

Quantum Physics and Eternity

Job 38:1-7, 12, 33

Faith and Science series #2

September 26, 2021

Rev. Cynthia Cochran-Carney, First Presbyterian Church of San Rafael, CA

1 Then God answered Job out of the whirlwind: 2 "Who is this that darkens counsel by words without knowledge? 3 Gird up your loins like a man, I will question you, and you shall declare to me. 4 "Where were you when I laid the foundation of the earth? Tell me, if you have understanding. 5 Who determined its measurements—surely you know! Or who stretched the line upon it? 6 On what were its bases sunk, or who laid its cornerstone 7 when the morning stars sang together and all the heavenly beings shouted for joy?

12 "Have you commanded the morning since your days began, and caused the dawn to know its place...

33 Do you know the ordinances of the heavens? Can you establish their rule on the earth?

I grew up going to Sunday school, singing in church choirs, reading Bible stories. I was encouraged to ask questions about faith, reflect on what it meant to live the ways of Jesus, and talk about what it means to love God and love my neighbor as myself. And above all of creation was God. God, male, white, sitting up there somewhere. This was my church world. I went to school and learned math, biology, genetics, chemistry. I loved math (until calculus) and was fascinated by biology and theories of evolution. Science and math were not in conflict with my faith, just totally separate. Science was a source of wonder and awe to me. I was always more at home in the world of words and stories and Shakespeare and poetry. But there were times I walked in the world of science and math and felt at home there too. Two worlds. Two world views. True in high school, college and certainly in seminary.

Science dealt with the physical world. It was interested in how things worked. Once something observable was predictable, an equation was created to describe that behavior. Science was objective and dealt with facts.

Religion on the other hand dealt with the spiritual world. It was concerned with what things meant and how humans should behave in relationship to them. Religion was subjective and dealt with values. It focused on the Divine, God, the Holy and used story to tell the truth.

So it seemed clear to me that this division was how the world and reality was. There was matter and there was spirit but they are not the same thing. Compartmentalized.

However, I began to realize this was not true. I knew it. I recognized it when I studied Celtic spirituality – matter matters and our body and soul were indeed connected. There is a wholeness, a oneness. It is throughout biblical texts and it is in the incarnation of love in Jesus.

And then, there it was, this week, I saw it again in a most unlikely place - writing a sermon on quantum physics which I know nothing about. And in reading an essay by one of my favorite preachers and writers Barbara Brown Taylor.

So let's back up a bit and I will share some of the journey I have been on.

The Bible gives us a worldview based on the physics of Aristotle. In it the earth sits at the center of the universe and presumably at the center of God's attention as well. For eons, everyone accepted that the earth was flat and the heavens were above. Finally came Copernicus, who changed our vision of the universe. Through his observation of the seasons and his reading of the classics, Copernicus believed that the sun, not the earth, belonged at the center of things. Religious leaders shouted, "No! Heresy!" Years later Italian astronomer Galileo believed Copernicus was right and continued his research in spite of the objections from religious leaders.

In the 17th century, Isaac Newton planted the seeds of a new worldview. Reducing his observations to four simple algebraic formulas, he revealed a solar system that worked like a machine. The machine, he said, was made of parts—some of them as small as an atom and others as huge as the sun—but they all obeyed the same four laws. Newtonian physics.

That is where we were last week in the cosmos. Planets, galaxies, the edge of the universe. Laws apply there and atoms. He gave God credit for the laws, but the laws themselves left very little for the Divine to do.

Human beings were so charmed by Newton's metaphor offered that we began to see ourselves as machines too and used atomistic principles. If each of us will do our parts, then the big machine should keep on humming. There is no mystery. This affected theology and the church. Theology became increasingly specialized and systematized. Our "God view" came to resemble our worldview. Orderly atoms.

However, there is another way to conceive of our life together. There is another way to conceive of life, but it requires a different worldview—not a clockwork universe in which individuals function as discrete springs and gears, but one that looks more like a luminous web, in which the whole is far more than the parts. In this view, there is no such thing as an individual apart from his or her relationships. Every interaction—between people and people, between people and things, between things and things—affects the whole. Life on earth cannot be reduced to four sure-fire rules. It is an ever-unfolding mystery that defies precise prediction. Meanwhile, in this universe, there is no such thing as "parts." The whole is the fundamental unity of reality.

If this sounds like the language of Eastern religion, it is not. It is the language of **quantum physics**, which is causing a revolution in the way we see our world. Quantum mechanics or

quantum physics deals with the very small. It is the science dealing with the behavior of matter and light on the atomic and subatomic scale. It attempts to describe and account for the properties of molecules and atoms and their constituents—electrons, protons, neutrons, and other more esoteric particles such as quarks and gluons. These properties include the interactions of the particles with one another. Light can be both wave and particles. Time and space are not constants. This new science relies on probability and possibility rather than observation and experiments and interconnectedness not linear.

I had what I can only call a spiritual experience. By that, what I mean is all those fractured parts of myself—the math part, the verbal part, the physical part, the spiritual part—they all came together. I was rescued from my atomistic understanding of myself in ministry, in which I was the mechanic and the congregation the machine I was supposed to run. The new science gives me new models for my life in community, which matched up with biblical models. No longer a Newtonian world view.

