

Scientific Proof of the Existence of God

An interview with Amit Goswami
by Craig Hamilton

Introduction

Before you read any further, stop and close your eyes for a moment. Now consider the following question: for the moment your eyes were closed, did the world still exist even though you weren't conscious of it? How do you know? If this sounds like the kind of unanswerable brain teaser your Philosophy 101 professor used to employ to stretch your philosophical imagination, you might be surprised to discover that there are actually physicists at reputable universities who believe they have answered this question—and their answer, believe it or not, is *no*.

Now consider something even more intriguing. Imagine for a moment the entire history of the universe. According to all the data scientists have been able to gather, it exploded into existence some fifteen billion years ago, setting the stage for a cosmic dance of energy and light that continues to this day. Now imagine the history of planet Earth. An amorphous cloud of dust emerging out of that primordial fireball, it slowly coalesced into a solid orb, found its way into gravitational orbit around the sun, and through a complex interaction of light and gases over billions of years, generated an atmosphere and a biosphere capable of not only giving birth to, but sustaining and proliferating, life.

Now imagine that none of the above ever happened. Consider instead the possibility that the entire story only existed as an abstract potential—a cosmic dream among countless other cosmic dreams—until, in that dream, life somehow evolved to the point that a conscious, sentient being came into existence. At that moment, solely because of the conscious observation of that individual, the entire universe, including all of the history leading up to that point, suddenly came into being. Until that moment, nothing had actually ever happened. In that moment, fifteen billion years happened. If this sounds like nothing more than a complicated backdrop for a science fiction story or a secular version of one of the world's great creation myths, hold on to your hat. According to physicist Amit Goswami, the above description is a scientifically viable explanation of how the universe came into being.

Goswami is convinced, along with a number of others who subscribe to the same view, that the universe, in order to exist, requires a conscious sentient being to be aware of it. Without an observer, he claims, it only exists as a possibility. And as they say in the world of science, Goswami has done his math. Marshalling evidence from recent research in cognitive psychology, biology, parapsychology and quantum physics, and leaning

heavily on the ancient mystical traditions of the world, Goswami is building a case for a new paradigm that he calls "monistic idealism," the view that consciousness, not matter, is the foundation of everything that is.

A professor of physics at the University of Oregon and a member of its Institute of Theoretical Science, Dr. Goswami is part of a growing body of renegade scientists who in recent years have ventured into the domain of the spiritual in an attempt both to interpret the seemingly inexplicable findings of their experiments and to validate their intuitions about the existence of a spiritual dimension of life. The culmination of Goswami's own work is his book *The Self-Aware Universe: How Consciousness Creates the Material World*. Rooted in an interpretation of the experimental data of quantum physics (the physics of elementary particles), the book weaves together a myriad of findings and theories in fields from artificial intelligence to astronomy to Hindu mysticism in an attempt to show that the discoveries of modern science are in perfect accord with the deepest mystical truths.

Quantum physics, as well as a number of other modern sciences, he feels, is demonstrating that the essential unity underlying all of reality is a fact which can be experimentally verified. Because of the enormous implications he sees in this scientific confirmation of the spiritual, Goswami is ardently devoted to explaining his theory to as many people as possible in order to help bring about what he feels is a much needed paradigm shift. He feels that because science is now capable of validating mysticism, much that before required a leap of faith can now be empirically proven and, hence, the materialist paradigm which has dominated scientific and philosophical thought for over two hundred years can finally be called into question.

Interviewing Amit Goswami was a mind-bending and concept-challenging experience. Listening to him explain many ideas with which he seemed perfectly at home, required, for me, such a suspension of disbelief that I at times found myself having to stretch far beyond anything I had previously considered. (Goswami is also a great fan of science fiction whose first book, *The Cosmic Dancers*, was a look at science fiction through the eyes of a physicist.)

But whether or not one ultimately accepts some of his more esoteric theories, one has to respect the creativity and passion with which he is willing to inquire. Goswami is clearly willing to take risks with his ideas and is fervently dedicated to sharing his investigation with audiences around the world. He speaks widely at conferences and other forums about the exciting discoveries of the new science and their significance, not only for the way science is done, but for society as a whole. In India, the country of his birth, he is actively involved in a growing organized movement to bridge the gap between science and spirituality, through which he is helping to pioneer a graduate institute in "consciousness studies" based on the premise that consciousness is the ground of all being.

