hallucinates your conscious reality"? Epic title, by the way, but what's the gist of that?

Anil Seth:

Well, the title is funny because actually, one thing I didn't know in advance, but the title of the Ted Talk is about the only thing that you don't get to choose yourself. So that wasn't my title, and it can be misunderstood because one way people have misunderstood it is that as something that we just make everything up, that there's no objective reality out there, and that everything is just the product of the mind. That's not what I'm saying at all. If you go and stand in front of a bus, you'll know it. It's not just a figment of your imagination. And a few people advised me to try that because they disagreed with what I was saying. I'm not saying that.

What I mean is that it goes back to this old philosophical idea of the distinction between appearance and reality. So, let's just assume there is a real world out there. I mean, that's really a question for physicists

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rather than for neuroscientists like me. We certainly perceive that there is a world out there and we perceive the things within that world to be real. So when I look outside of the window and I see blue sky or clouds, because I'm in England, these things seem to really exist, like the tree outside the window also seems to exist, seems to have a particular color.

But then we know, for instance, colors, colors don't exist as colors out there in the world. All that's out there in the world is electromagnetic radiation of various sorts, who knows what else? But there's certainly nothing that is actually red or green out there in the world. I mean, we've known this since Newton. The brain is inventing colors from combinations of wavelengths. So, color is a sort of perceptual construction. And I think that same thing goes for everything that we perceive, not just colors, but for all the attributes of the world that we experience around us, and critically, for how we experience ourselves. For the experience of being me or being you, That's also a construction.

Now, the reason we use the word hallucination is because people typically think of hallucination as something very different from normal perception, that if you have a hallucination, you're really perceiving something that isn't there.

The point I'm trying to make, and I'm sure we'll get onto this in more detail, is that there's really the same process going on. The same things in your brain are happening when you are having a hallucination, perceiving something that other people don't, as when you are engaged in normal perception. There's just some aspects of the balance has changed.

Dave Asprey:

Philip Goff teaches us at Durham University in England. He wrote a book called Galileo's Error: Foundations for a New Science of Consciousness. You have to read this book because he goes all the way back to the foundations of the scientific revolution.

Philip, welcome to the show.

Philip Goff:

Thank you very much, Dave. Good to be here. Good to chat to you.

Dave Asprey:

Did you catch a lot of crap when you said, "Look, we need to rethink what science is to solve the problem of consciousness"? Did all the hardcore skeptics, science people say, "If you don't believe in my hypothesis, you're a bad person"? Did they just come after you?

Philip Goff:

To an extent, but I think it's amazing how much has changed recently. I mean, for a lot of the 20th century, you couldn't talk about consciousness. It wasn't seen as a suitable topic for serious science, and people couldn't get jobs if they were interested in working on consciousness. I think a lot has changed, maybe from the 1990s onwards, and now, it's broadly agreed that consciousness does pose a serious challenge for science. It's a serious scientific problem. But I think people still thought of this approach, "Well, we just need to do more neuroscience and we'll crack it. We just need to carry on with our standard methods of investigating the brain."

But I mean, I think what people are seeing more recently and coming to think is that in many ways, this isn't just a standard scientific problem, and the conventional tools of a scientific method that serve us so well in many contexts are not really ideally suited for this purpose, in fact, as I argue in the book, that they weren't designed for this purpose.

So I think, yeah, you still get a lot of resistance because I think that these questions of science and how we find the truth, people get very passionate about it and it's wrapped up in their sense of who they are and all that. But I think there really is, in the last five or 10 years, people really taking a different approach to consciousness, and it's really exciting times.

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Well, this is another thing that's changed so quickly. I guess 30 years ago, panpsychism was just laughed at insofar as it was thought about at all. I was actually, when I first finished my PhD and started looking for academic jobs, well-meaning professors said to me, "Maybe don't mention that panpsychism stuff." But in the last five or 10 years, it's really become taken very, very seriously in academic philosophy, partly because of the rediscovery of certain very important work from the 1920s by the philosopher Bertrand Russell and the scientist, Arthur Eddington, who is incidentally the first scientist to confirm Einstein's general theory of relativity after the First World War that made Einstein an overnight celebrity.

