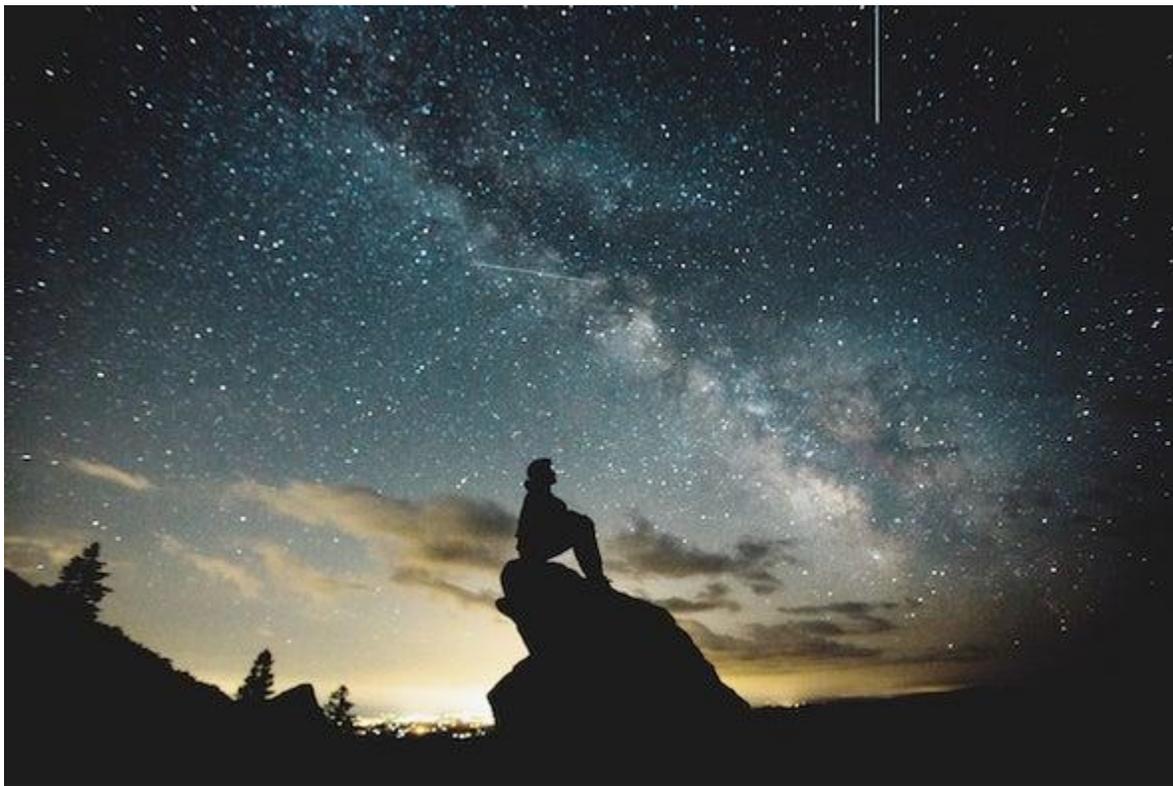


Spacetime Emergence, Panpsychism and the Nature of Consciousness

How does experience, which is so intimately tied to our perception of time and space, arise from timeless, non-spatial ingredients?

By [Susan Schneider](#) on August 6, 2018

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(Interjection- Attempting to resolve the dichotomy of quantum physics theory with the experience of panpsychism, to this engineer/scientist is a non-starter. While within the orbit of a hydrogen atom, I was aware of that atom's consciousness and also aware of it's non-threatening knowledge of my presence between the nucleus and electron shell. Likewise, with other such experiences... It has been my experience that such non-threatening awareness exists at all levels of materiality. How to explain such universal awareness mathematically? These experiences have taught me to simply "go with the flow"... to accept the statements of sages and mystics through the ages of "what IS, IS." ~ Don Chapin)

As you read this, it feels like something to be you. You are seeing these words on the page and hearing the world around you, for instance. And all these thoughts and sensations come together into your conscious “now.” Consciousness is this felt quality of experience. Without consciousness, there would be no enjoyment of a beautiful sunset. Nor would there be suffering. Experience, positive or negative, simply wouldn’t exist.