Goswami is considered by some to be a pioneer in his field. By attempting to

bring material realism to its knees and to integrate all fields of knowledge in a single unified paradigm, he hopes to pave the way for a new holistic worldview in which spirit is put first. In fact, as far as we know, he is the only new paradigm scientist who is taking a clear stand against the relativism so popular among new age thinkers. At a time when the decay of human values and the erosion of any sense of meaning has reached epidemic scale, it is hard to imagine what could be more important than this.

And yet, for all the important and valuable work he seems to be doing, in the end we are left with serious reservations as to whether Goswami's approach will ultimately lead to the kind of transformation he hopes for. Thinkers such as Huston Smith and E. F. Schumacher have pointed to what they feel is an arrogance, or at least, a kind of naiveté, on the part of scientists who believe they can expand the reach of their discipline to somehow include or explain the spiritual dimension of life. Such critics suggest that the very attempt to scientifically validate the spiritual is itself a product of the same materialistic impulses it intends to uproot and, because of this, is ultimately only capable of reducing spirit, God and the transcendent to mere objects of scientific fascination.

Is science capable of proving the reality of the transcendent dimension of life? Or would science better serve the spiritual potential of the human race by acknowledging the inherent limits of its domain? The following interview confronts us with these questions.

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Interview

WIE: *In your book The Self-Aware Universe you speak about the need for a paradigm shift. Could you talk a bit about how you conceive of that shift? From what to what?*

Amit Goswami: The current worldview has it that everything is made of matter, and everything can be reduced to the elementary particles of matter, the basic constituents—building blocks—of matter. And *cause* arises from the interactions of these basic building blocks or elementary particles; elementary particles make atoms, atoms make molecules, molecules make cells, and cells make brain. But all the way, the ultimate cause is always the interactions between the elementary particles. This is the belief—all cause moves from the elementary particles. This is what we call "upward causation." So in this view, what human beings—you and I—think of as our free will does not really exist. It is only an epiphenomenon or secondary phenomenon, secondary to the causal power of matter. And any causal

power that we seem to be able to exert on matter is just an illusion. This is the current paradigm.

Now, the opposite view is that everything starts with consciousness. That is, consciousness is the ground of all being. In this view, consciousness imposes "downward causation." In other words, our free will is real. When we act in the world we really are acting with causal power. This view does not deny that matter also has causal potency—it does not deny that there is causal power from elementary particles upward, so there is upward causation—but in addition it insists that there is also downward causation. It shows up in our creativity and acts of free will, or when we make moral decisions. In those occasions we are actually witnessing downward causation by consciousness.

WIE: *In your book you refer to this new paradigm as "monistic idealism." And you also suggest that science seems to be verifying what a lot of mystics have said throughout history—that science's current findings seem to be parallel to the essence of the perennial spiritual teaching.*

AG: *It is the spiritual teaching. It is not just parallel. The idea that consciousness is the ground of being is the basis of all spiritual traditions, as it is for the philosophy of monistic idealism—although I have given it a somewhat new name. The reason for my choice of the name is that, in the West, there is a philosophy called "idealism" which is opposed to the philosophy of "material realism," which holds that only matter is real. Idealism says no, consciousness is the only real thing. But in the West that kind of idealism has usually meant something that is really dualism—that is, consciousness and matter are separate. So, by monistic idealism, I made it clear that, no, I don't mean that dualistic kind of Western idealism, but really a monistic idealism, which *has* existed in the West, but only in the esoteric spiritual traditions. Whereas in the East this is the mainstream philosophy. In Buddhism, or in Hinduism where it is called Vedanta, or in Taoism, this is the philosophy of everyone. But in the West this is a very esoteric tradition, only known and adhered to by very astute philosophers, the people who have really delved deeply into the nature of reality.*

WIE: *What you are saying is that modern science, from a completely different angle—not assuming anything about the existence of a spiritual dimension of life—has somehow come back around, and is finding itself in agreement with that view as a result of its own discoveries.*

AG: *That's right. And this is not entirely unexpected. Starting from the beginning of quantum physics, which began in the year 1900 and then became full-fledged in 1925 when the equations of quantum mechanics were discovered, quantum physics has given us indications that the worldview might change. Staunch materialist physicists have loved to compare the classical worldview and the quantum worldview. Of course, they wouldn't go so far as to abandon the idea that there is only upward causation and that matter is supreme, but the fact remains that they saw in quantum physics some great paradigm changing potential. And then what*

happened was that, starting in 1982, results started coming in from laboratory experiments in physics. That is the year when, in France, Alain Aspect and his collaborators performed the great experiment that conclusively established the veracity of the spiritual notions, and particularly the notion of transcendence. Should I go into a little bit of detail about Aspect's experiment?