And that work got forgotten about for a long time. I'm inclined to think these guys did, in the 1920s, for the science of consciousness, what Darwin did in the 19th century for the science of life. And it's a real tragedy of history that it got forgotten about for so long, but it's recently been rediscovered in academic philosophy and it's really causing a lot of excitement. So, that's one reason this is getting taken very seriously.

Another reason is, and we can talk about the details there, another reason in neuroscience, the emergence of the integrated information theory of consciousness, one of leading neuroscientific theories by the neuroscientist Giulio Tononi, which is one of the most respected neuroscientific theories of consciousness, but also has some panpsychist implications.

So I think for these two reasons, this view that was just laughed at, is people are starting to say, "Hold on, there might be something here." I guess also because this has just proven, consciousness, such an intractable problem that people are gradually more open to slightly alternative approaches.

Dave Asprey:

Can you define panpsychism in one sentence?

Philip Goff:

Yeah, I can define it one sentence. Consciousness is everywhere.

Anil Seth:

Perception doesn't come from the outside in, it really goes the other direction. It comes from the inside out.

So again, back to this simple example of colors. Colors aren't there in the real world in the first place. The brain is projecting colors into our perception as a way of interpreting what's happening in the world. So it's not really a question of filtering out some stuff and leaving the rest. Certainly, the brain is selective about what signals it responds to in the world, but what ends up populating our conscious experiences, what ends up forming our perceptions is not simply a process of selection. It's an active process of construction.

Dave Asprey:

So you and I are sitting here, we may be looking at the same electromagnetic smog. I'm experiencing it as espresso with Brain Octane in it, and you're experiencing it entirely differently. You're doing your own thing. But how does this impact what I'm going to do all day, the way I interact with you? I'm not sure that there's a "so what" here, is there?

Anil Seth:

Well, there is. I have to front up and say, from my point of view, I've just been interested in this because of the nature of the question. How we come to experience the world in the self is just like... I mean, there doesn't have to be a, "So what?" It's just fascinating, right? Who am I and how do I perceive the world in the way that I do? Just fundamental questions.

But there are implications as well, and these implications really do arise from the fact or the implication that each of us can perceive the world differently from each other, and that we can ourselves perceive the world differently at different times of our lives. And we also noticed through, for instance, mental illness in psychiatry, a lot of the symptoms of mental illness and certain psychiatric syndromes,

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conditions, are expressed through changes in perception. We perceive the world differently or we perceive ourselves differently.

And so understanding how these perceptions are constructed by the brain and the body gives us a root to understanding what's happening in these psychiatric conditions and then coming up, potentially, with diagnosis and treatments. But there's also the positive side, which is that we can train ourselves maybe to perceive the world differently than we do now to optimize our perceptions perhaps. And also in recognizing that we do perceive the world differently from each other, I think it opens a space for cultivating a greater understanding in situations where people disagree about stuff.

Philip Goff:

What we mean by consciousness here, that's a little bit of an ambiguous word. People often understand something quite sophisticated by that, like awareness of self, awareness of your own existence. And that's something maybe a sheep doesn't have, nevermind an electron. But all we mean by consciousness here is subjective experience, pleasure, pain, visual or auditory experiences. So human experience is incredibly rich and sophisticated. This is the result of millions of years of evolution by natural selection, but horses' experience is less complex; a mouse, less so; the experience of a bedbug, less so again.

Dave Asprey:

But there's still some in there, a tiny grain of it, as you go down?

Philip Goff:

Yeah.

Dave Asprey:

Okay.

Philip Goff:

So the idea is when we get down to the basic building blocks, they have almost unimaginably simple forms of experience. So we're not sitting there thinking the electron is feeling existential angst or something. It's just got some almost... We can't really get a grip on how simple this kind of experience would be. But yeah, that's the position.

It depends on your interpretation upon psychism. To think about the integrated information theory, according to this view, you get consciousness at the level at which there's most integrated information. So for example, according to IIT, a tree does not itself have consciousness because it's probable that there's more integrated information in the cells of a tree than there is in the tree as a whole. So according to IIT, we should think of a tree as sort of a community of conscious cells rather than the conscious thing in its own right.

