

APOLOGY FOR AMAZEMENT

A sermon by F. Jay Deacon

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We have a way of moving about on automatic pilot, numb and uncomprehending. Or maybe drugged. Not always, though. There are those moments when the magnitude of it all settles in and sweeps you away with wonder. You have those moments, don't you?

Maybe it's the crashing surf. A beloved face. Some act of human nobility. Maybe nothing in particular and yet you find that you are awake.

We exist within a realm of astonishment that provokes an experience that apparently only humans have: *awe*. And we know that the experience of awe makes better people of us, moves us to care and love and work and sacrifice for the greater good. And truly to understand ourselves as existing within a matrix of unceasing creation — activates awe in us.



So I'd like to take you on a visit to a place suggested by one of the most creative and brilliant minds I know, that of the scientific thinker Howard Bloom.¹ Blame him: I met him and heard him once in Boston and he took me on this trip of amazement. So here goes.

Where we're going is a café table at the beginning of the universe. But first, try something. Try poking your right finger through the palm of your left hand. Did it go through and come out the other side? If it

¹ With appreciation, and unapologetically, I recommend to you his *The God Problem: How a Godless Cosmos Creates*. Amherst, NY: Promentheus Books, 2012.

didn't, it's because you're solid, right?

What stopped your finger is protons. Which are 13.73 billion years old. The universe created them in the first nanosliver of a second of the big bang. So how old are you? And what have you been through? Those protons have been through every catastrophe, every creative crash the kosmos has gone through. And what you're about to see is your story.



So here we are, you and me, seated at a café table in the nothingness before the big bang. You are a wildly imaginative visionary. I'm pretty cautious, level-headed, you know. Logic. Common sense. That's me. But you have extraordinary visions, nutty stuff.

We have nothing better to do, since absolutely nothing has happened and there is nothing, no thing, no action, no space or time or form, not a thing. So what are we going to do but sit here at our table sipping one coffee after another. Which we've been doing for a long time.

But suddenly you're all cranked up about something. You've got one of those crazy visions. And I have to say this one's pretty insane. You point to a spot in the blackness just beyond our table. And you tell me to watch carefully because I will see a pinprick, infinitely small, pop from the nothingness and then expand at super-speed, blowing up to a massive sheet of raw space and time. This is what you tell me I'm about to see.

Which is nuts and defies all the laws of logic because you and I have been sitting here at this table for a good long time and we've kept our eyes peeled and we both know there has never been a pinprick of any kind. Nor has there ever been any of this stuff you're calling space and time. These things don't exist, full stop. And they never will because zero plus zero equals zero. Nothing. Look, I know the first law of thermodynamics. The law of the conservation of matter and energy. You can't make more. There isn't any. Any anything.

So while I'm pointing out to you that you're out of your mind, this pinprick, infinitely small, shows up. Someday the great mathematician Roger Penrose and his great friend Stephen Hawking will call this pinprick a singularity. Well, big deal. There it is. This makes no sense. But you stay cool and watch as the thing blows up so fast it makes me dizzy. And you announce that it has three properties—time, space, and energy—that do not and should not exist and never have and never could. How in the nonexistent world did the nothingness pull that off?

What the heck is space, or time, or energy? How did they come out of emptiness, please? The sheet is still growing and my jaw is still dropping when you make another nutty prediction.

This unfurling sheet of space and time, you tell me, is about to produce something called "things." *Things*. And those things are supposed to precipitate from the sheet of space, time, and speed, you say, so I know you've lost it entirely.

There is no such thing as things. Let's be just a bit realistic, okay?

And in far less than a second, your blasted space-time-energy manifold produces a rain, a hail storm, of things. Gazillions. Roughly

10^{87} things. And you explain. What they are is elementary particles—quarks. All popping simultaneously into existence. Whoosh. I don't like it at all that you've now been right twice about utterly nutty things.

And there we sit watching this rule-breaking and massively innovative universe churn out *things*. How?

I'm really trying to be the voice of reason. Sober. And now you're telling me that these quark things are going to come together in groups of three. And you say that when they do they will change their character completely and give birth to something altogether new. Nutcase idea.

But you lay out groups of three quarks on the café table and ask some questions.

The quarks came in two kinds, up and down quarks. What happens if you put two up quarks with one down quark? Well, the answer is obvious, isn't it? You get three quarks. No, you say. They change completely into something the universe has never seen. You tell me to try it, put them on my dinner plate, which I do. Zap! They bunch so tightly you don't see three quarks at all. It's become something that never was, ever, and you explain it's a proton. It's like laying out three apples and getting a woolly mammoth. Stop it.

And of course you have to ask me what happens if I present one up quark to two down quarks and I say, again, you will have three lousy quarks, but when I try it, something utterly new is created, which you tell me is a neutron. Lovely.

Well, I also know the second law of thermodynamics, so I know none of this is permissible. All things tend toward disorder. Formlessness. Entropy. You can't get new stuff like this. I explain to you that even if there were a

universe, it would be in a steady state of decline, unravelling into disorder and randomness, not creating new things, inventing structures and possibilities that never were.



So here we are in this soup, this plasma of the early universe. And I tell you it cannot make anything new, it cannot invent things, it must all slide into disorder and entropy. I can see elementary particles, which shouldn't exist, smashing and slamming into each other and ricocheting away at speeds that make me dizzy. Can't you see? It's just soup.

But you tell me to back off and look at the big picture, so I back off and look again, take in the macroscale. And I realize something is happening. Those gazillions of crashing particles are cooperating on some massive scale in the formation of waves and troughs. Stupendous waves and troughs rippling from one end of the cosmos to the other. Rippling coherently for hundreds of light-years rolling protons and neutrons in tight synchrony, while retaining their identity, harmoniously spaced so they create music. This new universe rings like a massive gong!