WIE: *Yes, please do.*

AG: To give a little background, what had been happening was that for many years quantum physics had been giving indications that there are levels of reality other than the material level. How it started happening first was that quantum objects—objects in quantum physics—began to be looked upon as waves of possibility. Now, initially people thought, "Oh, they are just like regular waves." But very soon it was found out that, no, they are not waves in space and time. They cannot be called waves in space and time at all—they have properties which do not jibe with those of ordinary waves. So they began to be recognized as *waves in potential*, waves of possibility, and the potential was recognized as *transcendent*, beyond matter somehow.

But the fact that there is transcendent potential was not very clear for a long time. Then Aspect's experiment verified that this is not just theory, there really *is* transcendent potential, objects really *do* have connections outside of space and time—outside of space and time! What happens in this experiment is that an atom emits two quanta of light, called photons, going opposite ways, and somehow these photons affect one another's behavior at a distance, without exchanging any signals through space. Notice that: without exchanging any signals through space but instantly affecting each other. Instantaneously.

Now Einstein showed long ago that two objects can never affect each other instantly in space and time because everything must travel with a maximum speed limit, and that speed limit is the speed of light. So any influence must travel, if it travels through space, taking a finite time. This is called the idea of "locality." Every signal is supposed to be local in the sense that it must take a finite time to travel through space. And yet, Aspect's photons—the photons emitted by the atom in Aspect's experiment—influence one another, at a distance, without exchanging signals because they are doing it instantaneously—they are doing it faster than the speed of light. And therefore it follows that the influence could not have traveled through space. Instead the influence must belong to a domain of reality that we must recognize as the transcendent domain of reality.

WIE: *That's fascinating. Would most physicists agree with that interpretation of his experiment?*

AG: Well, physicists *must* agree with this interpretation of this experiment. Many times of course, physicists will take the following point of view: they will say, "Well, yeah sure, experiments. But this relationship between particles really isn't important. We mustn't look into any of the

consequences of this transcendent domain—if it can even be interpreted that way." In other words, they try to minimize the impact of this and still try to hold on to the idea that matter is supreme.

But in their heart they know, as is very evidenced. In 1984 or '85, at the American Physical Society meeting at which I was present, it is said that one physicist was heard saying to another physicist that, after Aspect's experiment, anyone who does not believe that something is really strange about the world must have rocks in his head.

WIE: *So what you are saying is that from your point of view, which a number of others share, it is somehow obvious that one would have to bring in the idea of a transcendent dimension to really understand this.*

AG: Yes, it is. Henry Stapp, who is a physicist at the University of California at Berkeley, says this quite explicitly in one of his papers written in 1977, that things outside of space and time affect things inside space and time. There's just no question that that happens in the realm of quantum physics when you are dealing with quantum objects. Now of course, the crux of the matter is, the surprising thing is, that we are *always* dealing with quantum objects because it turns out that quantum physics is the physics of every object. Whether it's submicroscopic or it's macroscopic, quantum physics is the only physics we've got. So although it's more apparent for photons, for electrons, for the submicroscopic objects, our belief is that all reality, all manifest reality, all matter, is governed by the same laws. And if that is so, then this experiment is telling us that we should change our worldview because we, too, are quantum objects.