And what is notable about the human brain is that the incredibly mind-blowing degrees of integrated information with every neuron, the cells of the brain, connected to 10,000 others yielding trillions of connections, and the way the brain stores information is dependent on that network of connections.

So coming back to your coffee cup, there's probably more integrated information, I would say, in the molecules making up that coffee than in the cup of coffee itself. So according to IIT, we'd say maybe the molecules are conscious, maybe the parts, but the cup of coffee as a whole is not itself conscious.

I did a terrible thing then of using an acronym without defining it, but yeah, the integrated information theory of consciousness that I mentioned earlier of Giulio Tononi.

But this is just one approach to consciousness. But I think what I'm more engaged in is a more general philosophical project that could be applied to many different scientific theories of consciousness. It's more of a broad framework. If you think about, by analogy, the idea of evolution by natural selection that Darwin came up with, that's a very general framework of idea about how life emerged. And then of course, it takes a century to fill in the details to get DNA. We're still doing it now.

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So, this form of panpsychism inspired by Bertrand Russell and Arthur Eddington is a very general framework for bringing together what we know about ourselves from the inside with what science tells us about the body and the brain from the outside, to bring them together in a single, integrated picture of reality.

Dave Asprey:

That's the most perfect statement. It's why I wanted to have you on the show.

Announcer:

The Human Upgrade with Dave Asprey.

Anil Seth:

There's been a long-standing question about whether you can train non-synesthetes to have synesthetic experiences. So if I told you it would be easy to train yourself so that you'd perceive a blue sky as green, you'd probably say, "Well, that doesn't make sense because the sky is blue." So it's, I think, counterintuitive for a lot of people that perception can be trained because they experience their perception as this kind of direct reflection of reality. And if it's a direct reflection of reality, well, there's no space for it to be different than it is.

But of course, yes, you're right. We can train it.

Dave Asprey:

We can? Okay.

Anil Seth:

But the previous attempts to do this had not succeeded. They didn't have long enough experiments, long enough training protocols. I mean, in our first experiment, we had our volunteers come into the lab for half an hour a day, every day, for five days a week, for nine weeks. And that's quite a logistical challenge for any lab and it kind of ate up all our resources for a long time. But turns out, that's the sort of thing you need in order to get somebody who sees text just in the color that it is to start seeing a black letter K as red, let's say. That's what you need. You need to really hammer that association in.

Dave Asprey:

What's the coolest thing you've ever taught someone to do they couldn't do in this field?

Anil Seth:

Oh, I would have to say it's probably the synesthesia example. I mean, we're not generally doing a lot of these cognitive training experiments, but we've wanted to focus on synesthesia because it's so immediate, because it really does change your visual experience. And it also gave us something to look at in the brain.

So we know, for instance, there are certain characteristics at the level of neurophysiology that distinguish natural synesthetes from non-synesthetes. One of these, for instance, is that the visual cortex is more, we like to call it, excitable. So basically, how ready are the neurons in your visual brain likely to fire? They're just sort of buzzing around. And the way we assess that is we give a little electrical impulse to the visual cortex using something called transcranial magnetic stimulation, which is a way of injecting energy, and then we measure the kind of echo, the response to that. And so what you can do is if the brain is more excitable, then you see a larger response to this perturbation, to this little pulse.

As humans, we don't just passively experience this stream of sensory information. We're always actively sampling our worlds. We are deciding where to look. We're deciding what to pay attention to within our visual field. And of course, if we are looking for news online, we choose the media sources that we find out about the world from. In perception in neuroscience, we call this active perception or active inference, active sampling, this idea that we are not just passive recipients of a waterfall of sensory information.

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And this is a major driver in how we can come to perceive things differently, whether it's ourselves through training or whether it's how different people can perceive the same thing differently because even if it's the same objective world, yes, they can have exactly the same sensory data and come to different perceptual conclusions about it, but also on top of that, they're not going to be sampling the same world in the same way. They're going to be sampling different parts of it. And as they do that, you can build up these reinforcing circles that entrench different kinds of perceptions and different kinds of beliefs.

So in the US, it's no surprise that somebody who watches Fox News is going to have certain political viewpoints reinforced as compared to someone who watches CNN can have other kinds of political beliefs reinforced.

