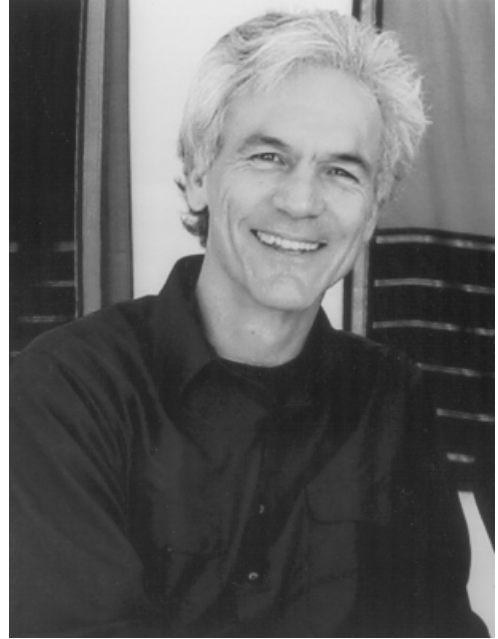


Chapter 1



The Creative Cosmos: An Interview With Brian Swimme



Talking with Brian Swimme about the universe is itself a cosmic event. His sense of wonder and amazement about the universe and his enthusiasm for it are contagious, inspiring, and transformative. Dr. Swimme is a mathematical cosmologist and core faculty in the Philosophy, Cosmology, and Consciousness graduate program at the California Institute of Integral Studies in San Francisco. His primary fields of research are the nature of the evolutionary dynamics of the universe, the relationship between scientific cosmology and more traditional religious visions, the cultural implications of the new evolutionary epic, and the role of humanity in the unfolding story of Earth and cosmos. Central to Swimme's work is the nature of the human as an emergent being within the universe and Earth, and the role of the human within the Earth community.

He is the author of *The Hidden Heart of the Cosmos* (Orbis, 1996), *Manifesto for a Global Civilization* (with Matthew Fox) (Bear and Company, 1983), *The Universe is a Green Dragon* (Bear and Company, 1984), and *The Universe Story* (Harper, 1992), which is a culmination of a

10-year collaboration with the well-known cultural historian Thomas Berry. His media credits include the video series *Canticle to the Cosmos*, *The Hidden Heart of the Cosmos*, *The Earth's Imagination*, and *The Powers of the Universe*.

Brian Swimme received his PhD in 1978 from the University of Oregon, specializing in gravitational dynamics. He was a faculty member in the Department of Mathematics at the University of Puget Sound in Tacoma, Washington, from 1978 to 1981, and a member of the faculty at the Institute for Culture and Creation Spirituality at Holy Names College in Oakland, California, from 1983 to 1989. In 1989 he joined the faculty at the California Institute of Integral Studies in San Francisco, where he continues to teach today.

Swimme lectures worldwide and has presented at conferences sponsored by the American Association for the Advancement of Science, The World Bank, UNESCO, The United Nations Millennium Peace Summit, and the American Natural History Museum.

Stephan Martin: In your work you've expressed the view that the universe is not evolving randomly, but is instead making choices in search of something. I wonder if you could say more about what that something is. If it's not teleology, then what is the universe aiming at through this ongoing process of evolution?

Brian Swimme: One of the stunning developments of 20th-century science is that we can actually say that the universe seems to be in search of complexity. What complexity means is an interesting question, as is what it means to say that it's in search of something. The difficulty when we use language like this is that it sounds like anthropomorphism.

So when we say "the universe" is seeking, it sounds as if we're thinking of the universe as a person, and we're not. The universe is not a person, it's something vastly greater than we are, and we're attempting to say something about that which gave birth to us. We're reflecting on a reality that has brought us forth, and we're using language like the English language, which doesn't really have the capacity to describe the universe fully. Not at all, because a lot of the scientific discoveries about the universe that we're making are very recent, and they run counter to the mentality that humans had when the English language was invented and shaped.