WIE: *These are fascinating discoveries which have inspired a lot of people. A number of books have already attempted to make the link between physics and mysticism. Fritjof Capra's *The Tao of Physics* and Gary Zukav's *The Dancing Wu Li Masters* have both reached many, many people. In your book, though, you mention that there was something that you felt had not yet been covered which you feel is your unique contribution to all this. Could you say something about what you are doing that is different from what has been done before in this area?*

AG: I'm glad that you asked that question. This should be clarified and I will try to explicate it as clearly as I can. The early work, like *The Tao of Physics*, has been very important for the history of science. However, these early works, in spite of supporting the spiritual aspect of human beings, all basically held on to the material view of the world nevertheless. In other words, they did not challenge the material realists' view that everything is made up of matter. That view was never put to any challenge by any of these early books. In fact, my book was the first one which challenged it squarely and which was still based on a rigorous explication in scientific terms. In other words, the idea that consciousness is the ground of being, of course, has existed in psychology, as transpersonal psychology, but outside of transpersonal psychology no tradition of science and no scientist has seen it so clearly.

It was my good fortune to recognize it within quantum physics, to recognize that all the paradoxes of quantum physics can be solved if we accept consciousness as the ground of being. So that was my unique contribution and, of course, this has paradigm-shifting potential because now we can truly integrate science and spirituality. In other words, with Capra and Zukav—although their books are very good—because they held on to a fundamentally materialist paradigm, the paradigm is not *shifting*, nor is there any real reconciliation between spirituality and science. Because if everything is ultimately material, all causal efficacy must come from matter. So consciousness is recognized, spirituality is recognized, but only as causal epiphenomena, or secondary phenomena. And an epiphenomenal consciousness is not very good. I mean, it's not *doing* anything. So, although these books acknowledge our spirituality, the spirituality is ultimately coming from some sort of material interaction.

But that's not the spirituality that Jesus talked about. That's not the spirituality that Eastern mystics were so ecstatic about. That's not the spirituality where a mystic recognizes and says, "I now know what reality is like, and this takes away all the unhappiness that one ever had. This is infinite, this is joy, this is consciousness." This kind of exuberant statement that mystics make could not be made on the basis of epiphenomenal consciousness. It can be made only when one recognizes the ground of being itself, when one cognizes directly that One is All.

Now, an epiphenomenal human being would not have any such cognition. It would not make any sense to cognize that you are All. So that is what I am saying. So long as science remains on the basis of the materialist worldview, however much you try to accommodate spiritual experiences in terms of parallels or in terms of chemicals in the brain or what have you, you are not really giving up the old paradigm. You are giving up the old paradigm and fully reconciling with spirituality only when you establish science on the basis of the fundamental spiritual notion that consciousness is the ground of all being. That is what I have done in my book, and that is the beginning. But already there are some other books that are recognizing this too.

WIE: *So there are people corroborating your ideas?*

AG: There are people who are now coming out and recognizing the same thing, that this view is the correct way to go to explain quantum physics and also to develop science in the future. In other words, the present science has shown not only quantum paradoxes but also has shown real incompetence in explaining paradoxical and anomalous phenomena, such as parapsychology, the paranormal—even creativity. And even traditional subjects, like perception or biological evolution, have much to explain that these materialist theories *don't* explain. To give you one example, in biology there is what is called the theory of punctuated equilibrium. What that means is that evolution is not only slow, as Darwin perceived, but there are also rapid epochs of evolution, which are called "punctuation marks." But traditional biology has no explanation for this.

However, if we do science on the basis of consciousness, on the primacy of consciousness, then we can see in this phenomenon creativity, real creativity of consciousness. In other words, we can truly see that consciousness is operating creatively even in biology, even in the evolution of species. And so we can now fill up these gaps that conventional biology cannot explain with ideas which are essentially spiritual ideas, such as consciousness as the creator of the world.

WIE: *This brings to mind the subtitle of your book, How Consciousness Creates the Material World. This is obviously quite a radical idea. Could you explain a bit more concretely how this actually happens in your opinion?*

AG: Actually, it's the easiest thing to explain, because in quantum physics, as I said earlier, objects are not seen as definite things, as we are used to seeing them. Newton taught us that objects *are* definite things, they can be seen all the time, moving in definite trajectories. Quantum physics doesn't depict objects that way at all. In quantum physics, objects are seen as possibilities, possibility waves. Right? So then the question arises, what converts possibility into actuality? Because, when we see, we only see actual events. That's starting with us. When you see a chair, you see an actual chair, you don't see a possible chair.

