

## Cosmology and Me

This will, ultimately, be about my interest in science, but it begins with religion. My mother was an evangelical Christian, a fundamentalist. There was nothing mystical about her religion. Fundamentalists are nominalists. They call people to “Believe on the name of the Lord.” (By “nominalism,” I mean the sense that words refer to discrete, non-transferable essences.) What mattered to my mother and people like her was to know what she would have called “the truth.” There was very little emphasis on subjective experience. I grew up within the fundamentalist framework, but, even as a young child, I was a bit different. I wanted to correlate dogma with experience. My mother was quite embarrassed when I tried to give all my possessions to the poorer child next door, uncomfortable with that sort of extrapolation perhaps. I wanted to experience raptures. In that, I was disappointed. Rapture would have to wait until I discovered art (but that’s another story.)

It is often said that fundamentalists are literalists; what is seldom said is that they are also materialists. At least my mother was. She believed in the solid, separate reality of things—indissolubly linked with names. Metaphor, which exchanges, or “carries across,” made her uncomfortable. The Garden of Eden, for instance, was a spot on earth. It couldn’t also be the womb. “A” cannot be “non-A.” Equation is a slippery slope. And yet, of course, Jesus is the ultimate stand-in. What happened to him is meant to carry over, to carry across (which is the literal meaning of metaphor) to us all. Is it only evangelicals who are in a state of tension about the relation between the singularity of event and the promiscuity of metaphor—or is it the whole Judeo-Christian tradition?

I left Christianity behind in my teenage years, but, predictably, I didn’t leave the questions or the habits of mind I formed within it. For the last fifteen years or so I’ve taken an interest in cosmology and physics. I don’t think it’s because I’m looking for an authoritative view of reality different from the one I grew up with. In fact, these sciences don’t seem to offer that! Perhaps it’s because reading the Bible has given me the habit of trying to imagine the Creation and

the End. Religion has given me a taste for ultimate questions. And I find the concept of the origin of the universe more mind-boggling, stranger, more awe-inspiring without theology than with it. I took to occasionally writing versions of the creation story in my poems. Here are two short sections of my poem, "The Creation":

Let us  
move fast  
enough, in a small  
enough space, and  
our travels  
will take first  
shape, then substance.

\*

In the beginning  
there was measurement.

How much  
does self-scrutiny  
resemble mother-touch?

I imagine the Biblical echoes are evident here: "Let us make man in our own image" becomes "Let us/ move fast/ enough . . ." etc., and "In the beginning was the word . . .", of course, becomes "In the beginning/ there was measurement." I can't remember exactly what the scientific sources were—but certainly the mysterious role of measurement in quantum physics enters in as does the equation of energy (movement) with matter (substance).

There's some mischievous impulse behind such rewritings, of course. What could be more scandalous than a woman playing God? But there's also a more serious desire, one conserved from my days in church, to unite experience with concept. What does creation *feel like*? How can humans understand it, or, more appropriately, how do we not understand it? How does it feel to stand inside uncertainty? Like many of you, probably, I take a perverse pleasure in quantum

physics' uncertainty principle. Is it because quantum fuzziness seems to underwrite metaphor? The interference pattern on the detector shows that, as long as its trajectory isn't registered, the single photon has taken *both* possible paths from the beam splitter. *Both*. I want to shout this to my poor dead mother. (Eden as place on earth *and* womb?)

Fundamentalism may be a kind of materialism but, apparently, no one really knows what matter is. Things with "mass" are material—but what is mass? According to physicist Brian Greene's book, *The Fabric of the Cosmos*, there are two possible explanations for mass: "The mass of a particle depends on how much drag force it experiences as it wades through the Higgs ocean." (The Higgs ocean is a new version of the ether, formed by the ubiquitous presence of a theoretical, as yet undiscovered, particle called the Higgs boson.) Or else, Greene continues, "A similar scenario likely plays out in string theory. If a huge collection of strings all vibrate in just the right coordinated way throughout all space, they can provide a uniform background that, for all intents and purposes would be indistinguishable from a Higgs ocean." Whatever beautiful mathematics buttresses these theories, they are clearly still speculative. And, if we don't really know what matter is, then materialism (and therefore literalism) is in trouble. Clearly I take some personal pleasure in this—though that doesn't mean in the least that I'm a dualist or that I believe in an afterlife in a spirit world.

I'll finish by briefly discussing the poem "Back" from *Up to Speed*. As a child, I tried to have experiential knowledge of religious doctrine. Never one to give up, in "Back" I try to somehow ground abstract physics in human psychology. I do so feeling that the two are somehow incompatible and that they will clash in tragicomic ways. Here's the poem.

### Back

The teacher said  
two mirror images

could come into being  
by borrowing

from zero –but only  
if they agreed

to cancel one another out.

We followed  
from inert matter

by offering  
to eat each other up.

\*

What sort of place is  
existence  
since we can “come into” it?

A point coincides;  
it has no dimension.

Some say  
matter’s really energy

and energy is force  
of law

and law is just  
tautology.

\*

We were taught

to have faces  
by a face

looking back

“Back” begins in what seems to be the voice of an algebra teacher discussing equations. Beneath this, though, is the theory of the quantum vacuum in which, supposedly, virtual particles and their mirror-image anti-particles constantly pop into existence and then annihilate one another. How can we understand this? By imitation? Living beings survive by canceling out, by gobbling one another up, by turns. I, as the speaker in the poem, offer this imperfect and grotesque metaphor as a tribute to particle physics. Imitation as the sincerest form of flattery. Formulas seem to express physical laws by putting an equal sign between things. But what is the single thing? Does it come down to the “point particle” which is said to somehow exist in one (unimaginable) dimension? In the third section of the poem, the mirror-image particle has become the Lacanian mirror-stage in the child’s development. I wonder, if we exist only as paired, entangled, tautological images, do we exist at all?

Of course, not all of my poems call on science, but, in recent years, a surprising number have. I think this is because contemporary science not only gives us provocative things to imagine but also leaves us with more questions than answers.