Philip Goff:

Well, a key moment in the scientific revolution was Galileo's declaration that mathematics was to be the language of the new science. The new science was to have a purely quantitative vocabulary, and this had never been done before. But Galileo knew quite well that you can't capture consciousness in those terms, and that's because consciousness is an essentially qualitative, quality-involving phenomenon. Just if you think about the redness of a red experience or the smell of coffee or the taste of mint, you can't capture these kind of qualities in the purely quantitative vocabulary of mathematics. You can't capture in an equation what it's like to see red.

So anyway, well, we can argue about this, but let's just start with what Galileo thought. So Galileo says, "Well, if we want a mathematical science, we have to take consciousness outside of the domain of science." So he said, "That's in the soul, that's outside of the domain of science." So in his worldview, there's this radical division between two domains. There's the quantitative domain of science, the physical world with these mathematical properties, and the qualitative domain of consciousness, consciousness with its colors and sounds and smells and tastes, these wonderful qualities. And there's a complete division. And this is the start of mathematical physics, which has gone incredibly well and produced technology that's transformed our planet.

What we've forgotten is that it was never intended as a complete description of reality. The whole project was premised on putting consciousness outside of the domain of science. And I think if we now want a science of consciousness, we need to find a way of bringing it back in.

But that's the basic idea, this qualitative-quantitative division, but maybe you're not so sure about that.

Dave Asprey:

I'm not that sure about it. But just the idea that, okay, if we're going to study colors and that was all we cared about, you would ignore temperature. And then if your whole universe was color-based, like I wonder why sometimes people start smoking and die, it's because you never studied temperature. So you can focus your lens and you can exclude things that you don't know you're excluding it. And you're saying that Galileo actually knew he excluded consciousness because he was trying to create something new, a new lens. I can go with that.

Philip Goff:

Yeah, yeah. And maybe that was necessary to do that. Maybe that was necessary to set outside consciousness for a period of time so we can just focus on mathematical modeling and what can be captured in mathematics, and that was hugely, hugely impressive. But we are now at a point of history, I think, where we're so blown away by the success of that, that we're inclined to think, "Oh, this is everything. This is the truth." Whereas I think the irony is the reason it's been so successful is because it was always focused on such a narrow, as you put it, a kind of lens, a narrow-focused task, and that task was never designed to deal with consciousness. And I think in principle, it can't wholly deal with consciousness.

Anil Seth:

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The experience of being a self, the experience of being me rather than you, anybody has the experience of being somebody, that's a perception. That's not the kind of recipient of perceptions. The self, the way I experience being Anil Seth is a perceptual construction. I perceive my body as a particular object in the world with a configuration, a color, a size, a shape, and I perceive it as mine and as different from objects that I might hold. I perceive myself as an identity over time with a particular set of memories. When I make an action, I perceive it as a voluntary action.

And of course, perhaps more fundamentally, when I experience emotions, they're also perceptions of bodily states or of changes in our physiology. And this is a very old tradition in psychology that goes back to William James in the 19th century and even earlier, but they come out in modern neuroscience in the same way that we begin to think about perception of the outside world. Emotion is an inference, a best guess about what's going on inside the body.

And the purpose of perceiving the body is not always to get an accurate picture of what it's like. I mean, I don't really care what my blood pressure is numerically; I just want to make sure that I'm going to stay alive. So emotions, I think, reflect a perception of how well the body is doing at regulating its physiology in a way that's adaptive and that's useful. And when that goes wrong, that's when a lot of anxiety, depression, other perhaps aversive states that can shade into psychiatric illness, the extremes come into play. So if I could train myself to perceive, not necessarily more accurately, but if I could train my perception in a way that's useful, I think training my perception of the body would be best. And of course, that's what a lot of meditation, in fact, is about.

There are now plenty of machine learning algorithms that are very, very good at classifying images. They can take any number, they've been trained on millions or tens of millions of photos that have been uploaded to the Google database in the sky. And with that huge data set and these neural networks, so-called deep convolutional neural networks, which are basically just lots of layers of artificial neurons, these can be trained to classify images. Is there a dog there or not a dog? What kind of dog, and so on. And the performance of these algorithms is now extremely good, human level or superhuman level in some instances.