WIE: *Right—I hope so.*

AG: We all hope so. Now this is called the "quantum measurement paradox." It is a paradox because who are we to do this conversion? Because after all, in the materialist paradigm we don't have any causal efficacy. We are nothing but the brain, which is made up of atoms and elementary particles. So how can a brain which is made up of atoms and elementary particles convert a possibility wave that it itself *is*? It itself is made up of the possibility waves of atoms and elementary particles, so it cannot convert its own possibility wave into actuality. This is called a paradox. Now in the new view, consciousness is the ground of being. So who converts possibility into actuality? Consciousness does, because consciousness does not obey quantum physics. Consciousness is not made of material. Consciousness is transcendent. Do you see the paradigm-changing view right here—how consciousness can be said to create the material world? The material world of quantum physics is just possibility. It is consciousness, through the conversion of possibility into actuality, that creates what we see manifest. In other words, *consciousness creates the manifest world.*

WIE: *To be honest, when I first saw the subtitle of your book I assumed you were speaking metaphorically. But after reading the book, and speaking with you about it now, I am definitely getting the sense that you mean it much more literally than I had thought. One thing in your book that really stopped me in my tracks was your statement that, according to your interpretation, the entire physical universe only existed in a realm of countless evolving possibilities until at one point, the possibility of a conscious, sentient being arose and that, at that point, instantaneously, the entire known universe came into being, including the fifteen billion*

years of history leading up to that point. Do you really mean that?

AG: I mean that literally. This is what quantum physics demands. In fact, in quantum physics this is called "delayed choice." And I have added to this concept the concept of "self-reference." Actually the concept of delayed choice is very old. It is due to a very famous physicist named John Wheeler, but Wheeler did not see the entire thing correctly, in my opinion. He left out self-reference. The question always arises, "The universe is supposed to have existed for fifteen billion years, so if it takes consciousness to convert possibility into actuality, then how could the universe be around for so long?" Because there was no consciousness, no sentient being, biological being, carbonbased being, in that primordial fireball which is supposed to have created the universe, the big bang. But this *other* way of looking at things says that the universe remained in possibility until there was self-referential quantum measurement—so that is the new concept. An observer's *looking* is essential in order to manifest possibility into actuality, and so only when the observer looks, only then does the entire thing become manifest—including time. So all of past time, in that respect, becomes manifest right at that moment when the first sentient being *looks*.

It turns out that this idea, in a very clever, very subtle way, has been around in cosmology and astronomy under the guise of a principle called the "anthropic principle." That is, the idea has been growing among astronomers—cosmologists anyway—that the universe has a purpose. It is so fine-tuned, there are so many coincidences, that it seems very likely that the universe is doing something purposive, as if the universe is growing in such a way that a sentient being will arise at some point.

WIE: *So you feel there's a kind of purposiveness to the way the universe is evolving; that, in a sense, it reaches its fruition in us, in human beings?*

AG: Well, human beings may not be the end of it, but certainly they are the first fruition, because here is then the possibility of manifest creativity, creativity in the sentient being itself. The animals are certainly sentient, but they are not creative in the sense that we are. So human beings certainly right now seem to be an epitome, but this may not be the final epitome. I think we have a long way to go and there is a long evolution to occur yet.

WIE: *In your book you even go so far as to suggest that the cosmos was created for our sake.*

AG: Absolutely. But it means sentient beings, for the sake of all sentient beings. And the universe is us. That's very clear. The universe is self-aware, but it is self-aware through us. We are the meaning of the universe. We are not the geographical center of the universe—Copernicus was right about that—but we are the meaning center of the universe.

WIE: *Through us the universe finds its meaning?*

AG: Through sentient beings. And that doesn't have to be anthropocentric in the sense of only earthlings. There could be beings, sentient beings on other planets, in other stars—in fact I am convinced that there are—and that's completely consonant with this theory.

