

Advent Prelude 2012

The View from the Center of the Universe: Part I

A sermon by Rev. Steven Epperson

November 25, 2012

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I heard recently that some Unitarians on the North Shore have dubbed me “Rev. Science.” “*Rev. Science*”—now I have to tell you my secondary school science teachers would have been shocked to hear **that** one. (Well, the “Reverend” part would have been a pretty wild one too!). You see, back then I was a restless, bored, distracted and below par student in their classrooms. But things changed irrevocably for me—four children asked questions about life and the universe I couldn’t even begin to answer. Slowly, I sloughed off an unexamined supernaturalism that could not possibly square up to evidence about the advent and evolution of the cosmos and life through natural laws and forces. My own slow growth into adulthood these past fifteen or so years has been aided and abetted by revolutionary developments and discoveries in the sciences that have reported in what I think is a golden age of popular science writing. And finally, I became a Unitarian minister and with that a strong desire for us to share one extraordinary story after another about the beauty, complexity, mystery and grandeur of life from the atom through photosynthesis from plate tectonics to the teenage brain. And we’ve been doing that now in annual Advent worship services for a decade—and what an adventure it’s been!

In these next two weeks, I will be sharing information and ideas from a book called *The View from the Center of the Universe: Discovering our Extraordinary Place in the Cosmos*, co-authored by astrophysicist Neil Primack and cultural historian Nancy Abrams. It caught my eye one day back in 2007 in Duthie Books (don’t I miss that bookstore!) and I’ve been waiting to share its story with you. Last August, I had planned on doing these Advent worship services,

and was then pleased (and surprised) that Neil Turok, Director of the Perimeter Institute for Theoretical Physics, and his Massey lectures this year scooped me somewhat.

But since he's a physicist and I'm *Rev. Science*, **he** has his story to tell, and I *mine*...well, it goes like this, and starts with a "visualization" exercise: I want you to close your eyes and picture "the universe"—what do you see? Endless space with stars scattered unimaginably far apart? An ember-red moon rising over an unknown planet? Chewbacca and Han Solo in the *Millennium Falcon*? (Wait! That's the wrong picture!) What about an infant star coming into existence at the top of an immense column of cosmic dust? Or picture our own shining blue boat planet floating on the black backdrop of empty space....These pictures are just snapshots of course, and two dimensional at that; they are no more true or representative of the universe than is a single molecule of DNA or a moonrise over Vancouver.

It's strange, even now for the most part the pictures inside our heads don't correspond with revolutionary discoveries that have taken place in astronomy and astrophysics in the past twenty years—a revolution as momentous as the one in the 16th and 17th centuries that threw our planet away from the centre of the universe and set it in orbit around a medium size star in a distant patch of endless space.

And the question, the important one arises: Does it matter to us what it looks like, this map of ours of the cosmos and how it's made up? Does it make a difference in our lives here and now?

From peering dimly out into space, let's look now back in time in our world for a few minutes. We're going to do some historical *cosmology*. For thousands of years, our human family has looked up into the heavens and surveyed the earth in wonder, speculation and argument: how did it all begin? How can I begin to describe it? The horizon of the earth runs up

and touches the hem of the heavens; the sky's dome arches overhead blazoned with stars, sun and moon process across it, curtains of cloud, rain, and bent bows of arcing colour fill the skies. How did they come to be? Are they—the heavens, skies and earth—related in some way? And we and I—are we connected with them? After all, it is through the portals of our senses they enter and manifest, and at some gut level we search for “a voice through which the universe can talk to us. [For] the universe is endlessly speaking.” (Primack and Abrams, 36)

In virtually all traditional cultures, cosmology—the ways we depict and explain the heavens and their relationship to the earth and us—gave people a fundamental idea and belief about where they came from, who they were, and what their role in life's bigger picture might be. It is one of the most important pictures we have and carry around inside us: it helps explain the sacred relationship between the way the world is and how we should behave. Traditional cosmologies may not have been scientifically accurate by our standards, but they were valid to them and had the power to ground codes of behaviour and identity within a larger landscape.