So we're in this really awkward situation of having amazing insights into the universe and yet not having the capacity to fully express those insights in language. Sometimes we can capture some of them in mathematics and that's great, but even then it's a challenge.

So for me, there's this overall sense of the universe trying to get somewhere. What we can say with some certainty is that the sense of the universe being entirely random would lead to the expectation that after 14 billion years there wouldn't be much complexity in the universe. So it's interesting that whatever it is that we're enveloped in is getting somewhere more quickly than it would if it were simply random. That's very interesting!

So that's what I mean when I say the universe is seeking or searching for the complex. Complexity itself is another mystery, and what I mean by complexity is that we have evidence now that the universe 14 billion years ago was very simple in terms of structure—just elementary particles and photons, and now we find all these complex structures like galaxies and people.

At the same time—and I know this is one of the things you're interested in—if it's not just random, is it *also* random? We've been discovering that it's not just random, but I want to emphasize the fact that it's also random. It's both random and non-random, and the relationship between these two is the actual unfolding of the universe. There's a way in which the structure of the Milky Way reflects both the random dimension of the universe and the non-random. Both are extremely important. The thinker who understands as well as anyone is Edgar Morin. Your readers might want to explore his book, *On Complexity*.

Now even if we're moving away from the idea of things being totally random, we're not moving toward the idea that the universe was *designed* from the beginning to be just as it is now. That, I think, is a very weak interpretation of the universe. The universe is an exciting, chaotic process that is in search of a mysterious something that we can just point to with a word like *complexity*.

We often associate the idea of randomness with total chaos, yet there are new fields of science such as complexity theory and chaos theory, where there seems to be a certain kind of emergent order that comes out of chaotic systems spontaneously. I wonder if *spontaneity* would be another word to use in addition to *randomness*?

Yes, yes, that's a great word. The spontaneity of the universe includes both some sort of ultimate order and also chaos. Simultaneously. I love the ideas of complexity and chaos science, where order and chaos are entwined mysteriously.

And they seem to arise out of each other, without a pre-existing plan, which is more stunning than if it had a plan that was unfolding.

Exactly—it's way more stunning! Right now when we're discovering that things aren't totally random, we're looking around for a way to express it, and so some people have locked onto this idea that "Oh, it must have been *de-signed*." In the English language we have phrases such as design, intelligent design, and intelligent designer, but that isn't anywhere near as exciting as what's actually happening. We don't have a readily available phrase in English to capture all that we're saying here, but all of it is way more exciting than simply saying it was designed.

Yes, it's really an approximation because we really can't reach for the right word. That's why people throughout history have fallen back on poetry and metaphor to describe the universe.

We're in a moment in our understanding of the universe where the human imagination has to plumb its depths to bring forth new images, new poetry, and new insights to describe reality. Language has to be recreated if we're to express what we're discovering about the universe. So it's a time for the poets and for the imagination.

Some people are depressed by the fact that the English language does not contain the necessary words for us to express ourselves fully, but other people are thrilled by it, because it means that we're giving birth to new language. The English language is going to be so different in a couple of centuries than it is right now.

Right, and it won't just be different vocabulary, but maybe the structure of it will be different as well. One thing I heard recently is that people are approaching indigenous cultures who have process-based languages for talking about the results of quantum theory, since

quantum theory strongly suggests that the universe is not a thing, but a process, and so this way of speaking about things naturally makes sense to these peoples.

Yes, and the indigenous languages, certainly those of North America, are much more process-oriented than English. English is heavily noun-based, because the English language reflects the fundamental cosmology of English-speaking people. In the modern period, Newtonian cosmology was based on the idea of substance, the idea that everything is made up of particles and atoms. So naturally if atoms and particles interacting with each other are seen as the building blocks of the world, then our language will reflect that with nouns and verbs interacting with each other in a similar way. We have more nouns in the English language than any language we know of throughout all of history, and this reflects the belief of Western peoples that the world is made up of objects.

