

The Soul and Quantum Physics

An interview with Dr. Fred Alan Wolf.

Dr. Fred Alan Wolf earned a Ph. D. in theoretical physics from UCLA. He continues to write, lecture throughout the world, and conduct research on the relationship of quantum physics to consciousness. He is the National Book Award Winning author of Taking the Quantum Leap and many other books including The Spiritual Universe. He is a member of the Martin Luther King, Jr. Collegium of Scholars. Dr. Wolf has taught at the University of London, the University of Paris, the Hahn-Meitner Institute for Nuclear Physics in Berlin, The Hebrew University of Jerusalem, and San Diego State University in the United States. His latest book is entitled Mind into Matter.

Q. Let me start off by asking you some questions that refer to your latest book *Mind into Matter* and your previous books, especially *Taking the Quantum Leap*. How different is the world of quantum physics from the physical world that we see?

FRED ALAN WOLF. It is an invisible world, yet its affect upon the things we do perceive is very striking. It's a world in which we have to deal in an abstract way of thinking or a way of perceiving. Here we deal with something quite intangible that I call a qwiff—a mathematical construct—that can never be seen, measured, or tested. Yet qwiffs have observable, measurable, and testable consequences. It's a world which describes the things we call atoms, molecules, sub-atomic particles and even more recently, computers, deep space communication, how your photo-cells on your camera work, television and of course, the modern computer and how it basically works. All these things wouldn't be possible without an understanding of the basic principles that we call quantum physics.

Q. Does that tell us how different the world of quantum physics is?

FRED ALAN WOLF. No, it just explains that there is a new basis for understanding the way the world works. When we try to understand the world in terms of what is called today classical physics, which was the physics that was invented in the seventeenth and eighteenth centuries by people like Isaac Newton, for example, we found that our classical understanding was perfectly adequate. It describes the movements of very large objects like, planets in their orbits, driving automobiles down streets, and mechanical devices in general. But when we tried to apply that same kind of thinking to the very small, to the tiny, to the atomic, and to the sub-atomic realm, we found that these classical laws predicted things that didn't occur. The things that did occur were totally unpredictable. In fact quantum physics introduced a whole new way of thinking about science. It pointed to the fact that the way a person observes an atomic or sub-atomic event can actually alter and change that event in ways that would not be predictable by the old Newtonian models.

Q. How does this work?

FRED ALAN WOLF. According to the tenets of the quantum physics based on the uncertainty principle and the complementarity principle, there is no reality until that reality is perceived. Our perceptions of reality will, consequently, appear somewhat contradictory, dualistic, and paradoxical. However, the instantaneous experience of the reality of an immediate experience will not appear paradoxical at all. Reality only seems paradoxical when we construct a history of our perceptions.

Q. That makes sense when looking at something new and deciding what it means. But I'm not actually changing reality, am I? I'm just changing my interpretation of reality.

FRED ALAN WOLF. The answer is subtle, but as surprising as it may seem, you are changing reality simply by observing it. In the real world of quantum mechanics, ultimately and fundamentally we affect the universe whenever we observe it or anything in it.

Let's consider a simple example: the quantum mechanics of the nursery rhyme that begins, "Starlight, star bright, first star I see tonight." The qwiff describing a photon emitted from a star four light years from earth has a very simple pattern of movement. This pattern takes the form of a spherical wave, endless wave ripples pulsing outward from the center like the layers of an onion. A two-dimensional version of this is created whenever you drop a stone into a still pond.

A potential observer, A, on the earth could be, for example, thinking about the possibility of a star existing at some point in space. Imagine the star is undiscovered and is crying for help, seeking to be found. It sends out a single photon qwiff that spreads throughout all of space. Each point on its wave surface is a possible discovery point. But there is no intelligence in the universe to know that. So the wave surface grows, expanding further but getting weaker as it goes. Perhaps if it expands further, like a balloon blowing up, it will find intelligence.

Suddenly on earth, something pops in the "mind" of our thinking observer. In a flash, faster than light, the observer "sees" the light of the star. And at that instant, the qwiff is changed drastically like a pricked balloon. The photon is said to have arrived. Intelligence has occurred on the scene. Knowledge has occurred on the scene. Knowledge has been altered. The single photon qwiff, which had been spread over a four-lightyear radius sphere, has collapsed to a single atomic event at the retina of the observer. That event—the collapse of the wave function from an eight-lightyear diameter sphere to a single point on the retina of the beholder—is an alteration affecting the whole universe for one single instant.

Meanwhile, another observer, B, may have also been seeking that star's light. Suppose that observer B was waiting for the flash on another planet that also happened to be four lightyears from the star, but on the opposite side from observer A. B would miss the show because A popped the qwiff. When A saw the light, he altered the probability

throughout all space.

But just before A's discovery, both A and B had equal chances to discover the star. In that world inhabited by qwiffs, the photon was potentially in both places - near A and near B at the same time. Indeed, it was potentially and simultaneously at every point on that qwiff sphere. Then A saw the light.

That not only changed A's reality, it also changed B's reality and just as quickly. It is tempting to say that A acted as the cause and B became the effect in this change. But we must not be hasty. We could just as logically say that B's nonobservance of the photon caused A's event to occur.

