

Transfiguration Sunday

27th February 2022

Psalm 65:5-13

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Quantum Theology

In December 1926, 95 years ago, the physicist Albert Einstein wrote a letter responding to fellow physicist Max Born. Born and Einstein were debating the foundations of quantum mechanics, the physics of the incredibly small. Born noted that the experimental data suggested that, when we get down to the tiniest, most basic, building blocks of the universe, quantum particles, that they behaved not in predictable ways, as we had understood in the 400 years since Isaac Newton, but in random and unpredictable ways, as though suffering from

arrhythmia. In response to Born's suggestion, Einstein responded that, "I am at all events convinced that [God] does not play dice [with the universe]."

As it turns out, however, God does. Many of us probably learned something about Newton's physical universe when we were in school, even if we've actively worked to forget it all since then. Newton gave us the laws of classical mechanics and the math to back them up. Newton's laws teach us that for every action, there is an equal and opposite reaction, and that objects in motion or at rest will main-

tain that state unless acted upon by an outside force.

In short, Newton gave us a predictable universe. A universe in which we could plug in data and make reliable forecasts about the outcome. Drop a ball off a building, plug in the acceleration of gravity, wind resistance, and height of the building, and you can predict how long it will take to fall.

That Newtonian worldview has provided us not only with insights into the way our universe seems to function, at least at a macro level, but those same presuppositions have carried over into our understanding of how the moral universe works, how God must work. Margaret Wheatley is a management and organization systems consultant who wrote an interesting book about business management explained by the concepts

she discovered in quantum physics. In her book, she identifies four characteristics of this Newtonian universe:

1. It is a universe based on cause and effect. I push the button on my coffee-maker in the morning, and the coffeemaker gets power and heats up and brews my coffee. The coffee is the result of something that causes it to happen.

2. It is a universe of determinism and predictability. I can predict that when I flip that switch on my coffee-maker, I know what will happen next. A burner heats up, water flows through the coffee basket, and I get coffee.

3. It's a universe comprised of separate and discrete parts. The coffeemaker is an entity separate from me, just as I am separate from each of you. Everything has clear, defined boundaries that determine

where one thing ends, and another begins. If you grew up with a sibling, you may have experienced this when you hold your finger a centimeter away from your sibling and loudly repeat, “I’m not touching you. I’m not touching you.”

4. Finally, and this is a big one that we are struggling with in our post-modern age, it is a universe of objective reality. Data is measurable and recordable, and when that data is collected accurately, it is presumed to be objective and reliable. That is, a neutral observer should be able to repeat the experiment and collect the same data, because the event exists independent of whoever is observing it, so everyone should be able to observe the same thing.

This model of the universe was virtually unassailable for 400 years after Isaac

Newton. But then came quantum physics. Despite Einstein’s letter challenging Born’s findings, Einstein’s theories contributed a great deal to how we now understand the universe at the most basic level.

Before Einstein, in Newton’s understanding, the basic “stuff” of the universe was matter—the stuff that makes up everything. Einstein came along and discovered that the basic building block of the universe is not matter, but energy. And that energy is capable of being modified and transformed. Along with Einstein’s discovery came some other insights that have caused those building blocks of a Newtonian universe to come tumbling down.

1. In this new understanding of the universe, things are not discrete like we thought they were. Things can only be under-

stood in relation to one another. That's relativity. Jump on a plane and fly across the ocean. While you're in flight, you will age slower relative to someone on the ground. Jump on a spaceship and travel around the universe near the speed of light and you've aged a few years while centuries have passed on earth. It isn't that time functions differently for you, it's that you have aged less relative to the people on earth traveling through space at a much slower speed.

2. In this understanding of the universe, we cannot observe something without our observation changing that thing. That's the famous Schrödinger's Cat thought experiment. The cat in the box exists in a state of being both alive and dead until you observe it. One of the basic experiments to demonstrate this is to shine a light through a piece of

paper with two parallel slits cut out. What appears on the wall behind it shows an interference pattern of light waves. But if you observe these photos as they pass through the paper, measure them, suddenly the interference pattern is changed. Those photos that acted like waves now behave as particles.

The very act of observing something changes it. What that means is that reality is not this objective thing we can just observe, but something fluid that we are all taking part in creating. At its most basic, our universe, everything in it, does not exist apart from us, as some objective thing outside of us, but in relation to us and to everything in it. Reality is relative. That's the world-changing insight of quantum physics—that everything in our universe exists not independently and

discretely, but in relation to something else. Independence is a myth.

One way to think about this on a macro level is to consider who you are, your personality, your interests and quirks and uniqueness and everything that makes you “you.” All of that exists because of your relationship to other people around you. Even the things that are most unique about you are unique because they are different than the characteristics you observe in your relationship to others. Our personalities and expressions of ourselves look different as we relate to different people. That doesn’t mean that we are different people. But some of our personality traits are evoked while other are suppressed depending on the people with whom we are interacting. This doesn’t make us inauthentic; it merely makes us quantum.

Not only are we fuzzy...the whole universe is.

This whole month we’ve been invited to consider how science can give us deeper insights into the life of faith. To me, reading and trying to understand something of reality at the quantum level has led to the greatest transformation of my understanding of God. In a Newtonian universe, we thought of God as infinitely rational. God’s works were predictable. It’s the cause-and-effect universe we considered two Sundays ago with the story of Job. If we didn’t understand something about God, it wasn’t because God’s actions were irrational, but because we were missing some critical bit of understanding the mind of God. If we had enough knowledge, we could predict God, if not become God.

One of the oddities of quantum physics is that par-

ticles can take on different forms. In that double-slit experiment I mentioned earlier, photons can be particles or waves depending on an observer. In theological terms, that same freedom allows us to think of God not as some immutable being, but rather able to take on different forms in relation to the one encountering God.

Sometimes God acts as a wave, discoverable only as a thought or a feeling. Sometimes God is a collection of particles—a carpenter from Israel, a blue-faced goatherder from India, a spot of light in your meditation. The Native Americans said God was a shapeshifter, capable of becoming a coyote or a jackal or the smoke from the fire—all things familiar to them, all things they could understand. God can even become, if that is what you are looking for, a big guy in the sky.

Of course, this is all metaphor—as I learn about the fascinating science, it has functioned as a metaphor to deepen my understanding of God. This is the frontier where I find my faith stretched to new insights. But the greatest revelation for me is that my quest to know God comes not through acquiring knowledge, or through rational thought, but the deepening realization that God can only ever be known in the same way we can know anything about our universe—in relationship.

As we wrap up our science and faith month this morning, I'm reminded that the greatest insight science has offered me is not deeper knowledge, but relationship—with God, with the universe, with the world around me, and that God exists, not independent of the universe and everything

in it, but that God is, in fact, the very interconnectedness that binds all things together. Amen.
