

Finding God in Dark Matter by Rev. Doug McCusker

One of the most popular Unitarian Universalist adult religious education classes of all time is Building Your Own Theology by Richard Gilbert. I took it back in 2001 and have taught it many times. David Boone and I finished teaching the latest offering of the course 2 weeks ago. Building Your Own Theology is an eye-opener for people because it is based on the proposition that we are the meaning-makers existing within a historical continuum. That which we consider to be ultimate reality, a.k.a. God for short, must make sense for us.

To be divine, ultimate reality must give us hope and confidence. It must nurture our dreams and aspirations; open our minds and hearts so we can feel our deep ties to each other, to other living creatures, to the planet we share and perhaps to some special purpose, and to the future. It must inspire our personal quest for meaning and courage. Anything less than that is not ultimate, not worthy of being called God.

My favorite exercise in the class involves drawing the conception of God from our youth, early adulthood and present stage of spiritual development. I love seeing everyone's God journey depicted in images and symbolic metaphors. It makes you think hard about what you believe and how that has changed throughout your life.

Humanity has been on that quest throughout its collective lifespan. Conceptions of God have been changing along with our understanding of the cosmos. But ever since the Copernican revolution and Newton's discovery of gravity, God has been banished from the physical world. Once the idea of a heavenly sphere beyond the fixed stars in the sky was debunked, God had no place to live.

And thus, began an incoherence between spiritual and physical reality. God became supernatural, living on some plane of existence outside anything we could know with our senses or comprehend with our intellect. It was as if we had a picture of everything we knew to be real, and all we had to do was find God like Where's Waldo.

Explanations such as God is nature or God is the universe have filled in the blank spaces for many people, me included from time to time. But all we are doing is renaming something else, something big, something complex that seems to approximate ultimacy. Others have used metaphors like "ground of being" to posit a base level of creation that gives rise to the laws of physics, which govern our scientific baseline of reality. But once again, you are left with the issue of where's God?

As Unitarian Universalists, we rely heavily on science and reason to guide us along our spiritual paths. A God that existed before the universe and continues to create everything from outside the universe is not plausible. An intelligent designer presupposes an incredibly high degree of complexity prior to the Big Bang and the evolution of all things.

A God that is omnipotent and who knows everything means that it is everything. But what we know from science is that for anything to exist it must have limits. A river exists because of its banks. If God is everything, then God is nothing. Knowing what God is not, is enough to convince most atheists that God isn't real; that he is a figment of imagination.

I've never gone that far because I have experienced things that I cannot explain; things that connect me to something greater. At times I have felt connected to the

cosmos if for a fleeting moment. When I pray or meditate and open myself to the web of life, I have a sense of belonging.

The first time I took Building Your Own Theology, I learned about a different way of perceiving God called process theology. In seminary, I studied it more intensely. It was first conceived by the brilliant mathematician and philosopher Alfred North Whitehead. As the name implies, God is a process rather than a being or a static entity that has always been. Like us humans, God is always in the process of becoming, changing and evolving. God evolves through a reciprocal relationship with the world.

God does not see into the future and does not know what will happen before it occurs. God is affected by the world and all the collective, interdependent choices that have been made by humanity. The God process continually presents us with possibilities for the common good. God has a vision, but is not coercive. Ultimately, we all must choose. And in this process of selection we co-create with God

God's aim is the intensification of experience. Beauty is the confluence of harmony and intensification. As we evolve with each new event we feel our experiences. But rather than wander aimlessly with no purpose, we have guideposts that signal God's vision of the greatest common good. It is up to us as individuals and as religious communities to listen to God's call and to let God's vision guide us to creative transformation in the world.

God as a process of continual change resonates with me. It feels much more coherent than a Supreme Being outside of the Universe. I have a role in helping to create the world through my choices. It gives me a different perspective of reality. But where does God come from and how is God's vision generated? Those have been lingering questions.

Ray and Natalie Davis gave me a tremendous gift when they asked me to read Nancy Abram's book *A God That Could Be Real: Spirituality, Science, and the Future of Our Planet*. Abrams provided answers to my lingering questions within a coherent scientific framework. She is a philosopher of science and the spouse of famed astrophysicist Joel Primack, who is one of the creators of the new theory of the cosmos based on dark matter and dark energy. She has been at the ground level of the paradigm shattering discoveries of how the universe was formed and why it is expanding.

We are in a similar era as in Galileo and Newton's time. The double-dark universe is a refinement of the greatest story ever told – how we got to here from the Big Bang, 13.8 billion years ago. They filled in the missing pieces of the puzzle by scientifically proving that dark particles and energy make up 96% of all the density in the universe. Here is how Abrams succinctly describes our origin story:

“Right after the Big Bang there was nothing but rapidly moving elementary particles and energy, not even atoms yet, though the simplest atoms, hydrogen and helium, formed after a few hundred thousand years. The early universe was smooth, expanding but not turbulent. Spacetime came into existence wrinkled, and the wrinkles expanded with the universe. For billions of years, primeval particles of dark matter flowed toward the wrinkles by gravitational attraction alone. The dark matter formed clumps along the wrinkles.

As time passed, enormous transformations occurred. The immense gravity of the dark matter clumps drew in clouds of hydrogen and helium, which cooled and collapsed

to the centers of the clumps, igniting as stars. Surrounded by a halo of dark matter, the stars cooked up inside themselves the heavier atoms, like oxygen, carbon, nitrogen, silicon, and the nearly hundred natural atoms that make up the periodic table of elements.