WIE: *This human-centered—or even sentient-being-centered—stance seems quite radical at a time when so much of modern progressive thought, across disciplines from ecology to feminism to systems theory, is going in the opposite direction. These perspectives point more toward interconnectedness or interrelatedness, in which the significance of any one part of the whole—including one species, such as the human species—is being de-emphasized. Your view seems to hark back to a more traditional, almost biblical kind of idea. How would you respond to proponents of the prevailing "nonhierarchical" paradigm?*

AG: It's the difference between the perennial philosophy that we are talking about, monistic idealism, and what is called a kind of pantheism. That is, these views—which I call "ecological worldviews" and which Ken Wilber calls the same thing—are actually denigrating God by seeing God as limited to the immanent reality. On the face of it, this sounds good because everything becomes divine—the rocks, the trees, all the way to human beings, and they are all equal and they are all divinity—it sounds fine, but it certainly does not adhere to what the spiritual teachers knew. In the Bhagavad Gita, Krishna says to Arjuna, "All these things are in me, but I am not in them." What does he mean by that? What he means is that "I am not exclusively in them."

So there *is* evolution, in other words, in the manifest reality. *Evolution* happens. That means that the amoeba is, of course, a manifestation of consciousness, and so is the human being. But they are not in the same stage. Evolutionarily, yes, we are ahead of the amoeba. And these theories, these ecological-worldview people, they don't see that. They don't rightly understand what evolution is because they are ignoring the transcendent dimension, they are ignoring the purposiveness of the universe, the creative play. Ken Wilber makes this point very, very well in his book *Sex, Ecology, Spirituality*.

WIE: *So you would say they have part of the picture but that without this other aspect that you are bringing in, their view is very—*

AG: It's very limited. And that's why pantheism is very limited. When Westerners started going to India, they thought it was pantheistic because it has many, many gods. Indian philosophy tends to see God in nature, in many things—they worship rocks sometimes, that kind of thing—so they thought it was pantheistic and only somewhat later did they realize that there is a transcendent dimension. In fact, the transcendent dimension is developed extremely well in Indian philosophy, whereas the transcendent dimension in the West is hidden in the cave of a very few esoteric systems such as the Gnostics and a few great masters like Meister Eckhart. In Jesus' teachings you can see it in the Gospel according to Thomas. But you have to really dig

deep to find that thread in the West. In India, in the Upanishads and the Vedanta and the Bhagavad Gita, it is very much explicit. Now, pantheism *sounds* very good. But it's only part of the story. It's a good way to worship, it's a good way to bring spirituality into your daily life, because it is good to acknowledge that there is spirit in everything. But if we just see the diversity, see the God in everything, but don't see the God which is beyond every particular thing, then we are not realizing our potential. We are not realizing our Self. And so, truly, Self-realization involves seeing this pantheistic aspect of reality, but also seeing the transcendent aspect of reality.

WIE: *In addition to being a scientist, you are also a spiritual practitioner. Could you talk a little bit about what brought you to spirituality?*

AG: Well, I'm afraid that is a pretty usual, almost classic, case. The ideal classic case, of course, is the famous case of the Buddha, who recognized at the age of twenty-nine that all of his pleasure as a prince was really a waste of time because there is suffering in the world. For me it was not that drastic, but when I was about thirty-seven the world started to fall apart on me. I lost my research grant, I had a divorce and I was very lonely. And the professional pleasure that I used to get by writing physics papers stopped being pleasure.

I remember one time when I was at a conference and all day I had been going around, beating my own drums and arguing with people. Then in the evening when I was alone, I felt so lonely. And I realized that I had heartburn, and I had already exhausted a full bottle of Tums and still it would not go away. I discovered suffering; I discovered suffering literally. And it is that discovery of suffering that brought me to spirituality, because I couldn't think of anything else. I couldn't think of any other way—although I had given up the idea of God entirely and had been a materialist physicist for quite some time. In fact, when my young children asked me one time, "Are you an atheist?" I said something like, "Yeah." And, "Is there a God?" And I said, "No, I don't believe in God." That kind of thing was quite common for me to say. But in that era, around thirty-seven, that particular world—where God didn't exist and where the meaning of life came just from brain-pursuits of glory in a profession—just did not satisfy me and did not bring happiness. In fact it was full of suffering. So I came to meditation. I wanted to see if there was any way of at least finding some solace, if not happiness. And eventually great joy came out of it, but that took time. And also, I must mention that I got married too, and the challenge of love was a very important one. In other words, I very soon discovered after I got married for the second time that love is very different than what I thought it was. So I discovered with my wife the meaning of love, and that was a big contribution also to my own spirituality.