It's amazing, really, to think of how cosmology seeps into language, so that when you're speaking English, basically you're speaking Newtonian cosmology. But now what we've discovered through quantum physics is that everything is fundamentally a process, yet we're still trying to use English nouns to describe it. This type of process thinking seems to have been present in earlier and current indigenous peoples. Hopi, Navajo, and many indigenous languages reflect a very different cosmology, so there's a fertile interaction happening between modern languages and those of ancient and traditional cultures right now. Nancy Maryboy and David Begay explore these ideas in their work relating Dine and Western cosmologies. The physicist David Peat and his book *Blackfoot Physics* might also be mentioned here. It's an ongoing endeavor that I think is going to be increasingly important as we move further into this challenge of re-creating language.

It seems like language is fundamental because it is such a shaping force in our interaction with the universe. As you said, escaping out of the Newtonian framework and out of the subject-object split requires a transition from thinking of the universe as a collection of objects to a communion of subjects, as you and Thomas Berry have phrased it.

Yes, that's one way to articulate the major challenge before us as humans. Scientists originally felt that they had all the truths, but now there's the growing

realization that there are deep, deep truths about cosmic process embedded in indigenous languages. It's a thrilling exploration for those who have the sense of this. We were so certain in modern science that we really had the final say on the nature of the world—just so certain—and then to have all that break apart has been not only sobering, but liberating.

It seems like we're in a similar place now with our scientific culture as we were just before quantum physics shattered the mechanistic view of the world nearly a hundred years ago. What comes to mind is John Horgan's book *The End of Science*, where he suggests that we're at the end of the era of great discoveries about the nature of the universe. It reminds me so much of Lord Kelvin's statement at the end of the 19th century where he says something like "Don't go into physics anymore—it's all done." And so I wonder, are we on the edge of some great initiation into some new aspect or dimension of science right now? What direction will 21st- and 22nd-century science take?

It seems very clear that it will not be the direction of the 17th, 18th, 19th, and 20th centuries where science aimed at discovering the "fundamental" equations that governed particular phenomenal domains. A number of leading scientists believe that search is over and done with. So what new way of interacting with the universe will surface, especially in terms of scientific investigation of the universe? We only have intuitions, surmises, and my personal favorite, which is the one that believes 21st-century science will be focused on the study of complex systems. I think scientists will increasingly focus on very particular systems such as Earth's climate, or a spiral galaxy, and will attempt to learn not the fundamental equations, but the basic *habits of behavior* of such systems. But that's just a guess. What will actually take place nobody knows.

It seems like we're in an era where we're letting go of our old ideas about what the universe is, as well as reconsidering our relationship to it. It's a pretty recent discovery that we can say that we are not walking around *in* the universe, but that we *are* the universe itself. As increasing numbers of astronomers, philosophers, and others are now saying, we seem to be the self-reflexive capacity of the universe to reflect on itself.

Yes, that would be one way of characterizing the deepest contribution that Western science has made to the world. We can say simply that “we *are* the universe.”

Clifford Matthews, professor of chemistry at the University of Illinois, says that the way to summarize everything we’ve learned through science about the universe in four words is: “we are recycled stardust.” It’s just so great! In terms of science and empirical knowledge, this was completely unknown a few centuries ago.

Now we realize, with our observational methods and our theoretical formulations, that the stars have given birth to us. It’s an incredible discovery. So we can say with absolute scientific certainty, as you said, “We *are* the universe,” and notice how profoundly that breaks us out of the subject-object relationship. There’s no object in a certain sense—it’s all one vast communion of subjects that gave birth to us.

How to take that fundamental insight, which has required millions of humans with their observations and thought and experiments, and work it into the grammar of daily life? That’s the task we have before us. To live in a way that’s in alignment with our deepest understanding. That’s why it’s so great to be alive right now! [laughs] All of the old certainties are being broken apart, and so we’re in this thrilling moment of giving birth to this new way of being human.

I should say right away that a lot of these insights have parallels and are mirrored in other cultural traditions. We’ve been talking about the indigenous traditions, and many of them would be completely at home with the insight that “We are the universe,” or that “We come from the stars.” They’ve understood themselves that way for millennia. Even in the classical religions of Taoism, Confucianism, and Hinduism they would be at home with these ideas.