But what's difficult to know is what's actually going on within these networks while they're doing this. And so what the people at Google decided to do was basically run them backwards. Take a network that's working, fix it at the top level, basically tell the network there is a dog there, then run the network backwards and have it update the image bit by bit until it settles into a set and steady state where what the image is and what you are telling the network is there all match up. And you can then look at what happens.

And this is when you start to see really strange things. So a lot of these images floated around the internet at the time with bowls of pasta suddenly sprouting dog heads and just weird stuff happening. And what looks like, to be honest, quite a psychedelic eruption of imagery through this Google DeepDream algorithm. And what we got interested in was the extent to which we could consider this as an interesting model of unusual perceptual states because the deep networks that were that underlie this process are... You can think of them as very simplified models of how the brain does vision. It's a bunch of neurons and information goes from one end to the other.

So we used the DeepDream algorithm, and instead of just taking a single photo though, what we did was we took a panoramic video and then we subject it, we put each frame of the video through this process and did some continuity and whatnot, so that when you put a virtual reality headset on, you can look around this scene and you perceive it through this DeepDream process. So suddenly, what was just as if you were in the middle of our university campus looking around and seeing people grabbing their lunch, suddenly the scene has changed and it's as if there are dogs coming out of everywhere.

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And the reason this is interesting is because I think it gives us a way of understanding this balance between sensory data coming in and our prior expectations going the other way that, through their interaction, form what we perceive.

And another good example of this is when we look up at a cloudy sky, lots of little white fluffy clouds, we can sometimes see faces in these clouds. As you said earlier, the brain is extraordinarily good at pattern recognition. One of the patterns it's especially good at recognizing is faces. If you follow that, I think the Twitter thread, Faces in Things, it's brilliant. We see faces in pretty much anything because the brain is always projecting this, if you like, a face template onto whatever sensory signals are coming in. And you can understand hallucination and you can understand maybe psychedelic perception and you can understand this DeepDream thing as just turning the dial so that these patterns for faces or dogs or whatever just become stronger. So, we start to impose these patterns on things that we wouldn't normally do.

And for me, that's a really good lesson into how perception works all the time, and also how it works in unusual circumstances like hallucination, like psychedelia.

Philip Goff:

One problem with consciousness, and this is one way of seeing why it's such a unique scientific problem, is that consciousness is not publicly observable. I can't look inside your head and see your feelings and experiences. Only you, as it were, can observe your experiences from the inside.

Now, science is used to dealing with unobservables. Fundamental particles, like electrons and quarks, can't be directly observed, but there's an important difference. In all of these cases, we postulate fundamental particles to explain what we can observe. Quarks and electrons are postulated as part of the standard model of particle physics, which is wonderful, a capacity to explain what we can't observe. In the unique case of consciousness, the thing we are trying to explain can't be publicly observed, and that really constrains our capacity to deal with it scientifically.

But as you say, quite rightly, we can deal with it scientifically because we can't observe it, but we can ask people, right? We can ask them what they're feeling and what they're experiencing, and we can do this while we scan their brains in an fMRI scanner or EEG. And what we can do then, we can map correlations. So we can see certain kinds of brain activity in certain regions of the brain are correlated with experience of colors, let's say, and that's absolutely crucial data and any scientific theory, any theory of consciousness has to respect.

The problem is that in itself is not a theory of consciousness, not a full theory of consciousness, because what we ultimately want is an explanation of those correlations. That's the big question at the end of the day. Why on earth is a certain kind of brain activity accompanied by feelings and experiences and experience of color and sound as smell? Why do they go together? And I don't think an experiment, just doing more neuroscience, just gathering more correlations, is not going to answer that. I think we have to bring in an element of philosophy.

Dave Asprey:

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Philip Goff:

In the Case of Life, what are we trying to explain? We're trying to explain what is publicly observable behavior, and science is really good at that. Science is good at explaining what we can observe.

In the case of consciousness, we're explaining something that's not publicly observable. And in the case of consciousness, we're explaining something that involves these qualities that we apprehend when we attend to our experience, qualities that just can't be entirely captured in a sort of purely quantitative vocabulary. So I think there are reasons this is just a fundamentally different problem.

