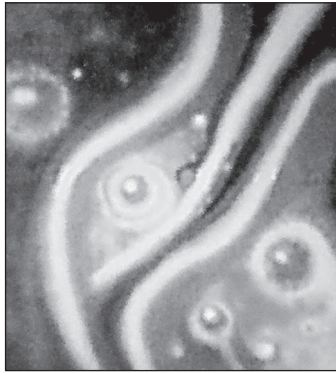


# Relativity, Quanta, and Consciousness

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# Introduction

This discussion, “Relativity, Quanta, and Consciousness,” is an extended reflection on the foundational findings of modern physics in terms of the implications they may have for a quite different phenomenon: human consciousness. It is not an essay that a theoretical physicist would write, nor is it an essay that a philosopher of science would write; rather, it is an interdisciplinary and even personal probe into possible synthetic connections that might be discernible between the nature of science and the nature of awareness. It is an elaborate, hypothetical musing about realities that no one really knows about and that human beings may never finally know about, and this difficulty makes the questions more, rather than less, interesting.

The brief summary might be: If Einstein was right about space-time, and Planck was right about the quantum of action, what do these theories imply about what human consciousness is? If we set aside supernatural explanations during the discussion and accept the terms of theoretical physics as valid, we must ask: *What is consciousness made of? How does consciousness come about? In what sense are*

*these very questions examples of space-time and quantum mechanics in action?*

The conclusion is profoundly Socratic. If modern physics tells us anything that is useful in interpreting what we are, it may be that first, the individual mind is an illusion because the entire relativity-universe is one seamless space-time entity, and second, ultimate self-knowledge is impossible; quantum mechanics has discovered unexpected obstacles to further understanding, and the quest to find our own interpretation ends at a great dark universe-wall, a kind of Socratic absolute zero.

The situation is made worse, or better, depending on one's preference, by the fact that relativity and quantum mechanics are dueling snapshots of ultimate reality; we have not been able to unify the two theories, and we have not been able to refute either theory. It is a bit like asking someone where he is and receiving the answer, "Not in Chicago, and not in Pocatello."

For many years, reflections on the strangeness of modern science have given me confidence that a Socratic approach to knowledge (being authentically and honestly aware of what one does not know) is not a false path. Even for the leading scientists of modern times, the ultimate nature of reality is profoundly obscure. In attempting descriptions of the wheely universe of galaxies and the snappy inner universe of atoms, scientists have been forced into metaphors such as *field*, *wave*, *particle*, *up* and *down*—look at the names

of subatomic particles, and you will see that the list of metaphors is very long.

When the phenomena are so obscure that precise terminology is impossible, we resort to poetry, to metaphor. The problem then is that only the scientists realize that the words are metaphors, sputters of flame tossed into blackness; others think that things are known.

Scientists have also been forced to employ bizarre theoretical devices, such as “complementary” theories that seem to contradict each other and yet are regarded as equally true. The actual truth is neither; truth hides unseen in the paradoxical tension between the contradictory, correct theories.

And yet science is gorgeous; the ideas are beautiful; they draw one like a doomed moth. If I pull back and regard the problem not from the point of view of me but from the point of view of a vast universe of flying glitter made of atoms with subatomic particles popping about via Planck’s constant, and then see this panorama of spinning galaxies and nebulae as one great geometrical Einstein surface of space-time, like the sparkling dunes of a black Sahara, then I can, as from a far telescope, spot my own consciousness as one point on the curved surface, a hot spot where the great space-time universe has somehow become self-aware. I am not different from it, not other than it, but I am it, a location of it. Somehow the folding and geometry of space-time has resulted in the place in space-time that has thought of itself

as me. All around me are other such hot spots, conscious points of the universe, such as my wife and children and friends, and all of us, without realizing it, are part of the one great fabric, connected more than we know.

And even this image is a falling-short; it is constructed in the three dimensions familiar to human vision, rather than in a four-dimensional Riemannian calculus that space-time requires. The real thing is not imaginable; we can only try to suggest the unfamiliar with familiar, false images.

But either we take the science seriously, or we don't. If we take it seriously and think that the discoveries might actually be true, then something like this is what they must mean: the huge universe—a paradoxical, wheeling geometry of quanta-space-time—has here and there squeezed out local bumps of self-awareness, which we know as human consciousness.

I should say a word or two about what may seem to be the tortured language of my discussion. In developing these thoughts, I felt that I could not describe the problem in ordinary terms, such as “my thoughts” or “people’s self-awareness.” Ordinariness is false to the extraordinary implications of the science. Putting these things in plain English is not the right thing to do; plain is just what they are not, and it is the rude shock of what they mean that one must try not to obscure. I was *not* asking about me, really, or even about us. I was asking about the universe and how it might express itself locally in cosmic phenomena that we think of

as ourselves. I was talking about the *it* part of me. I had to get *me* and *us* out of the sentences.