WIE: *It's interesting that, while you turned to spirituality because you felt that science wasn't really satisfying your own search for truth, you have nevertheless remained a scientist throughout.*

AG: That's true. It's just that my way of doing science changed. What happened to me, the reason that I lost the joy of science, was because I had made it into a professional trip. I lost the ideal way of doing science, which is the spirit of discovery, the curiosity, the spirit of knowing truth. So I was not searching for truth anymore through science, and therefore I had to discover meditation, where I was searching for truth again, truth of reality. What is the nature of reality after all? You see the first tendency was nihilism, nothing exists; I was completely desperate. But meditation very soon told me that no, it's not that desperate. I had an experience. I had a glimpse that reality really does exist. Whatever it was I didn't know, but something exists. So that gave me the prerogative to go back to science and see if I could now do science with new energy and new direction and really investigate truth instead of investigating because of professional glory.

WIE: *How then did your newly revived interest in truth, this spiritual core to your life, inform your practice of science?*

AG: What happened was that I was not doing science anymore for the purpose of just publishing papers and doing problems which enabled you to publish papers and get grants. Instead, I was doing the really important problems. And the really important problems of today are very paradoxical and very anomalous. Well, I'm not saying that traditional scientists don't have a few important problems. There are a few important problems there too. But one of the problems I discovered very quickly that would lead me, I just intuited, to questions of reality was the quantum measurement problem.

You see, the quantum measurement problem is supposed to be a problem which forever derails people from any professional achievement because it's a very difficult problem. People have tried it for decades and have not been able to solve it. But I thought, "I have nothing to lose and I am going to investigate only truth, so why not see?" Quantum physics was something I knew very well. I had researched quantum physics all my life, so why not do the quantum measurement problem? So that's how I came to ask this question, "What agency converts possibility into actuality?" And it still took me from 1975 to 1985 until, through a mystical breakthrough, I came to recognize this.

WIE: *Could you describe that breakthrough?*

AG: Yes, I'd love to. It's so vivid in my mind. You see, the wisdom was in those days—and this was in every sort of book, *The Tao of Physics*, *The Dancing Wu Li Masters*, Fred Alan Wolf's *Taking the Quantum Leap*, and some other books too—everywhere the wisdom was that consciousness must be an emergent phenomenon of the brain. And despite the fact that some of these people, to their credit, were giving consciousness causal efficacy, no one could explain how it *happened*. That was the mystery because, after all, if it's an emergent phenomenon of the brain, then all causal efficacy must ultimately come from the material elementary particles. So this was a puzzle to me. This was a puzzle to everybody. And I just couldn't find any

way to solve it. David Bohm talked about hidden variables, so I toyed with his ideas of an explicate order and an implicate order, that kind of thing—but this wasn't satisfactory because in Bohm's theory, again, there is no causal efficacy that is given to consciousness. It is all a *realist* theory. In other words, it is a theory on which everything can be explained through mathematical equations. There is no freedom of choice, in other words, in reality. So I was just struggling and struggling because I was convinced that there *is* real freedom of choice.

So then one time—and this is where the breakthrough happened—my wife and I were in Ventura, California and a mystic friend, Joel Morwood, came down from Los Angeles, and we all went to hear Krishnamurti. And Krishnamurti, of course, is extremely impressive, a very great mystic. So we heard him and then we came back home. We had dinner and we were talking, and I was giving Joel a spiel about my latest ideas of the quantum theory of consciousness and Joel just challenged me. He said, "Can consciousness be explained?" And I tried to wriggle my way through that but he wouldn't listen. He said, "You are putting on scientific blinders. You don't realize that consciousness is the ground of all being." He didn't use that particular word, but he said something like, "There is nothing but God." And something flipped inside of me which I cannot quite explain. This is the ultimate cognition, that I had at that very moment. There was a complete about-turn in my psyche and I just realized that consciousness is the ground of all being. I remember staying up that night, looking at the sky and having a real mystical feeling about what the world is, and the complete conviction that this *is* the way the world is, this *is* the way that reality is, and one *can* do science. You see, the prevalent notion—even among people like David Bohm—was, "How can you ever do science without assuming that there is reality and material and all this? How can you do science if you let consciousness do things which are 'arbitrary?'" But I became completely convinced—there has not been a shred of doubt ever since—that one *can* do science on this basis. Not only that, one can solve the problems of today's science. And that is what is turning out. Of course all the problems did not get solved right on that night. That night was the beginning of a new way of doing science.