Q. Why?

FRED ALAN WOLF. Because at the instant that B knew there was no photon, he or she also instantly altered the probability from a possibility to nothing. Thus B, as well as A, was responsible for collapsing the qwiff.

Q. Doesn't that violate all the normal laws of cause and effect?

FRED ALAN WOLF. The instantaneous qwiff pop doesn't seem to obey the usual laws of cause and effect. Because of the instantaneousness of the A and B events, we cannot say who controls whom or what controls what. It's as if minds were eager, hungry children, all out there and waiting to gobble up the first qwiff that passes by.

Q. I like that image!

FRED ALAN WOLF. Thanks. The problem is that the first gobbler leaves nothing for the rest, or else, by his act of not knowing, he creates a feast of knowledge for another.

Q. But there's so much knowledge. I mean, a star doesn't just put out one photon. It puts out billions. So just because I see one photon and pop a qwiff doesn't mean the next person can't see the next photon and pop another qwiff.

FRED ALAN WOLF. Yes, of course, an instant later another photon qwiff would reach the two observers. And again, A might see the light. But the qwiff favors neither A nor B. For it is equally likely that B will see this photon. And if he does see it, he will alter A's reality for just an instant. Then comes the third photon, and the fourth, and so on. Each photon qwiff is altered from nearly opposite sides of the vast spatial universe. In that continual series of observations, the vast distance of space is perceived by both A and B.

So from a certain, and perhaps cosmic, viewpoint there's a connection between the two observers, A and B. They may never know it, however. Before the observations made by A and B, the qwiff was an unbroken whole spread over a vast range of space.

Before the observation of that single photon by A, there was no objective separation between A and B. That separation arose when the photon was observed.

By observing the universe, each observer is disturbing the unbroken wholeness of the universe. By observing, each observer is separating himself or herself from the rest of creation. By observing, the observer is gaining knowledge, but also paying a price. He is becoming more and more alone and isolated. Perhaps this is what is meant by the tree of knowledge in the Garden of Eden. The first bite of the apple is sweet, but costly. Our eyes are opened and we see we are alone.

Q. And by becoming conscious of the universe, by paying attention to it, do we change the universe?

FRED ALAN WOLF. Yes. Consciousness is what consciousness does. It performs a dual role in the universe. In the world of the quantum, it is both the awareness and the creation of experience. In short, knowing is mind and being is matter. This interaction between mind and matter, or knowing and being, has perplexed philosophers for centuries and is called the “mind-body problem”.

The problem has to do with will. Just getting the job done is not sufficient. Any old machine will do that. It’s knowing that the job is being done that is the grabber.

Q. How do you will something to happen? In other words, when I choose to do something, how does it get done and how do I know that I am doing it?

FRED ALAN WOLF. Surprisingly, it is quantum indeterminacy that leads to deterministic choices on the normal level of perceived experience. If this indeterminacy were to vanish somehow, my will would not be done. I would have no choice, none at all.

Q. I don’t understand.

FRED ALAN WOLF. What is the event we are talking about? Is it the nerve cell firing itself? No. It is even further down the scale of events: We need to look at a smaller part of the nerve cell. This smaller subsystem consists of one complex molecule called methylamine, which consists of two hydrogen atoms and one nitrogen atom forming a triangle. It is part of an active group of atoms on an enzyme molecule inside the nerve cell and lying very close to the wall of the cell. We might think of the enzyme as a kind of gatekeeper. The small subsystem we are interested in lies at the end of one of the tails on the gatekeeper enzyme.

The scenario goes something like this: The nerve cell fires. The protein gate undergoes a change in conformation appropriate for a channel gate. The tail enters the gate. The two hydrogen atoms form a baseline on the tiny tail’s tip, with the nitrogen atom above or below that line. If the nitrogen atom is above the baseline, the tail fits into the gate much like a key fits a lock, and the gate stays open to fire again after the tail leaves the gate.

If, on the other hand, the nitrogen atom is below the baseline, the tail again fits the gate, but, like a good boy, it closes the gate after its encounter with it. These are the only two fits of the tail's "key" tip into the gate "lock". So far, so good. An "up" triangle keeps the gate open. A "down" triangle closes the gate. So what happens? Well, it depends on whether or not you notice. We're in quantum land. It is the act of noticing that causes the cell to fire, to pop a qwiff. From the instant the event is noted, the moment it becomes an event of consciousness, the world is a different place. This is because the appraisal of possibilities now available to the observer has also changed.

Q. So it's the atom that notices and decides whether or not to open and close? Are you saying atoms are conscious? That they can make a choice?

FRED ALAN WOLF. At the atomic level, consciousness is necessarily primitive and self-reflective. Neurons contain possibly several billion atomic "self-reflective minds." This self-reflective property comes from quantum physics in a subtle way. All together these minds are the agents that make up your intelligence agency. At the molecular level, each agent performs a single task: that of noticing itself. It is like one potential reality noticing another potential reality within the same pure qwiff. In that sudden mysterious event, one of those potential realities just "appears". That act of consciousness is the creation of reality at the atomic and molecular level. Now the neuron is alerted to signal the muscle. Next the neuron is signaling the muscle. And on an on it goes.

