

Paradoxes in Science and Theology



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What is light? What is matter? Perfectly reasonable questions to ask—so one might think. But all is not what it seems. Many scientists believe that such questions are not only difficult to answer, they have no answers at all. If they are right, then fundamental physics begins to look a little like theology.

Our story begins in the early part of the twentieth century. Light was discovered to have a dual nature. Some experiments pointed to its being a wave; others to its being a stream of particles. But that is odd: how can something be both a spread-out wave—like a succession of ripples on a pond—and at the same time a small localized particle—like a tiny billiard ball?

A similar apparent contradiction arose when a study was made of the ultimate constituents of matter. They too exhibited both wave and particle aspects.

No way out of this dilemma could be found until Niels Bohr, the Danish physicist, came up with a remarkable suggestion. He claimed that science tells us nothing at all about the world as it is in itself; it does not answer questions of the form “What is . . .?” Instead, it tells us of the way we *interact* with the world.

Thus concepts like “wave” and “particle” apply not to objects themselves (light or matter) but to how we interact with them. There are wave-like interactions and particle-like interactions, and that is all we can say. It being physically impossible to perform both types of experiment at the same time, there is never a need to invoke both concepts simultaneously. Provided we stick solely to our interactions or observations of nature, there is no paradox.

Bohr went on to assert that this ability to speak meaningfully only of

our interactions was no temporary restriction. This was the frontier of the *knowable*—a barrier that would never be breached.

This claim was made in the late 1920s, and it did not go unchallenged. Leading the counterattack was Albert Einstein. As the arguments flowed back and forth, more and more physicists came to side with Bohr, despite the fact that no one relished the idea of being in the opposite camp to Einstein! In the years that have ensued since those heated debates, no one has yet come up with a convincing description of the world as it is in itself, divorced from our observation of it—which is what Bohr would have expected.

But enough of the modern paradoxes of physics. What has this to do with theology?

Paradox has been a feature of Christian theology from earliest times. In trying to answer the question Who, or what, is God? the church fathers came to the conclusion that they had to regard him as Father, Son, and Holy Spirit. Nevertheless, he was one God, not three. Moreover, each of the Persons of this Trinity was not to be thought of as merely a part, or aspect, of God; each was fully God. Difficult though it was to see how the apparent contradiction was to be reconciled, they considered any simpler description of God would not do justice to the totality of the evidence.

When later they came to consider Who is Jesus? they concluded he was both fully God and fully man—omnipotent, omnipresent God, and at the same time limited, localized man—another paradox. Thus in Christian theology one deals with paradoxes every bit as puzzling as those that have now surfaced in physics.

It was in response to these paradoxes that Gregory Palamas, the

fourteenth-century Archbishop of Thessalonica, decided that God was absolutely unknowable in his “essence,” that is to say, as he was in himself. Instead, he was to be knowable only through his “energies”—the ways he revealed himself through the three Persons—the ways he interacted with us.

Much the same theme was taken up by, among others, the Danish theologian Søren Kierkegaard. Pondering the same Christian doctrines, he concluded that there were two kinds of truth: objective and subjective truth. When the truth appeared from an objective point of view to be paradoxical, it was an indication, he said, that one should be seeking a more subjective kind of truth—one involving one’s own participation.

According to this particular strand of theological thought, one finds it necessary, as in modern physics, to take a step back from the objects of one’s inquiry—whether they be God and Jesus, or light and matter—and be content to speak only of one’s interactions with those objects.

As a postscript, I ought to point out that Bohr was an avid reader of his compatriot Kierkegaard. Could it be that twentieth-century physics owes a modest debt to a nineteenth-century theologian’s contemplation of a fourth-century Christian creed?



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