

Transcript - Long

Robert Lawrence Kuhn:

Dave, when you started on this rather magnificent journey in trying to explore consciousness, seeing it as fundamental, the hard problem, that was pretty much what your vision was, that there was something special here. And in the intervening couple of decades or more, people have been moving in on your territory, which you're probably pretty happy about, but physicists, in general, or approaches that come from physics or quantum physics have been seeking to explain, whether it's quantum physics mechanisms or consciousness being part of quantum physics or integrated information theory. There are a whole bunch of things that are now coming in, so how do you analyze the physics of consciousness, particularly quantum physics?

David Chalmers:

Yeah, there are a whole lot of at least potentially intriguing connections between physics and consciousness, and especially quantum mechanics. This is tied partly to the idea that traditional formulations of quantum mechanics seem to give a role to measurement or observation and, well, what is that? It's like, well, the natural hypothesis is that measurement or observation is conscious perception. It's somehow a role of a conscious observer, so that's extremely suggestive for connecting the two, but you can connect them in a lot of ways. Some people might try to reductionistically explain consciousness in terms of quantum mechanical processes. In my view, that works no better than explaining it in terms of classical processes.

But another thing you might do is try to, not try to reduce consciousness, but find roles for consciousness in quantum mechanics. That's one of the big questions about consciousness is, what does it do? What is it here for? How can it affect the physical world? All the harder a question, if you think consciousness is irreducible and fundamental. So I'm at least taking seriously the idea that maybe consciousness plays a potential role in quantum mechanics. It's a version of the traditional idea that consciousness collapses the wave function. Not an especially popular idea among physicists these days, partly because it takes consciousness as fundamental, but if, like me, you think there are independent reasons to do that, then I think it's an avenue worth looking at. In particular, one thing that's happened over the last 20 years is people have started to develop rigorous non-reductionist theories of consciousness, like Tononi's integrated information theory. So lately I've been thinking about the idea of maybe we can combine that with the quantum mechanical theory of consciousness collapsing the wave function. Integrated information theory would give us a theory of when a certain physical state gives rise to consciousness, when it integrates enough information, for example. Quantum mechanics would then tell us, when that happens, consciousness will collapse the wave function in a certain way. If we combine a mathematical theory of consciousness with the traditional collapse interpretation of quantum mechanics, we might be able to get a mathematically rigorous quantum mechanical approach to consciousness.

Robert Lawrence Kuhn:

If you do that, though, are you undermining the fundamental assertion that consciousness is an irreducible, fundamental part of reality, because, by definition, that means it's sort of not being able to be explained by more fundamental relationships or equations or anything else?

David Chalmers:

The way I see this view, we're not trying to explain consciousness wholly in terms of a quantum mechanical wave function. Rather, we're assuming that consciousness exists and trying to connect it to the wave function. So integrated information theory tells us that when information is integrated in a certain way, then we're going to get consciousness. That's just kind of a basic law of the universe, the way I would see it, and quantum mechanical collapse would tell us that when you've got consciousness, it collapses the wave function in a certain way. Neither of those are reductionist explanations of consciousness. Rather, they're laws involving consciousness, like space and time and mass. They're fundamentals in standard physical theories, but what we try to do is articulate the laws that explain how they play a role in the dynamics. This is actually giving a story about how consciousness could play a role in the dynamics. It's speculation, but I think it's at least worth taking seriously.

Robert Lawrence Kuhn:

I'm still disturbed, because integrated information theory seems to be coming up with a mechanism of creating consciousness where you have certain things together, then you have consciousness. But in your view, you don't need to bring things together to have the consciousness because you have consciousness at its most fundamental level. You have a composition problem, how the little things get to the bigger things, but information, integrated information theory doesn't seem to be doing that. It seems to be just taking things from the world and combining together in a unique way and coming up with now we have this emergent consciousness. It's not fundamental.

David Chalmers:

Yeah. See, these are two different approaches. There's the panpsychist approach, where consciousness exists at the fundamental level of physics and all that comes together to yield me, and there's the dualist approach, where consciousness is separate from the physics, but interacts with it. And I see this quantum mechanical idea we've been talking about just now as a dualist idea, rather than a panpsychist idea. We've got a wave function and we've got consciousness as distinctive properties. Now, here are the laws that connect them. So this view won't work with panpsychism. If consciousness is everywhere, it can't be constantly collapsing the wave function.

Robert Lawrence Kuhn:

Right. And combining together to make. I agree with that.

David Chalmers:

So think of this as an updated version of Descartes. The body affects the mind; the mind affects the body. Integrated information theory tells us how physics affects consciousness. Collapse tells us how consciousness affects physics.

Robert Lawrence Kuhn:

Okay. Talk to me a few minutes about the reductionist use of quantum theory and quantum mechanics in trying to explain consciousness. I mean, to me, that seems very, it's just another identity theory and subject to the same kinds of issues. Forgetting about can you have quantum mechanical effects in a hot, wet brain and all of that, but just fundamentally, it's identity theory.

David Chalmers:

There is this well-known approach of Roger Penrose and Stuart Hameroff where they say things like quantum mechanical collapse is consciousness. It's not that consciousness causes the collapse. They say consciousness is the collapse and, to me, that sounds like the traditional mind-brain materialists who said, yeah, consciousness is a process in the brain. Pain is C fiber firing at you. Well, that's an attractive view, to be sure, but the question is can you explain consciousness in terms of those physical processes? I think you don't justify an identity theory, a materialist view, unless you've actually given an explanation of consciousness. And I don't think Penrose or Hameroff give anything to explain consciousness in terms of their quantum mechanical collapse processes. So maybe there's a version of this view that sees consciousness and the underlying class of processes as distinct things, but yeah, in the version as an identity theory or a form of materialism, I think it's just as problematic as the classical theory.

Robert Lawrence Kuhn:

But you think that the whole area of relationship between physics and consciousness is a, is an important area that progress can be made?

David Chalmers:

I think it's a wide open topic and progress is being made slowly, as happens in this field everywhere, but you know, there are avenues to be pursued.