Q. So is that the mind, all these choices made on the atomic level?

FRED ALAN WOLF. There is an intentional, subtle difference between the one mind and the individual atomic minds. The atomic minds pop qwiffs. They operate at the level of quantum mechanics. They deal in the bizarre world of choice among qwiff possibilities. And their choices have not been decided upon until they choose. Each action of an atomic mind is a popping of a qwiff. When an atomic mind operates, the gate is observed to be open.

The one mind does not normally deal with atomic realities. In fact, it deals only with atomic minds, and it deals with what has been created by the choices made by the atomic minds. It acts as a data-saver. Imagine your one mind as the chief of your central nervous system. Picture your individual atomic minds as agents acting independently. By summing up the experiences of the atomic minds, the one mind makes up its mind. It literally creates a one-mindedness. In doing this automatically, it transforms new experiences into old experiences and creates habits.

Q. So the one mind is just the sum of all the choices made by the billions of atomic minds. Where's the free will in that?

FRED ALAN WOLF. The unique freedom of the one mind is that it is all of the atomic minds and any one of them at the same time. There are no clear dividing lines

between the one mind and any other mind within the body. This freedom arises because the mind has no location in space. And just imagine, if this idea is correct, that consciousness is able to sense things on an atomic scale. The possibility is mind-boggling. It means that new or novel events can be accepted at the atomic level, the level where potential reality becomes reality.

In my wild imagination, I picture God in the center of the whole universe preparing quantum feasts of knowledge, all kinds of magical and tasteful future goodies in the form of magnificent qwiffs. The qwiffs spread throughout the universe faster than light, traveling both backwards and forwards in time. And God cries out, like a good Jewish mother, "Eat, eat, my children. These are wondrous gourmet things, real pearls." But, alas, we are an audience quite fearful of what could be. We watch the splendor and we moan. We are afraid to laugh at the Great One's jokes. We are afraid to feast on the new food for fear of indigestion.

Q. But the world seems so disordered. As Einstein said, "God doesn't play dice."

FRED ALAN WOLF. We might say that God's will is exercised in the world of the qwiff, the quantum wave function. It is a causal world of exact mathematical accuracy, but there is not matter present. It is a world of paradox and utter confusion for human, limited intelligence. For it is a world where a thing both occupies a single place at a single time and occupies an infinite number of places at the same time. Yet there is an explicit order to the paradox. There is a pattern to the many positions, a symmetry.

But we, who exist in the world of matter, can only disrupt that perfection of paradox by attempting to observe the pattern. We pay a large price for a material world. The price involves our sanity. We cannot make total order of our observations. There always appears to be something missing. This disruption of God's order appears to us as The Principle of Uncertainty. Thus we become helpless, feel inadequate, and long for the order we are helpless to create in the universe. All we can do is go along with it.

On the other hand, we are free to choose. Our very helplessness to create a perfect order allows us to create. You might say that the Uncertainty Principle is a two-edged sword. It frees us from the past because nothing can be predetermined. It gives us the freedom to choose how we go about in the universe. But we cannot predict the results of our choices. We can choose, but we cannot know if our choices will be successful.

Q. Now let me shift gears for a moment and ask you specifically about the connection between the soul and quantum physics. Many scientists question whether the soul exists. Many others in our culture question whether the soul has any relevance in a scientifically oriented, technologically trained modern society. Because science is largely responsible for portraying the world as merely a collection of mechanical parts acting on each other, some people feel a little uncomfortable when a quantum physicist such as yourself attempts to define the soul in scientific terms. Nevertheless, more and more people *are* concerned with questions dealing with the soul, the human spirit and

spirituality.

What is the soul from a quantum physics point of view?

FRED ALAN WOLF. This is really a very old question, if we leave off the quantum physics part. It started off a great debate thousands of years ago in ancient Greece between the followers of Plato and his student, Aristotle. In brief the soul is an agent of reality.

Plato believed that the physical senses were always going to cloud our perception of the universe. According to Plato, the mere fact that we are embodied makes our perceptions somewhat distorted, somewhat inaccurate, somewhat of an illusion. While working at the level of the body and the senses, Plato thought that we could never quite experience things as they are “in reality.” He taught there was a more perfect, non-material realm of existence.

In contrast, Aristotle taught there is no world outside of our senses. Nowadays, scientists have invented sophisticated scientific instruments such as microscopes and telescopes to extend the power of our senses, but the majority of scientists still share Aristotle’s basic worldview.

I believe that the findings of quantum physics increasingly support Plato. There is evidence that suggests the existence of a non-material, non-physical universe that has a reality even though it may not as yet be clearly perceptible to our senses and scientific instrumentation. When we consider out-of-body experiences, shamanic journeys and lucid dream states, though they cannot be replicated in the true scientific sense, they also point to the existence of non-material dimensions of reality.

Now most of us were not trained to look for and experience our souls. We’ve been more or less trained to look for things that can be grasped—things that are physical and solid. But the soul is not tangible, physical or solid. You cannot just reach out and touch the soul. Yet, the soul as an animating principle in the universe is ultimately more important than anything that is physical or tangible.

Q. The question then arises, “How is it that more people do not directly experience the presence of their souls?” They may read about the soul, they may believe in the soul, but if the soul is a reality, why do they feel a sense of soul loss, an absence of the soul in their lives?