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So Anil is doing great work, I'm really looking forward to his book, really great work in correlating what goes on in the brain with consciousness. Right, great. But let's say one day he finishes that, we've still got the question, why? Why does brain activity go along with conscious experience? And there are different theories, there are different theories.

A panpsychist has one theory, and we could go into more details about that. The two traditional options are the dualist who believes in the soul, the materialist who thinks really it's just about the chemistry of the brain. It's really about electrochemical signaling. All of those theories account for the correlations of neuroscience.

People have this mistaken idea that the neuroscience supports materialism, the conventional scientific view. The neuroscience is just neutral. The neuroscience just gives you correlations. And then there's a whole host of different philosophical theories to explain those correlations. And just doing more experiments will just get us more correlations. We've got to address the philosophical issues, and I think that's what people are starting to see now, to be honest.

I've always loved science. And when I studied philosophy, I thought I wanted to be a materialist. And I just came to see it just didn't make sense when it comes to consciousness. And then I thought, "Oh, maybe I can believe in the soul," but I just think that has such deep problems of another, of a more straightforward scientific nature.

So I came to think that these two conventional options of materialism and dualism were just both completely non-starters. And I actually gave up the subject. I thought, "I just don't want to think about this anymore." I left academia, went and did something else, lived in Poland for a bit, and it was discovering panpsychism, this middle way, that sounds a bit wacky, but I think that that avoids the deep problems of these more conventional options that really drew me back into this.

But let me answer your question directly. So the starting point of Russell and Eddington is that physical science doesn't really tell us what matter is, and that seems like a really weird claim. You think you study physics, you learn all these incredible things about space and time and matter. But what Russell and Eddington realized is that for all its richness, physics is confined to telling us about the behavior of matter, what it does.

Think about, what does physics tell us about an electron? It tells us it has negative charge, it has mass, and these properties are completely characterized in terms of behavior. Things like attraction, repulsion, resistance to acceleration, it's all about what it does. Physics tells us what the electron does, but not what it is.

And so I sometimes make an analogy with a chess piece. If you have the bishop, a concrete chess piece on a board, you might want to know what it does. If it's a bishop, it moves diagonally in any direction. But you might also be interested in the chess piece itself. Is it made of wood? Is it made of plastic? Is it made of metal? Similarly, with an electron, you might be interested in what physics tells us about what it does, but you might also be interested in the electron itself, independently of its behavior. What is an electron? And physics just has nothing to say about this.

So it turns out there's actually this huge hole in our standard scientific story of the universe, so the proposal of Russell and Eddington was to put consciousness in that hole. We're looking for a place for consciousness, we've got this hole, let's try and put consciousness in the hole.

So the view is it's a form of panpsychism, but not necessarily anything supernatural or not necessarily anything mystical even. The idea that there's just matter, particles and fields, but matter can be described from two perspectives. Physical science describes it from the outside in terms of its behavior, all great stuff, but matter from the inside is made up of consciousness. So it's this beautiful, simple, elegant way of bringing together the facts of natural science and the reality of consciousness into a single story.

Anil Seth:

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We're so conditioned to think of perception as there's a world out there and we perceive it as it is, or maybe we systematically misperceive it in some way because we know about visual illusions and all that, but it would be great if we could perceive the world more accurately as it is. And once we've got that perception, then we can decide what to do and we execute actions and we move our bodies.

And I think this is almost entirely wrong. The purpose of perception is not to figure out objectively what's out there in the world. The purpose of perception is to enable our adaptive behavior.

Dave Asprey:

So we don't die?

Anil Seth:

So we don't die. And in the most extreme version of that, the purpose of perception is to keep the body alive, to keep my heart going, to keep my blood pressure within bounds. And this is a theory I've written about in my work, I like to call it the beast machine theory. The way of saying the way we perceive everything, whether it's out there in the world or in here in the body, can only be properly understood because of its utility in keeping us alive. We perceive the world with, through, and because of our physiological bodies. Bodies aren't just vehicles for moving our brain from meeting to meeting. We can only understand perception through this imperative of staying alive.