It’s the West—the industrial West—that needs to understand this. As industrial Western ways of knowing embrace this understanding, it will enter more deeply into a dialogue with the other traditions of the world. It’s a planetary movement and together we’re going to find our way into what it means that we are deeply interconnected with everything. What kind of economics do you build when you start off with such an idea? What kinds of religions do you have?

Yes, and all of it has to be recycled from the foundations in a sense, and re-envisioned from the perspective “We are Universe.” We can’t even say “We are *the* universe,” because that implies a separation, so we have to say “We are Universe.”

Yes! Exactly. We are Universe!

So does this lead you to any insights about the human’s role in this transformational process that is occurring? It seems like we have such an impact on this planet, and that we have so many gifts to offer.

Absolutely. The first part would be that if we start with the insight “We are Universe,” then we have a base upon which to criticize other inadequate formulations of the human. The one that’s most current in industrial society would be something like “We are consumers.”

Our society is basically about using natural resources to make commodities that lead to human comfort. Unfortunately, this view of the planet as a resource bin is what’s leading to the destruction of all the ecosystems around the planet. We need to get some distance from what I call this “use cosmology,” the idea that the universe and the earth are here only for our use. But if we’re not here just to be consumers, what is our role?

One idea comes from noting that the human is certainly a place in the universe where the entire vast story can burst into awareness of itself. The human is this place where 14 billion years of evolution is reflecting upon itself. One way to think about us is to think that we are the way Universe reflects upon its own majesty and mystery.

It means that it’s possible that our primary role as humans is that of celebration. We have this destiny—and even duty—to become astonished by the universe! [laughs]

It sounds almost ridiculous to say this when our industrial society is oriented toward getting a job and producing stuff. But it’s a perspective that we need to take seriously. What if we began to organize our school system and educational process so that humans could move more deeply into an understanding and celebration of existence itself? What’s interesting is that to call consumer society into question is difficult because it’s so ingrained in each of

us, and so it sounds as if I'm pitting myself against all of the benefits of industrial society, but I'm not.

What I am saying is that we might begin to take seriously the idea that it's in the arts, it's in the sciences, and it's in the religions and the humanities, where we can find the deeper roles of the human, including the idea that we are here to marvel over existence and to celebrate it and to extend to those less fortunate the great privilege of being alive and healthy.

So, there's one idea. That we are here to celebrate the magnificence of being. And to work so that others might share in this joy. That's different than just being a consumer. In any event, we need to reimagine in a radical way what it means to be human.

Yes, and in this reimagining we cannot settle for small or pat answers, because part of the danger of materialism is getting sucked into thinking we know the basic nature of the universe. Calling humans consumers isn't necessarily a bad label, but it's just one that's way too small for what we truly are. It simply isn't satisfying.

Absolutely. That's why some people regard this moment as philosophically similar to the pre-Socratics, going all the way back to Pythagoras, Heraclitus, Parmenides, and others who were just freshly wondering about great questions like "What does it mean to be human?" We've developed a particular set of answers, and we've tried them out for a few thousand years, and now that we're coming to the end of that particular experiment, we're thrown back into a deep sense of questioning and wonder.

It seems like cultures have to go through this process of questioning every now and then when they've gotten too small for what they truly are.

Our planet is falling apart. That's a horrible thing, but one of the opportunities is that as we get in touch with the misery we are causing, we can find the energy to actually ask these radical questions at a level that's deep enough, as you say, to confront the tiny role of the consumer. We can be critical of our current role because we find ourselves in the midst of this vast firestorm taking place all around the planet with so many other species disappearing because of us.

Given this situation, what are the sources of guidance that people can have in these times? What can they rely upon to see them through this transformation that's happening in our culture right now?