WIE: *That's interesting. So that night something really did shift for you in your whole approach. And everything was different after that?*

AG: Everything was different.

WIE: *Did you then find, in working out the details of what it would mean to do science in this context, that you were able to penetrate much more deeply or that your own scientific thinking was transformed in some way by this experience?*

AG: Right. Exactly. What happened was very interesting. I was stuck, as I said, I was stuck with this idea before: "How can consciousness have causal efficacy?" And now that I recognized that consciousness was the ground of being, within months all the problems of quantum measurement theory, the

measurement paradoxes, just melted away. I wrote my first paper which was published in 1989, but that was just refinement of the ideas and working out details. The net upshot was that the creativity, which got a second wind on that night in 1985, took about another three years before it started fully expressing itself. But ever since I have been just blessed with ideas after ideas, and lots of problems have been solved—the problem of cognition, perception, biological evolution, mind-body healing. My latest book is called *Physics of the Soul*. This is a theory of reincarnation, all fully worked out. It has been just a wonderful adventure in creativity.

WIE: *So it sounds pretty clear that taking an interest in the spiritual, in your case, had a significant effect on your ability to do science. Looking through the opposite end of the lens, how would you say that being a scientist has affected your spiritual evolution?*

AG: Well, I stopped seeing them as separate, so this identification, this wholeness, the integration of the spiritual and the scientific, was very important for me. Mystics often warn people, "Look, don't divide your life into this and that." For me it came naturally because I discovered the new way of doing science when I discovered spirit. Spirit was the natural basis of my being, so after that, whatever I do, I don't separate them very much.

WIE: *You mentioned a shift in your motivation for doing science—how what was driving you started to turn at a certain point. That's one thing that we've been thinking about a lot as we've been looking into this issue: What is it that really motivates science? And how is that different from what motivates spiritual pursuit? Particularly, there have been some people we have discussed—thinkers like E. F. Schumacher or Huston Smith, for example—who feel that ever since the scientific revolution, when Descartes's and Newton's ideas took hold, the whole approach of science has been to try to dominate or control nature or the world. Such critics question whether science could ever be a genuine vehicle for discovering the deepest truths, because they feel that science is rooted in a desire to know for the wrong reasons. Obviously, in your work you have been very immersed in the scientific world—you know a lot of scientists, you go to conferences, you're surrounded by all of that and also, perhaps, you struggle with that motivation in yourself. Could you speak a little more about your experience of that?*

AG: Yes, this is a very, very good question; we have to understand it very deeply.

The problem is that in this pursuit, this particular pursuit of science, including the books that we mentioned earlier, *The Tao of Physics* and *The Dancing Wu Li Masters*, even when spirituality is recognized within the materialist worldview, God is seen only in the immanent aspect of divinity. What that means is: you have said that there is only one reality. By saying that there is only one reality—material reality—even when you imbue matter with spirituality, because you are still dealing with only one level, you are ignoring the transcendent level. And therefore you are only looking at half

of the pie; you are ignoring the other half. Ken Wilber makes this point very, very well. So what has to be done of course—and that's when the stigma of science disappears—is to include the other half into science. Now, before my work, I think it was very obscure how this inclusion has to be done. Although people like Teilhard de Chardin, Aurobindo or Madame Blavatsky, the founder of the Theosophy movement, recognized that such a science could have come, very few could actually see it.

So what I have done is to give actual flesh to all these visions that took place early in the century. And when you do that, when you recognize that science can be based on the primacy of consciousness, then this deficiency isn't there anymore. In other words then, the stigma that science is only separateness goes away. The materialist science *is* a separatist science. The new science, though, says that the material part of the world does exist, the separative movement is part of reality also, but it is not the *only* part of reality. There is separation, and then there is integration. So in my book *The Self-Aware Universe* I talk about the hero's journey for the entire scientific endeavor. I said that, well, four hundred years ago, with Galileo, Copernicus, Newton and others, we started the separatist sail and we went on a separate journey of separateness, but that's only the first part of the hero's journey. Then the hero discovers and the hero returns. It is the hero's return that we are now witnessing through this new paradigm.