But just in your example, it really highlights that perception in that case is about regulating a variable. And that when you perceive the same situation from the perspective of regulating something rather than discovering what it is, your experience is going to be very different. And we know perception works like this in many cases.

The classic experiment is how people catch a ball, whether it's baseball in the States or cricket in England, in the UK. If you ask a cricketer what they're doing when they run to make a catch, if you ask anyone what they do when they run to make a catch, let's say the ball's sailing overhead, then most people would probably say something like, "Oh yeah, I look up and I figure out where the ball is, and where it's going to land, and I kind of run to where it's going to land so that I can catch the ball."

But that's not what people are doing. What people are doing is they're running so as to minimize how the angle of the ball to the horizon changes. There's a very specific equation you can write down. They're minimizing, I think it's the acceleration of the tangent of the ball. It doesn't really matter, but there's a very simple perceptual variable that they're trying to regulate to maintain constant. And you can just prove it mathematically quite easily that if people move so as to control that perceptual variable, the ball will just end up hitting them squarely between the eyes.

So if people do that, they will intercept the ball. I mean, obviously the ball doesn't hit them. They have to, at some point, switch to catching the damn thing. But you can make predictions about how people will move if they're following this strategy, compared to figuring out where the ball is going to land and running there as fast as they can.

And so it turns out that people are following this control strategy, but they don't know that that's what they're doing.

Philip Goff:

Ultimately, we shouldn't be interested in which view we'd like to be true, but which view is most likely to be true. And I think there's a good case that panpsychism is, for the probable truth of panpsychism, on the basis that it's the best account humans have come up with for how to fit consciousness into our scientific story.

So, that's one thing. If it's the truth, it's the truth, then we should try and have our best guess at that. But I also do think it's, independently... And this is what I explore in actually the final chapter of my book. The first four chapters are just the kind of cold-blooded, philosophical and scientific case. But then the

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final chapter, I explore the sort of implications for human existence. And I do think this is a picture of reality which is maybe slightly more consonant with human mental and spiritual wellbeing.

I mean, materialism is pretty bleak. You've got sort of a mechanistic picture of nature and the cold immensity of empty space. Whereas in panpsychists' worldview, we are conscious creatures in a conscious universe. It's a sort of picture of the world we sort of feel a little bit more at home in.

And I mean, there's a lot of crazy stuff going on at the moment, and I think there are lots of reasons for this, economic and political, but I wonder whether some of it is what was once called the disenchantment of nature, this sense that we don't fit into the universe. And I wonder whether the attraction to nationalism or even fascism is trying to find how you fit into the world. And I think in some ways, panpsychism is a little bit more of a picture of the universe we fit in with.

A lot of people defending panpsychism, despite its connotations, people like David Chalmers or Luke Roloff, complete atheist secularists, no kind of spiritual leanings, they're not believing in anything necessarily spiritual, they're just believing in feelings, pain, pleasure. These things are undeniable and they just want to find a way of explaining that perfectly natural phenomena.

However, I guess if you are, in a panpsychist's worldview, I suppose it does fit better with certain... For independent reasons, you have certain spiritual convictions perhaps through taking hallucinogens. So people in all cultures have had these experiences, perhaps on hallucinogens or after prolonged meditation, that there's some kind of universal consciousness underlying all things. If you're a materialist, you probably have to think that's a delusion. It's something funny going on in your brain. But if you're a panpsychist and you already think the fundamental nature of reality is made up of consciousness, it's not much of a step to take those kind of experiences seriously.

And the really good... I mean, I come out of a very dry, what's called, analytic philosophy, a tradition that's very dry, scientific, logic-based. But what's come out of that tradition, people like the wonderful Australian philosopher Miri Albahari who defends something like that kind of mystical view, but in a very dry, rigorous, plain, working out the epistemology, on the basis of treating meditators as sort of experts of consciousness. And so I just think it's wonderful to have this.

It gets a bit scary because you wonder, are we going to get lost? Are we just deluding ourselves? But you've just got to... We've got academia and we've got peer-review journals, and you've just got to trust the institutions. That's what, more than ever, the importance of institution's to be able to distinguish the woo and the crap from serious rigorous study.