FRED ALAN WOLF. The answer may be found in the nature of the soul itself. The soul is alive and vibrant yet experienced subjectively. I go into more detail about this in my book *Mind into Matter*. The world that we see with our everyday eyes—through the filter of our senses—is derived from a more “objective” world. The “out there” objective world and the subjectively experienced “soul world” are in conflict with each other. This corresponds to what spiritual teachers have been saying about what happens when living spirit descends into objective matter—there’s a fight. So if we become too involved with the objective, external processes of life, we tend to lose touch with perception from the level of our soul. It’s when we go within into an internal quietness, as in meditation, we can begin to perceive something which is deeper and more

meaningful than just the objective “out there-ness.” So it’s really important for those of us who have lost touch with our souls to spend some quiet time—not in thinking, not in going over the day’s list of everything that has to be done—but in being with yourself in ways that allow a deeper inner reality to bubble up from within your consciousness.

Q. Some people have difficulty accepting that something can be real but not physical. Is there anything in science that is real but not physical?

FRED ALAN WOLF. Actually there is so much, that science had to change its way of describing reality. For example, magnetism is a well-researched area of study where we have demonstrated the existence of something that is real, and yet not solid or tangible. In science class as children, you might have seen how the horseshoe-shaped, bar magnet moved the iron filings into magnetic field patterns without the magnet having to physically touch the iron filings to move them around. So the effects of magnetism clearly demonstrates that something may exist, is real, is not physical and solid, yet it can fill space and move in time—as we know magnetic fields do. If a common phenomenon like a magnetic field acting on iron filings can do this, could not the soul be an invisible, non-material, super-intelligent, animating force that similarly acts on and through the human body and the universe?

To further explore the possible nature of the soul in scientific terms, we can look into the heart of quantum physics. Quantum physicists have demonstrated in experiments with sub-atomic particles that certain fields have a kind of intelligence and seem to be able to do things that ordinary fields can’t do. One very strange process that physicists observe is that electrons simply vanish, in a puff of light, when they interact with certain other particles. In the beginning, we didn’t know why this happened. Then we realized that these vanishing electrons were interacting with anti-matter. Because anti-matter electrons moved opposite to electrons, when the opposing particles met, they annihilated each other. When we studied anti-matter more closely, we began to speak about anti-matter as being “bubbles in the absolute vacuum of empty space.”

Q. What is this “absolute vacuum of empty space?”

FRED ALAN WOLF. Well, how many of you have ever fallen asleep watching television late at night and when you awoke, you heard the static hushing noise ” from your television screen? That noise, produced by the electronics inside the television receiver, is the amplified sound of this “vacuum of space.” Many quantum physicists, including myself, believe that the entire universe, the entire creation, was created out of the “absolute nothingness of the vacuum of space.” It appears this “vacuum of nothingness” is intelligent, active, and has a consciousness. The source of the soul proceeds from, and is present in, this vacuum. Admittedly, the very notion that “some thing” can be created from “no thing” is a very difficult concept for the mind to grasp.

I theorize that the soul emerged at the same time that all the matter in the universe emerged--at the time of the “Big Bang” 15 billion years ago. According to our present scientific model, the universe and the soul will continue to exist for another 20 billion,

billion years until a time that is referred by scientists as the “Big Crunch.”

Between those two points, from the Big Bang, at the beginning of time--to the Big Crunch, at the end of time--all the matter in the universe appears, expands to a maximum point, and then contracts again into nothing. And through it all, an ultimate intelligence, call it what you will, guides and directs the various activities of everything in the universe--including all living life forms, in an unfathomable, unseen way.

Q. Some people talk about the Light that is seen at the moment of death and in near-death experiences. What is this?

FRED ALAN WOLF. From a scientific standpoint, it is difficult to say exactly what is going on. And the reason why we don't know is because we have no idea where the *viewer* is that sees this Light. As an example, right now, you have some sense of being present in your body looking out at the world. But according to what we know from physics, this is an illusion of perception: There is no place inside your body where “you” actually exist. You don't have a particular volume of space or spot that is “you.” It is an illusion to think that everything outside that volume of space is “not you”--what you commonly say is “outside of you.” The best description we can give for this sense of presence is that you “are everywhere.” The main reason that you have more awareness of being in a body is simply because the sensory apparatus of the body commands a great deal of your attention and that much of your attention is linked to your physical senses. We have the illusion that our human bodies are solid, but they are over 99.99% empty space.

If an atom is blown up to the size of an entire football stadium, the dense part of the atom would be comparable to the size of a single grain of rice placed on the 50 yard line. Now why is that important? Because in an atom, the nucleus accounts for 99.99% of all of the matter or mass. Atoms are mostly made of space. So although we experience ourselves as being these solid human bodies, it's more like “who we are” is an awareness or consciousness that lives in space.

Q. Some people may wonder, what is the “light at the end of the tunnel” phenomenon that sometimes occurs in near-death experiences and probably at the moment of death as well?

FRED ALAN WOLF. Let me offer a possibility here. Though all material objects cannot, by definition, travel faster than the speed of light, there is evidence that the soul, which is non-physical and therefore not confined by movements in the material world, *can* travel faster than the speed of light. Traveling faster than the speed of light is called “superluminal speed.”

So at the time of death, or during a near-death experience, it may very well be that the person transitions from the material world--that operates at speeds less than the speed of light--to a world that operates faster than light speed, the so-called “superluminal” spiritual world. In that transfer, a tunneling effect may take place in much the same way that it appears to take place in what astrophysicists call a “black hole.”