I wanted to be more objective, removed, to write from a cold hilltop. I decided simply to talk about *consciousness* as a phenomenon and how it might be a manifestation of both relativity and quantum mechanics.

Anyone familiar with modern philosophy knows that some philosophers have challenged the very word *consciousness*, but this does not seem to me to be a barrier; even the consciousness objectors *knew they were objecting*, and snapping at words doesn't make a problem go away.

If relativity and quantum mechanics are true, and if consciousness is not an unnatural or supernatural anomaly but is a function of this Nature, then what can we say?

To say *something*, I needed to bring about a synthesis, a combination of two almost antithetical regions of inquiry. The consciousness of space-time? On the surface, the idea seems almost ridiculous, and the language I have used to explore the idea is uncommon. An odd, post-Heidegger, ruminative language has emerged, part existentialism and part philosophy of science, a language that would be conventional or even acceptable in neither field. All I can say is that these reflections are not a document of either field; the language I have used has helped me make things clearer to myself.

Ezra Pound took eighteen months to write “In a Station of the Metro”; the entire poem reads: “The apparition of these faces in the crowd / Petals on a wet, black bough.” He said that every revision of the poem made it shorter. My reflections on relativity, quanta, and consciousness emerged through a process something like that; there was a staring at sentences, a gradual and continual shortening, a cutting down to the bone without regard for whether the sentence sounded normal. Relativity and quantum mechanics are not normal and should not be tidied up too much.

In the end, the discussion is a perplexed hike into the no-man’s tension between Einstein’s echoes and Planck’s repercussions. “Here be monsters,” was written on the unexplored edges of the ancient maps. Perhaps there are monsters of discovery waiting for us in the future of theoretical physics, but I don’t think so. I think that we will learn what no one has learned before and that it will be endlessly illuminating.

A scientist might object to this discussion by saying that I am switching levels, that neither relativity nor quantum mechanics are discussions of consciousness, and that consciousness itself is a vague and unscientific term. Yes, I *am* switching levels, or trying to see if the levels can be connected. What I would ask the scientist is: Do you not believe your own theory? Do you not believe that the entire universe is a single geometric landscape of space-time? Do you not believe that all matter (apparently, but we don’t know

how, made of space-time) operates according to Planck's constant? And do you not believe that you and I, and our awareness of our own conversation, are part of this universe and function according to principles of its Nature? If so, you must believe that we are made of space-time, and that somewhere, far below our thoughts, our subatomic particles do their Planck pops in accordance with quantum laws.



# I. Consciousness

Philosophical inquiry and scientific research form the main components of the effort to develop a so-called objective description of man's situation. (Petersen 35)

The ontological question "What is being?" is of special concern because the question emerges from consciousness itself. In the act of ontology, consciousness recognizes itself as a form of being in search of its own interpretation.

Human being experiences itself as "in the world" through the manifold of sense phenomena that present human being to itself in the same way that phenomena of "nature" are presented. Human being also experiences itself as "consciousness," a sense of being itself that is unlike the sense of being in the world. Consciousness does not appear at all in the manifold of sense phenomena; it is completely absent. It cannot be physically examined.

The question of being, therefore, must include the being of the world, in that human being discovers itself in its own sense phenomena, and it must include being conscious, in that it is consciousness that discovers both itself and the world of sense phenomena in the first place.

If consciousness and the world are ontologically identical, then the interpretation of being must reveal how ultimate being presents itself in the two forms of being conscious and being in the world. It may be that the world is a form of being conscious. Both may be the manifestations of a third, ultimate ground of being. But if being is one, a way must be found to interpret the diversity of phenomena, including the phenomenon of consciousness that seems to itself radically unlike the phenomena of physical objects.

In any event, no interpretation of being can be considered complete until the question of the being of the world is resolved. Even if the ontology of consciousness is unique, it is being in the world, ordinarily, that consciousness is conscious of. The world somehow “enters” consciousness and makes itself known, along with those phenomena that consciousness associates with itself and not with the world. The world is therefore a profound element of the interior content of consciousness and must at all times be brought within the attempt of consciousness to interpret itself.

In other words, if being is many, then the being of the world requires interpretation as that within which or among which the being of consciousness continues. If being is one, the being of the world must be interpreted because it is identical to the being of consciousness and is a necessary component of the interpretation of consciousness itself. Either way, the being of the world must be resolved.