The biggest stars exploded in supernovas and spewed these heavy atoms into space as pure stardust for eons. The intermingling stardust of thousands of supernovas got pulled into the gravitational field of our forming solar system, and 4.6 billion years ago they condensed into the rocky planet Earth. Hundreds of millions of years passed before the earliest life evolved here, and billions more before intelligence evolved that was complex enough to understand the idea of creation.”

Thanks to supercomputers we now know the limits to the universe. We know how old it is and how big it is. We know that dark energy is expanding the universe faster and faster. We know the Milky Way and Andromeda galaxies will merge in 5 billion years. New stars will keep forming and the new Milky Andromeda mega galaxy will shine on for a trillion more years.

The astrophysics community is pretty much in agreement that this is how it happened and will continue to happen. I did not pour over the mathematical equations or watch the experiments, so I guess you can say that I am accepting this scientific convergence of opinion on faith as the best working knowledge.

Even though I accept the science, the magnitude of the time and the size of objects are hard to comprehend. Take out the insert and turn to the image called the Cosmic Uroboros. Abrams and her husband developed this metaphor to help us make sense of the universe. Uroboros is the Greek word for tail swallowing, an ancient symbol of unity.

The Cosmic Uroboros depicts the complete range in centimeters of all sizes of things in the universe. At the tail is the smallest size permitted by the laws of physics. Here you have the maximum mass that can be squeezed into the smallest space. The gravity is so intense that it collapses into itself forming a black hole. That is known as the Planck length, 10 to the negative 33 . The next size is dark matter. It is so small that the particles have never been detected, even though scientists can observe their effects. As you move counter-clockwise along the tail you encounter quantum and atomic particles, molecules, genes, and cells. Things are becoming more complex as you approach objects such as insects and large animals such as humans.

You can see that the objects keep growing such as mountains, planets, stars, galaxies and superclusters. The reason for the Uroboros, is because at both the tail and the head, gravity is the force that shrinks and expands objects thus unifying the universe. The head is 10 to the 60 times (one with 60 zeroes) larger than the tail. This is not infinity, but it is an enormous number. We now know all the size scales in the universe.

Look at the bottom of the serpent. Right at the halfway point are humans. We are at the center of all possible sizes. That turns out to be very significant. It is not by accident. That is the sweet spot for complex intelligence. It is large enough to contain thousands of degrees of complexity and varieties of atoms, but not so large to slow down the internal communication of our brains and neurotransmitters.

Okay, but where is God in all this? Turns out, God emerges from the consciousness at the center of the Cosmic Uroboros, from us humans. God is an

emergent phenomenon, born from the complexity of humanity. Through the evolution of countless chemical transformations through ever increasing levels of complexity, consciousness emerged into the universe through us humans. We are the universe becoming aware of itself.

Wanting to know who we are, what we are made of, how we fit into the universe and what we are to do in our lives are all products of consciousness. Deep at the very core of our consciousness is an emergent quality unique to us. We aspire. We are the aspiring species. We aspire to be better, do better, to find meaning. And out of the collective aspirations of humanity, from the first humans to the over seven billion on this planet today, God continues to emerge in increasing complexity. So where is God? Right here on this planet, as far as we know. If there is intelligent life elsewhere in the universe, they may very well have their God that emerged from their unique collective aspirations.

Let me back up and explain emergence. It is a dynamic process generated from complex interactions at a large scale. Take the ant colony for example. The colony can grow to an enormous size. The colony is self-organizing. It is not created or engineered by anyone member of the system. The same is true for human systems such as the markets and the global economy; or cultural developments such as language. Life itself emerged from the complex interactions of microbes and cells. All these things are real and have enormous impact on our lives. And even though we know they exist, we do not know how or when exactly they emerged.

So just as the media has emerged from our mass communications on the Internet, television, publications, movies, and so on, God has emerged from our mass aspirations. In this way, God represents the possibilities for growth, achievement, beauty, awe, discovery and collective transformation of our species. God is continually becoming and being regenerated through the interdependence of humanity through time and space.

Nancy Abrams uses a metaphor to visualize God. God is like oxygen generated from the breathing earth. Oxygen accumulated and formed an atmosphere from the excretions of all the microbes during the cooling of the planet. We are the microbes in this metaphor and through our collective aspirations we generated God, our meaning-sphere. In turn, we need the emergent God to find meaning in our lives, to feel connected and to serve our role as the consciousness of the planet.

On the backside of the insert is the Uroboros of our human identities. As you move from the tail of self-consciousness to ever larger consciousness, you become more and more in touch with the collective aspirations of the whole and the closer you get to God. This image is the closest thing I have found to visualize the interdependent web of life of which we are a part. If there ever was a time for humanity to be in touch with our interdependent consciousness, it is now, before our collective actions cause the emergent climate to become inhospitable on our planet.

We play a vital role as the intelligence of the planet and if we don't blow our chances at this crucial period in the history of the universe, we may someday be the intelligence of the universe. We need a God that is real to help us through this gauntlet that we have created. Not to manifest a miracle, but to align our collective humanity with our highest aspirations and our best selves. We have such a God that is real. It is time

to get in touch with this God for the future of your descendants and the future of consciousness. For if we perish as a species, so will God.