Now this is where it gets really interesting. At the superluminal speed of the soul, we go beyond time and space as we experience it in this physical dimension. We then have the phenomenon of being able to move both forward and backward through time/space. People who come back from a near-death experience describe something like this. What these people are very likely experiencing are windows into that kind of time/space dimension of reality.

Q. Many people also report, either at the moment of their death, or those who've come back after a near-death experience, that they have had experiences not only of seeing their loved ones that have departed, but also meeting what I call "super-luminary figures" such as Jesus, Mother Mary, Moses, Krishna or any other sacred personages. Can this be explained?

FRED ALAN WOLF. The specific super-luminary figure that appears is usually based a person's upbringing—Jesus appears to Christians, Krishna for Hindus, etc. But why do these particular beings manifest in our consciousness? Well, I believe these figures are symbolic representations of our spiritual ideals.

On a higher level, everyone embodies the archetypal aspects of Jesus, Krishna, Mohammed, etc. These archetypes of our ideals heal our sense of soul loss and serve our spiritual revival to help us remember a part of us that we usually forget about in everyday life. The physics of the process of experiencing these beings involves an interaction between our soul and our body-mind. This is nothing less than the "physics of God" that we're talking about.

Q. Some may wonder, "All right, if quantum physics offers evidence for the existence of the soul, where is God in this picture?"

FRED ALAN WOLF. Let me offer a speculative but scientifically grounded view of God. First, in speaking about any phenomena, including God, scientists prefer to say that something or someone *behaves* in this way, or that way, rather than say that something is or someone *does* this or *does* that. So, using this scientific terminology, how does God *behave* in the universe? Well, if we read the Bible, God seems to behave in very paradoxical ways. But there is one way that God behaves that seems to be very relevant to this discussion: *God creates*. God is considered the ultimate Creator of all that is. If that's the case, is it possible to speak about a "physics of God's behavior" that explains how God creates?

Basically, we're looking at a process in which the ultimate source of everything, "God," or whatever name you want to call it, transforms consciousness into matter. Once this happens, matter inherently acts as a kind of reflection or mirror of the intelligence from which it sprung. As matter modifies itself over time in an ongoing evolutionary process, new information and intelligence continues to be reflected in an ever-evolving universe.

So what we call God continues to create, with infinite intelligence, every billionth of a billionth of second, now and for billions and billions of years to come. What is

created with this perfect intelligence reflects and modifies everything at every instant and at every level. This happens from the smallest electron to the largest galaxy, including all forms of life in the universe.

Now on a human level, some people view their lives and get upset. They think, *Oh God, what did I live for? Isn't it terrible that I'm going to die? Life was black when it started. Life was black when I was here. And it's going to be black again when life ends! Oh, God, what's it all about?* In my view, even this blackness and despair has been designed into God's system. You may not completely believe or even remember this in this moment, but you have actually created all of it. Now, the "you" that created it all, is not the person, the personality, the one inside you that identifies oneself as "I'm Joe, I'm Martha, I'm Sam"--that's not that person I am speaking to or about. It's the greater essence of "I," this deeper presence, the working of consciousness itself that is in you, in me, in everyone. That "I," working through this body, is the same you that is reflected in the archetypal images of Jesus, Moses, Mohammed, Krishna, all of whom remind us of our true essence. The presence of these beings are but reflections or representations of our own identification with our greater, deeper "I" self.

When Einstein died, researchers were interested in examining his brain to see whether there was something special about it that made him a genius. Aside from a greater amount of glial cells in his visual cortex, there wasn't. His brain is still in a jar at Princeton University. We're not going to find what makes one person smart and one person stupid by looking at their brains, unless, of course, there's an obvious physical impairment. So we're not going to find the source of intelligence and the soul in the material world.

I don't see the soul and consciousness as an epiphenomenon, or product, of matter. It's just the other way around. I see matter as an epiphenomenon of soul and consciousness. The material world has evolved from the absolute vacuum of space--the home of the soul.

Q. Let me shift gears once again. I want to look at how your work offers some global prospective and provides some guidance about the future. We seem to be living in a time of acceleration. Many people are talking about our changing times and describe them as unprecedented. Are we in the middle of a shift? Is global consciousness changing? What's your perspective on a consciousness shifting from what some have called a duality consciousness to a unity consciousness?

FRED ALAN WOLF. Through an acceleration of the individuation process, the self is becoming more aware of a unity of consciousness. It's like a paradox. As we become more intelligent we become more aware of unity. Without the separation, without the individuation, this clarity of unity never would have occurred. It might have been practiced or mouthed or pretended to be understood. But today people are having an experience of unity through individuation. It's not just a matter of believing in unity. It's experiencing unity as an individual, not through group meditation or group mind, but through the individual becoming aware that there's more than just one's own individual thoughts. This psychic level awareness is increasing, but not because of group practice.

There's an enormous desire right now. Individuals want to know. They are striving to gain a foothold in the new knowledge base. They want the knowledge. Well, they want that knowledge because they can smell or sense or intuit that there is a new form of consciousness emerging around them.