Let me quote the economist Hazel Henderson, because she's really good on this. She's one of these cutting-edge thinkers who are trying to find their way out of industrial society into a more vital way of being human. She said simply, "I rely on my senses." She relies on her direct experience. She was trained in classical economics—it was her education, her philosophy, her cosmology, her whole way of seeing the world, and yet she found that she could not rely upon it for a new perspective. She had to return to her body and to her own deepest experiences to find the new truths. By returning to what she was experiencing in her body, she began to formulate new ideas about economics, contributing to a wide body of thought that "biologizes" civilization. In economics we have Henderson and such people as Herman Daly and Richard Norgaard. In technology we have Jenine Benyus and Hunter Lovins. In agriculture, Wes Jackson, in city planning, Richard Register. These are the geniuses who are providing us with the guidance we need to build a new civilization. And all of them began by throwing out the axioms of industrial society and thinking anew from their own experiences.

Yes, It makes me think of the recent turn in modern philosophy toward phenomenology—the return back to the actual phenomena of experience, because what is the universe but these basic elements of experience? In closing, I wonder if we could talk briefly about what's coming into the universe right now that's new. What is being born and is newly emerging in this stage of cosmic evolution?

That's a great question. The context for answering the question is that time can be talked about in different ways: linear time, cyclical time, organic time, mechanical time, and so forth. But in terms of the universe, time is newness. Time is creative emergence. What's really great is that the universe has this creative sense of time. Earlier in the universe it was the time of atoms—that's what was newly emerging into existence! Later it was the time of galaxies—that's the time they came forth. And once the galaxies came in and perdured, it became the time of planets. And then the first cells of life—new again, and so forth.

On the planet today, certainly one of the newest species is our own. The white shark is fantastic, but it attained its physical form a long time ago, and it continues in this same form today. Likewise, our Sun arrived at its stable form a long time ago. The cactus continues to change a little bit, but it's been in its form a long time. But the human has just arrived, and we are still attempting to find our form. So it is the human that is new in the universe right now.

In our emergence on Earth, what is new about the human? It's not our feet or our lungs or our heart—all of these things have been around for a long time through other organisms. It's not even our brain, because even though our brain is larger than other primates, it's very similar in form to other primates. What's new with the human is thought, and by thought I mean two things. I mean consciousness reflecting upon itself, so that conscious self-awareness is new. We're not the only species that has this, but we're the species that it has taken hold in most profoundly.

The other capacity of thought is the ability to hold conscious self-awareness in a form that is exterior to the human body, and more particularly in language that can be given cultural forms, such as paintings, books, and libraries. This change can be talked about in various ways, but one way to say it is that the DNA, which has operated brilliantly for three and a half billion years, has through the human spilled out into an exterior trans-genetic form that we call culture.

So that is what is new on the planet right now. If you're a baby white shark, you have a tremendous amount of information in your DNA, and you also have information from learning experiences in your environment, but what you don't have is all the detailed experience from previously existing individual white sharks—that's all gone.

With the human so much of it is there, captured in our languages. The difference then for the human is that even if we live to be a hundred years old, it's not fair to say that we have a hundred-year-old mind. Rather, even when we are young children, we are involved with a mind that is a hundred thousand years in the making. Through cultural artifacts, we enter into a continuously accumulating mind called humanity. In a real sense that continuously accumulating mind is currently shaping the planet more powerfully than anything else in nature.

This brings us back to the beginning of our conversation. What's the most powerful way of entering into the shaping of the planet? It is through the invention of new symbols and new modes of expression, because that is what is new right now. The entire planet is being organized by symbolic forms called English, Japanese, mathematics, Picasso, music of all sorts. This ongoing flow of language and symbolic expression is what is shaping all of the species of our planet right now.

That's why there is this impulse that people have, that you have in creating this book, and that people who are reading your book have—this impulse to give birth to new language and ideas. That's the very center of evolution, the spirit of the universe, the *élan vital*, the zest, it's the way in which Universe is attempting to bring itself forth newly. Our burning energy to create symbolic forms is the same burning energy 12 billion years ago when Universe was constructing galaxies. Same urgent creativity, different form.

Wow. It's quite a gift.

The most amazing we have.