Anil Seth:

My hope is that we might actually move away from this idea, this ideal of accuracy because it really relies on this assumption that there is a single way the world is, and that we need to calibrate our perception to fully, objectively accurately reflect that.

But just to go back to where we started with the simple example of color, color is not out there in the world. Color is already a construction of the brain. So I think we need to develop ways of training our perception, not necessarily so that it's the most accurate, but so that it's the most useful for us as individuals and for us as collections of individuals within a society of diverse people who will see the world in different ways.

I think we overestimate our continuity and identity as an individual anyway. So I've used this term in some of my work called self-change blindness. We know from many experiments in psychology that if things change slowly, we tend not to perceive them as changing at all. We're kind of blind, perceptually and cognitively blind to things that change very slowly. It explains why we are not perceiving the effects of climate change so much. Things are changing more slowly, so we perceive them as not changing at all.

And I think this applies to the self as well, and actually, more than it applies to the world. And that's because perception of the self is really geared towards keeping it the same. In the same way that we

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wanted to keep the angle of the cricket ball the same to catch it, I want to keep my blood pressure the same, I want to keep my heart rate variability the same because that's consistent with me staying alive. So, I'm going to perceptually overestimate how continuous I am. I know that I'm not the same person I was when I was 10 years old. I'm unlikely to be the same person when I'm 76 as I am in my mid-40s now.

So in a sense, there's less to hang onto. What does it mean to extend my life to whatever arbitrary horizon because I won't be the same person then anyway? So, that's one thing. And I think you can come to this recognition through meditation, through other kinds of, as you say, various ways of getting outside yourself. You can start to realize this.

And the other reflection was my experiences of general anesthesia. And I've had a few operations over my life and they've all gone well, thankfully. And each time, I've got more interested in just the experience of losing consciousness under anesthesia and regaining it on the other side. And when you go under general anesthesia, there is nothing. You could have been under for five minutes, five hours, or 500 years. It doesn't matter. You are not there. And I find this sort of existentially reassuring because when you're gone, you are gone, and there is nothing.

There's a book title by one of my favorite authors, Julian Barnes, and the book title is called, Nothing to Be Frightened of. And I think the double meaning of that title, when it comes to mortality, is exactly right. There really is nothing to be frightened of. Of course, it doesn't always feel that way at the time. The value of life is the emotional states you experience while alive.

Dave Asprey:

Driven by perception, right?

Anil Seth:

And those can be a veritable positive. And then of course, there's the value of life and the meaning of your life for others and so on. But the fear of mortality, I think, is something that can be addressed and that neuroscience does have something specific to say about.

Philip Goff:

Thanks very much, Dave. This was great. This was a really enjoyable chat. I've learned a lot actually.

Dave Asprey:

I think I've learned a lot more than you, unless we're talking about coffee, in which case I'm now sad to have learned that my coffee is not independently conscious. I thought it was hacking me this whole time.

But your book, Galileo's Error, is a very worthwhile read. So like I was saying earlier on the show, if you're interested in consciousness and if you want to upgrade yourself, what, do you just want to be a wall of abs? Okay, that's fine if that's the upper limit of what you want, but you probably want to be a wall of abs with a highly functioning, happy, healthy, impactful person tied to it. And I believe that looking at consciousness is necessary, and I've had the highest return on investment from my own things after I got my basic energy systems working. It was going straight to my consciousness and working on that, and there's so many tools available to do that. Some of those are in episodes for you, some of those you'll find just by reading a book like Galileo's Error, but I always say, be curious is the most important thing.

I really appreciate your body of work, Anil. I think you're doing some stuff that is fundamental to cracking the code for what really makes us tick and what really makes us human at our core and how we interact with each other in the world around us. And thanks to you and your colleagues for doing that work, your body of work is...

Anil Seth:

Anilseth.com.

Dave Asprey:

Anilseth.com. Well, keep on hacking human brains. When you have a really cool perception experiment that I can do at home, give me a call. I'm totally game.

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Anil Seth:

And I'll be happy to. Thanks a lot. It's been great chatting to you.

Dave Asprey:

You're listening to The Human Upgrade with Dave Asprey.