The technological tools today are also leading to this greater awareness. Almost a trivial example of this is the Internet, which leads to global communication at nearly light speed. With this there is a sense of unity of mind emerging. There's great hope, great promise. But it's not coming to us as it used to come to our forebears when they were a tribe communing together as a whole. As a whole they would feed each other, attempt to bring back the sense of unity presence—the unity of one spirit. That's not happening anymore. Now we have people in cubbyholes. Except for rock concerts and a few other events, people aren't congregating as much as they used to. They may go into new forms of media enhanced unity, but it's through the use of drumming and the impression of outside technological influence that people are coming to these events. The raves and concerts are examples of what I think are leading to a unity of consciousness because individuals want to bathe in that experience. They're not coming to be together necessarily. They're coming to be alone, rocking to the music. It's a different experience, yet it can lead to unity.

Q. I would like to get to something that quantum physicists call the observer effect. Many of the mystics and the indigenous medicine men have talked about prophecy and manifesting reality. They say we are affecting or manifesting reality by our collective consciousness. In other words, we choose our outcome. Some have put forth the theory that we can have alternate realities. One outcome for instance, is the destruction of planet earth. The other alternate reality would be a positive one for earth. Can the new physics explain the possibility of individual and collective human consciousness affecting or manifesting reality?

FRED ALAN WOLF. There are a number of things to discuss here. Each one must be considered separately before we can draw conclusions on what the overall mix means. First, what is the observer effect? Second, what is the effect of a large group of individuals on a system or a society? Next, what are alternate realities in that picture? Are there such realities, and what does it mean to make a choice. How does that enter into the game?

First from a common sense point of view, there are no alternate realities. There is only the physical world, and there are things you do to move it about or to move about it. Nothing really changes. Everything is conserved. An object can be moved from one place to another and in so doing one says things have changed. Actually they haven't. They've just more or less changed position like people playing musical chairs. That's a classical view.

The objects are assumed to exist whether anyone is there to observe them or not. If a tree falls in the forest, it makes a noise. Whether or not there's an ear there to hear it is immaterial. Human beings are nothing more than the physical movement of small objects inside of things called bodies. The rapid manner in which this movement occurs

and its activity produces what appears to be thought, feelings, and so forth. All that is happening is the movement of stuff. That's the most commonly accepted materialistic point of view.

Absent from this view is the ideal, the imaginal, or imagination, and the mystical experience. Anything outside of the material is not validated. The imaginal or mystical element is currently lacking from this perspective and won't ever be accounted for, given that the classical view is so specific and narrow.

The materialistic point of view has been very successful in making a scientific revolution. It's been very useful, but it's reached a point where it can't go any further. That point is explaining the nature of consciousness. How are people conscious? It seems that we can't explain from purely material processes how people are conscious. There are many people trying to do so and there are people attempting to build devices called artificially intelligent computers. The hope is that that can be done. But there seems to be from the point of view of what's now called new physics, clear limits as to how far you can go. What the new physics has taught us is that first of all, nothing is as it seems. So the objective worldview of objects is really not the way the world is constructed. It may appear to be constructed that way, but there's something hidden that we don't see that indicates that the world is not made of hard stuff.

Fundamentally, physical objects are not as real as they appear. From this new point of view, the appearance of something can have as drastic an effect as, what used to be thought of, the thing itself. An example of this is the practice of certain forms of martial arts. People who have reached a certain level in a form of martial arts can manipulate physical matter by using their minds in ways we are not used to in our culture. For example, you will find a student falling over if the teacher who is training the student moves his head a certain way. The student might look like he's been knocked over by a blow. But nothing physical has actually happened. There is far more going on than meets the eye.

There's a non-material communication that seems to influence, effect, and transform matter. It actually alters the matter of the people that are in contact. When you watch certain forms of animal life like ants, bees, flocks of birds, or even schools of fish, you find that they are able to communicate with each other at a tremendous speed, far greater than their simple neural systems would ever allow.

Even in our own brains we find there are temporal paradoxes. We're able to respond, comprehend, and be aware of the world around us at a speed that is far faster than our brains themselves can process the data. It takes longer for the brain to process the data, that is make the cognition, the conception, the recognition of sensation, than it takes for us to have the experience and know what the experience is all about. Processing the data takes time yet, we seem to be able to have the experience before our brains allow us to.

So there clearly is something else going on that doesn't fit the materialist point of view. The hope was to find some science that would explain it all. We haven't found it yet, but we've come closest with quantum physics. Quantum physics indicates that there is some profound relationship between observation and the physical world.

The key here is to realize that the ideas of an observer and the observed are

themselves illusions from a metaphysical point of view. The *observed* assumes a hard material object. The *observer* assumes a soft non-material object. The truth is there's something else going on that's neither hard nor soft, neither observed nor observer, but a unity that seems to have some far reaching connection. It appears to be an observer affecting the observed by merely observing. It appears that's what is going but that is not what is going on. It appears that there's mind and matter. And there's a mind of an observer affecting the material world. However, the material world itself is not really hard and the mind of the observer is not really soft. There is something else going on.