Let's look at the cosmic pictures printed in the order of service. First, in the upper left, the Biblical one: when ancient Hebrews looked up into the skies they saw a transparent dome studded with lights arching over a flat disc shaped earth. An awesome sight created by God to hold back boundless, primordial blue water clearly visible beyond: water on all sides above, beyond, and beneath the horizon. God had pushed back the water by creating that dome and thus making space for the dry land on which they lived out their days. The dome was called *raqi'a* or “firm substance”—a firmament placed there by the creative power and will of God. In the time of Noah, as the story goes, so great was humankind's transgression of divine law, that in anger, God withdrew his mighty arm, and the “windows of heaven” and the “fountains of the deep” burst open and flooded the known world. Now it's said that their deity promised not to do that

again, and placed a rainbow in the skies as a sign of his promise. But rainbows are a some time thing are they not? The main point here, for these ancestors, is that what takes place beneath the firmament—what human beings do or refrain from doing on dry land—was of central importance to an all-powerful, personal, temperamental and transactional deity. Principled behavior could avert, misdeeds provoke a cataclysm. Humans were at the center of the universe and gravely responsible for their future and the well-being of the world. A cosmic watery scale weighed us, and if tipped too far---? Catastrophe.

Representing the cosmologies of traditional, indigenous peoples, I have chosen this next picture which depicts Father Sky and Mother Earth from the Navajo nine-day Shootingway blessing and healing ceremony. It is a powerful image of the universe that embodies what the ancestors of the Navajo saw as they emerged from the body of Mother Earth, the abiding principles of male and female and of the order, symmetry, and harmony the ceremony seeks to re-establish. Constellations on the body of Father Sky evoke the story of stellar creation. In the body of Mother Earth are the four sacred plants—corn, bean, squash and tobacco that sustain the people. The Rainbow god encircles three sides of the sand painting to protect and bless the heavens and the earth and those participating in the Shootingway ceremony.

Through this painting created during the ceremony, all present are reminded of their connection to forces that sustain and animate their world. “Because we walk everyday on our Mother Earth and under our Father Sky,” one chanter of the Shootingway explains, it tells us our place on earth and under the heavens, our oneness with the intricate and infinite web of creation. We are connected with these entities: “these whorls at the tips of our toes hold us to the Earth. Those at our fingertips hold us to the sky. Because of these we do not fall when we move about....We are children of both of them” Mother Earth and Father Sky.

According to Nancy Maryboy of the Indigenous Education Institute, the Navajo worldview “includes a holistic and ordered universe where everything is interrelated... The entire universe is considered to be a living organism, a sacred organism existing in a non-static and constantly regenerating process. The human [person] is an integral participant within the dynamic whole. Every human action is considered cosmic and affects the web of universal relationships.” (Maryboy in: www2.raritanval.edu/planetarium/pdfs/D.10.NavajoSkies.pdf; for Mother Earth/Father Sky sand painting and the Shootingway ceremony see: <http://www.twinrocks.com/legends/64-mother-earth-father-sky.htm>)

Next picture: the one on the upper right with all the circles. The trick here is to imagine them in three dimensions—not flat circles, but as round spheres, one nested within the other like Russian matryoshka dolls. For the ancient Greeks, their earth was not flat and domed, but a round celestial object. Can you see it in the center? Orbiting immediately above it is the moon—whose sphere defined the border between the earthly world of change and decay below and inside, and the perfect, unchanging heavens outside. And beyond them all, transcendent—the *Coelum Empireum Habitaculum Dei*—“the celestial abode inhabited by god and all the elect.” By the Middle Ages and *for 1500 years*, this image of the universe, comprised of concentric heavenly spheres, became *the* cosmological map dogmatically taught and accepted by Jews, Muslims and Christians alike.

What this means is that on a clear night in ancient and medieval Europe and Near Asia, a person looking up into this cathedral, shul or mosque in the sky would have seen huge transparent globes nesting and receding away, encircling the center of the universe—and the center?—that’s us on our planet in the middle subject to the influence of the planets and stars. God was physically right out there. “Everything between heaven and earth,” writes Joel Primack, “had its eternal place, chosen and set by God. A worm in the soil, the lowliest peasant, and the king himself has been placed by God exactly where they belonged in the great chain of

being, and there was no questioning this divine hierarchy.” Religious institutions, nobility, family, the beasts of the field and the rocks themselves were situated in an ascending and descending order of importance. The pecking order below reflected the cosmos above, each in its mandated place for all time.