So we've been sitting here watching this sizzling-hot musical plasma of a cosmos now from this café table for 379,000 years. It's impressive, yeh, but I'm getting kind of bored. Meh. I'm just sinking into a coma when you light up again. You have this funny feeling. And just then we hit the 380,000 year mark after this all started, and the particles in the plasma slow down and the skittering protons, neutrons, and electrons separate and give each other space. And the particles discover that they are social particles. The puny little electrons discover that they're not satisfied on their own. They see

whizzing near them these other hulking giant particles that are 1,837 times more massive than they are—the protons. And I'm smart enough to see that a tiny electron isn't going to be interested in some giant proton or vice versa. Something the size of the Empire State Building isn't going to be interested in something the size of your fist. But no, they develop electromagnetic lusts. Crazy. But even if one electron and one proton did hook up, it would be a fluke, a one-time-only freak perversion.

And we're watching and the most amazing thing happens. Electrons and protons move toward each other and they're a perfect match, absolutely amazing. Something new has come into being and you explain that these things are called atoms. And it turns out that atoms team up in ways the cosmos has never seen before. And they combine, leap into each others' arms, not just once in some freak exception—zillions of times over. So I guess with zillions of particles jostling and jolting around each other, what we'll come up with is a crazy random variety of combinations, zillions of different kinds of atoms.

How many kinds of atoms does a cosmos of zillions of particles sliding into each other's arms produce? The probability equations of randomness would say zillions of kinds. But no. Three. Three permutations. They combine into just three kinds of atoms: hydrogen, helium, and lithium. Electrons and protons find they answer to each others' loneliness and pair up in just those three ways in this Big Bang. Hydrogen. Helium. Lithium. All at pretty much the same time.

If we stayed and watched long enough, the massive sheet of plasma would separate into clouds of atoms of hydrogen and helium and lithium and the great power of gravity would collapse the clouds into galaxies, and

the sky would become transparent. And within these galaxies, gravity would form stars and they would ignite, and in the cores of the stars, in the heat and pressure at their cores, those stars would create almost 400 more elements—atoms, each with a radically new set of properties. And as the stars age, they would explode and cast those elements into the depths of space. And gravity would draw the dust into planets.

And there we sit watching this rule-breaking and massively innovative universe churn out galaxies, stars, molecules, cells, and DNA, and café tables and croissants and oceans, and Old Lyme red-porphyratic granite, out of which, one day, conscious creatures will build churches.

Somewhere—somewhere perhaps within the quantum depths of reality
where we have only begun to venture—
on one little blue-green planet
this miraculously inventive matrix of Being Itself
will call forth a miracle called *life*
and there will come to flourish living things
kindled by sunlight on Earth
grasses and flowers and animals
living creatures whose loveliness
and glories
no human eye has yet lived to gaze upon.

And then will come the time when the human form appears,
giving yet fuller expression to the heart of Being Itself.



Now, maybe if we sit here long enough—and I'm not sure I want to hang around here that long—maybe what we wind up with in the end is a universe where, after entropy does its work, what is left is a universe run down to zero density where there's nothing to care but a few massless photons and gravitons and some dark matter. Maybe. But even if so, even if that's how it ends—in the meantime we've got a few billion years to proceed with the work of creating brilliance and beauty, and to vouchsafe the glory of the creative genius of the Universe, and vouchsafe the magnificence of the human enterprise.

And here you are. And here we are on a breezy sunny Fall morning.

Right here. In the heart of creation, where everything is new and poised to create that which has never been.

Into the heart of your despair and your fear and your emptiness and your confusion let there flow the pulsing waves of creation.

Into a world of sorrow and conflict and compulsive repetition and reflex folly and tired political gamesmanship and futility and greed, let your being and your living be an open channel to the pulsing waves of creation, a vehicle for a possible future that yearns to come into being.

Let it be.

READINGS

*from: Journey of the Universe,
by Brian Swimme and Mary Evelyn Tucker, 2011.*

Because we know that life is an adventure involving both chaos and order we sometimes want desperately to control things. And whenever our fear grows too strong we become vulnerable to simplistic promises concerning the future. But no one knows what the future holds—all of that is hidden in the darkest night. The future is being created by all of us, and it is a messy and confusing process. What is needed is courage to live in the midst of the ambiguities of this moment without drawing back into fear and a compulsion to control.

Are there guarantees? No, none. But there are reasons for confidence.

When the universe was just quarks and leptons, could anyone have known that it was in the process of bringing forth stars and galaxies? Or later, when Earth emerged, and life existed in the form of tiny jiggling cells, could anyone have seen in them the possibilities of the bluefin tuna or a vast temperate rain forest? We find ourselves inside an amazing drama filled with danger and risk but also stunning

creativity. This has happened many times in the past. Two billion years ago, when the atmosphere became so filled with oxygen, all of life was deteriorating. The only way for the life of that time to survive was to burrow deep into the mud at the bottom of the oceans. The future of Earth seemed bleak. And yet, in the midst of that crisis a new kind of cell emerged, one that was not destroyed by oxygen, but was in fact energized by it. Because of this miracle of creativity, life exploded with an exuberance never seen before.

It is in the nature of the universe to move forward between great tensions, between dynamic opposing forces. If the creative energies in the heart of the universe succeeded so brilliantly in the past, we have reason to hope that such creativity will inspire us and guide us into the future. In this way, our own generativity becomes woven into the vibrant communities that constitute the vast symphony of the universe.

*New Haven & London: Yale University Press, 2011, p. 117
Like Bloom's book, I commend this book to you.*