Q. There is no separation between the material world and consciousness?

FRED ALAN WOLF. The point is there is no such thing as consciousness and the material world. There is no such thing as duality. There is only one thing. What that is, is much more mysterious than I can ever fathom. It's deep and mysterious. It appears to separate into a material world and an observer observing a material world. I don't think anybody knows how this is done yet. The separation of subject and object is very mysterious. This separation occurs in a way that is not as simple as an assumed existent subject and an assumed existent object already separated. Subject and object are not already separated. They are not even inter-linked. They are one being pulled apart in different ways. The dance is always going on. It's like a taffy ball. It's being pulled apart into a subject and an object. It is pushed back together and pulled apart again. Every time it does so the strands in between are different and what subject was and what object was has changed. It is an incessant dance. The taffy is a huge boiling caldron called the vacuum. The particles that make you up right now, at this instant—every single electron—was in that vacuum and bubbled out. The illusion is that it's consistently staying there. Something far deeper and far more mysterious occurs making it appear very solid and very real.

This is coming from quantum physics. There is a whole field—think of it as a field of wheat—a huge field out there that contains both the observer and the observed. Something happens in one part of the wheat field. The wind blows. Something happens in another part of the wheat field. Something falls over, moves around. Maybe grains of wheat move. Anything. Now, it looks like from the observer's point of view that the observer has effected the observed by merely looking at it. From the observed point of view it looks like something's pushed it around. That's how it looks to us looking from the outside, looking from a quantum physics point of view. The fundamental of quantum physics is something that is neither material nor immaterial called quantum function or field of possibility. It's both imaginal and it has physical ramifications. But it's neither physical nor purely imaginary. It seems to be both out in space and in our brains at the same time. When the field changes material objects themselves change. How do they change? They change because what this field represents is the field of possibility for all things to happen. The shifting of the field of possibilities can be compared to a weighted coin. For example, a coin that has been weighted now, has instead of a 50/50 probability, a 75/25 probability when thrown in the air. What you see flipping the coin many times is seven and a half heads per ten choices. Before you would simply have 5/5 heads and tails.

The mind, the probability field can shift the odds so that what one observes is changed by continually observing, changing and shifting the ways one observes something. We already know that that exists. That it's real. That throws out the notion that the object itself is immutable, unchangeable except if it is being pushed around by a physical force. The force we're talking about is not the force of a physical object upon a physical object. It's a change of mind. It's no more energetic or forceful than a change of thought or a whim or a fancy of one's mind, but yet it seems to have effects. Today, we know that is true. Whether or not that can be harnessed in terms of a global transformative effect - whether that can be what shamans use when they deal with people and healing - whether that's what nations use when they want to mobilize to get people to go to war - whether that kind of transformative effect, such as the probability field in one mind effects another mind so that the group mind is felt as one field of probability which then effects everything? - it may be indeed what is happening.

Q. Hopi elders go out and make a rain dance and sure enough it rains. From a quantum physics standpoint, could there be an explanation for this?

FRED ALAN WOLF. There could be but it may not be what one would think. The practice is very old. It goes back to the time when magic was the prevailing practice. When you wanted something to happen you would perform an incantation, you would create the scenario "as above so below". Most likely, you would use something. Maybe you would even make a model in your own hands. Then, you would push the model around. If you'd want the rain to come you'd drop pebbles. When it rained you would observe very carefully what it was you did that was different about the way you dropped the pebbles today than the way you did yesterday when it didn't rain. I threw the pebble up in the air this time. Let's do that next time I want rain. I'll throw them a little higher. When that doesn't work you try something different. Magic has always been an attempt to control nature. It's possible from a purely materialistic point of view that such a practice could work. For example, throw enough pebbles up into moisture laden air; cause some convective currents to appear. These convective currents could, like the butterfly's wings in an unstable situation, cause the rain cloud to burst. This could happen. I don't think that's really what's going on. But that's a possibility because weather is very unpredictable, non-linear, and chaotic in terms of the models we currently have of it. It's not clear what a mind could do to effect all that. But there's another possibility here which is entirely different. It has nothing to do with the control of the shaman at all. It has to do with the shaman's awareness of being weather. She becomes weather. She becomes cloud. She becomes aware of cloud. She begins her dance when the rain is about to come. She can't help herself. She becomes weather. Now the rain comes. To the ordinary person watching this she brought the rain. But she didn't bring rain. She is rain. How could she bring what she already is? There is a difference here. That's really where the shaman comes in. The shaman is sensitive to where and when the Great Spirit moves. The shaman picks up on it. The shaman doesn't try to control the Great Spirit ever. The shaman is totally part of the Great Spirit. So, all the shaman does

is surrender to the Great Spirit, allow it to enter and become aware. Their nature is not to promise the outcome such as rain. Their nature is to become aware. No shaman that I've ever worked with has attempted to tell me that they can control. Even in healing, they wait to see if the Spirit's going to move into them. They become aware of the whole, the gestalt.

S: You become a participant in nature. You are somewhat of a conduit for it, but you are not the process itself. In true shamanic healing you wait sometimes days or weeks or months and see if the Spirit will enter and say yes it's okay. A real shaman won't see everyone. A real shaman can't promise anything except to help intensify what nature wants to do.

FRED ALAN WOLF. It really is a spiritual practice. It's a natural practice. Western medicine is far more magical and far more intrusive, and far more power structured than shamanism ever was, or ever was intended to be.