At the heart of current theorizing about consciousness in philosophy is *the hard problem of consciousness*, a puzzle raised by the philosopher David Chalmers. ([See his Scientific American article “The Puzzle of Conscious Experience.”](#)) Cognitive science says that the brain is an information processing engine. The hard problem asks: but why does all this sophisticated information processing need to feel like anything, from the inside? Why do we have experience? One influential approach to the problem, endorsed by Chalmers himself, is panpsychism.

Panpsychism holds that even the smallest layers of reality have experience. Fundamental particles have minute levels of consciousness, and in a watered-down sense, they are subjects of experience. When particles are in extremely sophisticated configurations, such as when they are in nervous systems, more sophisticated forms of consciousness arise. Panpsychism aims to locate the building blocks of reality in the most basic layer of reality identified by a completed physics. Indeed, panpsychists claim that it is a virtue of their theory that it meshes with fundamental physics, for experience is the underlying nature of the properties that physics identifies.

The view is at odds with cutting edge work in physics, however. At the very heart of contemporary physics is an apparent contradiction between the study of the big and the very small, i.e., between massive structures (e.g., black holes) in Einstein’s theory of general relativity and the subatomic realm of quantum mechanics. Work in the field of quantum gravity attempts to resolve this contradiction, and increasingly, it is saying something astonishing: the fundamental ingredients of reality are not spatiotemporal. Instead, spacetime emerges from something more basic, something that is defined in terms of a mathematical structure that dispenses with any temporal ordering or spatial metric. ([For more detail, see George Musser’s Scientific American article “What is Spacetime?”](#)) Just as the transparency of water is not found in a single molecule, at the finest level of resolution, spacetime drops out altogether.

If the more fundamental ingredients of reality are non-spatiotemporal, it is difficult to see how they can also be experiential. For if there is no time at this level, how could there be experience? Conscious experience has a felt quality that involves flow; thoughts seem to be present in the “now,” and they change from moment to moment. Timeless experience is an oxymoron. Relatedly, why say there are minds or subjects of experience at the fundamental level, if there is no spacetime? Minds would seem to have experiences. Without time, there are no mental events to unfold.

Here, the panpsychist could retort that our ordinary sense of time is an illusion. To be sure, debates over whether reality is timeless started over 2,000 years ago, when the pre-Socratic philosopher Parmenides claimed that reality was static and unchanging, like a mathematical equation. Heraclitus, in contrast, asserted that all was change, like the motion of a flame. Nowadays, physicists wrestle with similar issues. While Isaac Newton regarded time as being like a river flowing at the same rate every place throughout the universe, Albert Einstein

overturned this picture, for both general relativity theory and the Standard Model of particle physics are temporally symmetric. These laws do not say whether time is moving forward or backwards. Nor do the laws identify so special a moment as appears to us as what we call “now.”

This Einsteinian picture has been called a static, “block universe” view of spacetime because it lacks any sense of a flow or passage of time. As Einstein wrote, upon the passing of a close friend, “For us believing physicists, the distinction between past, present and future is only a stubbornly persistent illusion.”

Could the panpsychist appeal to this block universe picture to argue that time is an illusion? If so, perhaps panpsychism and quantum gravity are not at odds, after all. Suppose that our ordinary sense of duration is just an illusion, and reality is timeless. If this is the case, the point shouldn't be that the fundamental layer of reality is *experiential*. The point should be, instead, that fundamental reality is *nonexperiential*, and that underlying ingredients, whatever they are, will somehow serve to explain away our ordinary sense of time. But the panpsychists are not trying to explain away experience in terms of something nonexperiential. For them, **experience is basic**.

If non-spatiotemporal ingredients truly give rise to more familiar building blocks of spacetime this would be an exciting discovery. But few have considered the impact such a discovery would have on our understanding of the nature of consciousness. Upon reflection, spacetime emergence seems to make the hard problem even harder. For how does conscious experience, which is so intimately tied to our perception of time and space, arise from timeless, non-spatial ingredients? Put another way, how does experience stem from the non-spatiotemporal ingredients such as those that loop quantum gravity says underlie tiny quanta of volume, or that string theory says underlie the fields on a surface traced out by a string or loop?

The very same entities that fundamental physics investigates, these entities that spacetime is said to emerge from, may very well be the very same ingredients that give rise to experience. But if this is the case, we just don't know how. For **there seems to be an explanatory gap between the non-spatiotemporal and the experiential**. They are different kinds of things. Consciousness may arise from an elaborate dance among non-spatiotemporal ingredients, but if it does, the choreography eludes us.

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