Another way of saying it is that quantum physics spoke to my spirit. Here is something that grabbed me. One of the most iconic features of quantum mechanics is “entanglement” — describing particles that are mysteriously linked regardless of how far away from each other they are. Interconnected reality. Einstein did not like quantum theory at all. His objection to it was there was too much chance in it, too little design. According to quantum theory, a subatomic particle that decays into two particles becomes a set of "twins"—a single system with two parts, spinning in opposite directions. No one knows which one is spinning up and which one is spinning down until a measurement is made, but according to the laws of physics they must always balance each other.

So far so good. Now imagine those two particles flying apart—one of them heading around the dark side of the moon while the other lingers in the laboratory above of Einstein's hair. If Einstein could nab that one and reverse its spin, he theorized, then the other particle would have to reverse itself too—even if it was light years away. According to the laws of quantum physics, this is exactly what would happen. Some unimagined form of communication, faster than the speed of light, would allow each particle to "know" and respond to what the other was doing. Since this eerie idea violated his own theory of special relativity, Einstein concluded that quantum theory is wrong. He famously called it “spooky action at a distance.”

However, subsequent experiments proved that there is indeed some kind of instantaneous, superluminal communication between quantum particles. Once they have interacted with each other, they have the power to influence each other, no matter how far apart they go. According to quantum physics, this relatedness goes beyond human beings to include the whole creation. Physical reality refuses to be compartmentalized. As hard as we may try to turn it into a machine, it insists on acting like a body, animated by some intelligence, that exceeds the speed of light.

Scientists think it has something to do with field theory—fields being invisible, nonmaterial structures that may turn out to be the basic substance of the universe. Imagine another kind of field that knits the whole cosmos together.

In light of all this, consider Paul's metaphor of the church as Christ's body. As different as we are and as many functions as we serve, we are far more than a collection of parts. There are also times when we clearly participate in some form of communication—or better yet, communion—that puts us in touch with a source much more capable than our own consciousness. This mysterious action at-a-distance is known as nonlocality.

Another topic in Quantum Physics is Heisenberg's uncertainty principle, which asserts that it is not possible to know both where a particle is and how fast it is moving. Let's use the analogy of the game of musical chairs. While the music plays, everyone is in motion around the ring of chairs. Since there is one less chair than there are children, when the music plays, anything is possible. You could end up on that chair, that chair, that chair or the ground. There is no telling how it will end until the music stops. When that happens, everyone runs shrieking for a chair. There may be a brief struggle over who got there first, but the probability wave has been collapsed. The measurement has been taken, leaving one person without a chair.

In quantum theory, there is no way to predict the outcome of this game. The same child will end up on a chair one time, and on the ground the next. One time she will be a particle and the next time she will be a wave. So which is she, really? Quantum theory answers: she is neither; she is both. Maybe this sounds more like Zen Buddhism than physics.

David Bohm, a prolific quantum physicist, says that the new science requires a radical change in how we conceive the world. It is no longer possible to see it as a collection of autonomous parts, existing separately while interacting. The deeper revelation is one of undivided wholeness, in which the observer is not separable from what is observed. Or, in Heisenberg's words, "The common division of the world into subject and object, inner world and outer world, body and soul is no longer adequate."

Is this physics or theology, science or religion? At the very least, it is poetry. As far back as the 13th century, poet Rumi wrote, "You think because you understand *one* you must also understand *two*, because one and one make two. But you must also understand *and*."

Poem and story of Job offers another truth. God is not only above all but is in all and asks questions that are not to be unanswered. Job wanted answers. Instead God seems to say - Ask deeper questions about the universe and ways the Creator was, is and will be at work.

When I am dreaming quantum dreams, the picture I see is not a hierarchy, but a web of relationships—an infinite web, flung across the vastness of space like a luminous net. It is made of energy, not thread. And there is a sense of wholeness and connectedness.

Where am I in this picture? All over the place. Up there. Down here. Inside my skin and out. I am not alone. I am part of the web that is connection, relationship, with energy available to me that has been around since the universe was born. I serve a congregation that is a web of connection and seeks to expand our connections in the world.

Where is God in this picture? All over the place. Up there. Down here. Inside my skin and out. God is the web, the energy, the light, the presence, the source of love, revealed in that vast web of relationships that animates everything that is. Let us pray.

You are above us. You are within.

You are in all things, yet contained by no thing.

Teach us to seek you in all that has life, that we may see you as the Light of life.

Teach us to search for you in our own depths, that we may find you in every living soul.

Before us, around us, within us, we look for your life-giving mystery.

Before us, around us, within us. Amen.

Closing Prayer by John Phillip Newell, from *Sounds of the Eternal: A Celtic Psalter*.

Parts of this sermon were adapted from an essay
Physics and Faith: The Luminous Web by Barbara Brown Taylor,
The Christian Century, June 2, 1999.

<https://www.christiancentury.org/article/2011-11/physics-and-faith>

And her book *The Luminous Web: Essays on Science and Religion*.