Now we may shake our heads that people once beheld the heavens thus and for the consequential ways it divinely mandated hierarchies here on earth. Nevertheless, it and the other cosmic pictures of our ancestors answered such vexing questions as: How did it all begin? How did they come to be? Are the heavens, skies and earth related in some way? And we and I—are we connected with them? These traditional cosmic maps created a sacred model for society. Here, the heavens were near and familiar, with earth an abode under the cope of heaven where the human family could be content and seek to live in harmony with the universe and its providential direction, influence and rhythms. (see Joel Primack, “Cosmology and Culture,”

http://physics.ucsc.edu/cosmos/promack_abrams/COSMOS.HTM)

“A new cosmology,” writes Joel Primack, “is subversive in the deepest sense of the word.” Which brings us to the next image on the lower right side: at the end of the 16th and the beginning of the 17th centuries, the stable, earth-focused center was torn out of the heart of the Medieval universe. Galileo, Copernicus, Brahe, Kepler and others collected and analyzed astronomical data, observed the heavens through telescopes, and conclusively demonstrated that ours was one planet among others orbiting the sun according to impersonal laws of nature. Together, they proved that the earth-centered picture was wrong and with it—all those earthbound, heavenly mandated hierarchies. This was revolutionary stuff, and leading scientists were gagged, imprisoned and burned at the stake for it. (on cosmologies, see Primack and Abrams, 52-82)

By the time Isaac Newton explained the forces behind celestial motion in the 1680s *and for the next 300 plus years*, everything had changed in our western cosmologies, our depiction

of the universe. Educated people in the West—right up to Lucy and Calvin on today’s order of service cover—understood that science was telling us that our universe was incomprehensibly vast. What was “out there” was almost entirely empty space, with stars scattered at great distances from each other. There was no center, no inherent purpose to it all, no abode or location of God, and no obvious role for us.

The English poet John Donne immediately recognized what was going on. As early as 1611, upon learning of Galileo’s discoveries, he wrote:

The new Philosophy calls all in doubt,
The Element of Fire is quite put out;
The Sun is lost, and th’earth, and no man’s wit
Can well direct him where to look for it...
“Tis all in pieces, all coherence gone;
All just supply, and all relation;
Prince, Subject, Father, Son, are things forgot...”

About fifty years later, Blaise Pascal, the French Catholic philosopher and mathematician, assessed the cosmology that was coming into view and was terrified by what he saw, and its implications: “engulfed in the infinite immensity of spaces,” he wrote, “whereof I know nothing and which knows nothing of me, I am terrified....The eternal silence of these infinity spaces alarms me.” 300 hundred years later Lucy, in a Peanuts cartoon, put it this way: “You are of no importance, did you know that?” she tells Snoopy. “You are only the tiniest speck in an enormous universe.” And Snoopy’s reply? “Then I might as well go back to sleep.” And to Calvin’s cry of: “I’m significant!” the heavens burn remotely, silently on, reducing Calvin, more tragically, to echo Lucy’s words. “I’m significant!...screamed the dust speck.”

These are two rather remarkable cartoons, actually. What Lucy is describing is a cosmology that has prevailed for nearly four hundred years; a picture of the universe and our place within it based on what was, until recently, the best that science could provide. Calvin’s

response and Snoopy's are worthy of special notice and sympathy, for if Lucy's picture is correct—a nearly limitless and virtually empty cosmos where we are but insignificant specks of dust—what's left for us? How could we possibly be connected or interconnected with it? What is our role in the scheme of things? With heavens so remote, silent and without purpose, we are reduced to Calvin's scream of alienation and Snoopy's resignation. That is, unless, we reject science all together. We could keep believing in a supernatural Middle Ages cosmology—which is the case in a lot of conservative religious communities; or, we could believe somehow that unseen spiritual entities and forces animate all things. Standing betwixt and between these options most of my life, alternating back and forth between traditional, spiritual and modern cosmological thinking and feeling, I deeply empathize and understand both magical and austere cosmologies and their appeal, their subjective, heart-felt, soulful consequences.

There is, however, an alternative to magical thinking, alienated, existential anguish, and not-so-benign neglect. Joel Primack puts it like this:

“Scientific cosmology today has entered a golden age of discovery because of a combination of extraordinary new instruments and telescopes on the one hand and daring theoretical breakthroughs on the other. Data is flooding in, and cosmological theories are being honed to levels of precision unimaginable even a generation ago. We may see in the first decades of the 21st century the emergence of a new [revolutionary] universe picture that can be globally acceptable, and with this and the contributions of image-making writers, artists and spiritual visionaries, it is possible that the painful centuries-long break in the human connection with the universe will end. ...[F]or those who continue to seek truth, whether through science or spirituality, there will be a [new] universe for our time. *This* universe could become the most inspiring source of new ways of interpreting and addressing the problems of our planet.”

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That's a remarkable statement and appropriate as we launch into this year's Advent season. Next week, we'll dive right into this new universe picture, where we will discover that the human family, far from being unimportant specks of dust, reside at the centre of things, and that we have an extraordinary role to play in making meaning of "life, the universe and everything." "And the answer isn't just "42.") Please join us as we continue this journey into the Advent!