It's because of the mind set of western people when they first saw these practices, that they would have assumed that the shaman was doing something to make it happen. That's a natural assumption. The magician that does a stage performance does this thing in front of our eyes and we're all wowed over. We know that the magician is in control of everything that's happening on the stage. The assumption is that the shaman is like a magician. Magicians themselves don't know much about shamanic practice because the only thing they know is manipulative practice. They assume that anyone who's doing what shamans are claiming to do must be manipulating and therefore, have to be a fraud like they are.

Q. There is an interesting phenomena. Indigenous people have the ability to tune to various objects in their environment. For example, they can tune to a specific healing plant in order to find it. Are you familiar with that phenomena?

FRED ALAN WOLF. They become aware of that plant which is them. The consciousness of the plant and the person is not separated. The probability field is one. We on the other hand, have taken the position of manipulating nature. Western culture's really magical. It's techno-magic. It's far more magical than shamanism. Look at virtual reality. In a matter of days, months, weeks people are going to be able to walk in a reality that's not physically real at all and have the experience of physical reality. It's happening.

Q. There is something else I would like to address. I would like to briefly touch upon the issue of UFO sightings. How come two people can be at the same place, at the same

time, and one person sees a UFO and the other does not? Is such phenomena real and how does the idea of subjective and objective reality play into this?

FRED ALAN WOLF. That is a good question. There's no easy answer. The easy answer would be that there are real objects and not real objects; and the real objects are real and everybody can see them, and the not real objects are purely imaginary and only one person can see them. We know that's not quite correct even though that's assumed to be the correct answer. When we come to this whole field of mind and matter we find strange occurrences that can't easily be explained, UFOlogy is one. Another is the ability of people to make mind objects appear. These are called the tulpas. (CHECK SPELLING). The Tibetans practiced making tulpas appear for more than one person. It's a mind object which I create in my mind through much meditation. What happens is that you can sit and meditate with me and, even though you don't know what I'm meditating on, you'll see the thing that I'm seeing. So it appears to have what's called objective reality. If we both can see an object and agree on what we are seeing, it is real regardless of whether it's physically real, is solid, has mass, is not important. If it's objectively real we both can sense its presence in some common way. When it comes to things like UFOs or flying saucers or mysterious objects like the Virgin Mary appearing there is no easy answer. There are many accounts of these things happening. If you were to ask me what was going on, I would say that the minds of the individuals who are seeing these things are definitely connected in some form. And they are experiencing it. And there are other minds that aren't going to see them at all. It may be related to frequency, vibration, color, or point of view. There are a number of physical factors that could be involved but nevertheless, it seems to be involved more with the mind than objective. It's on the borderline. It's something omni-jective. It's between subject and object. It's in the formative stage. Why it is so prevalent and why so many people are having these observations and why reliable scientists like John Mack (CHECK WITH WOLF.) believe firmly that people are having objective experiences of these encounters, is still a mystery to a lot of people. It's phenomenon that's relatively new. It may be that as we get into virtual reality and the study of virtual reality as being produced by technology, we may get a better understanding of how things appear. For example, there are these stereogram pictures you can look at. It's a field of dots and patterns. Then you change the way you look at it and suddenly an object pops out at you. It may be something like that. I can see an object sticking out in front of me in a stereogram. You're looking at the same thing I'm looking at and you can't see anything. I'm using my eyes and my brain in a different way than you are. It may be that the UFOs have something to do with a stereogram effect. If two or more observers through training or relationship have learned to adjust the way they look at something, it appears; whereas to somebody else who doesn't know how to do that, it's not there.

Q. Mystics always refer to the oneness of all things, to the web that moves through all. Is there some basis for that concept from a quantum physics perspective? What are the similarities in this respect between the new scientist's and the mystic's view?

FRED ALAN WOLF. The key to the shaman is vibration. A shaman would say, “All is vibration. Vibration is the fundamental of all-ness of everything.” A quantum physicist would say, “everything is a quantum wave function, a vibrating field of possibilities.” The shaman and the physicist are seeing the same reality from a different perspective. For the quantum physicist once we have vibration, we have waves. Once we have waves we have different wavelengths and different frequencies. Once we have those we can form wave packets. We can form objects. We can make boundaries. We can form limitations. We can have physicality. To the shaman, once you have vibration, you have resonance, you have healing, you have the ability to tune, you have recognition, patterns.

Q. Can you explain from a new physics standpoint how some of the shamanic phenomenon is possible? Have you been successful in finding answers that would explain shape shifting or out of body experiences?

FRED ALAN WOLF. To say that I’ve solved the problem of what these people are doing would be carrying it much farther than what I understand. I don’t think I was totally successful. I might have gotten inklings or better ideas of what’s going on, but I don’t think I’ve figured out what’s going on. When I made the nine postulates, that was the closest I could come to making them into a science. And these are very weak. They are not robust concepts at all. It is very hard to pigeonhole the shaman into a western scientific mode. There are certain things that emerge though such as the universality of vibrations, the ability to effect by awareness, to alter things by awareness. The notion of resonance in healing practice was a very key idea that made sense to me. A shaman does not heal a patient by learning where the patient is and attempting to enter into the patient to feel a vibration. The shaman heals the patient by getting the patient to surrender, getting him to let go of the patterns that are holding the illness in the person’s body. The shaman knows from his/her own training what the healing vibration is in their own body. So shamans try to get the person to release some aspect of themselves that will allow them to resonate with the shaman. The shaman doesn’t try to vibrate at the vibrational pattern or frequency of the person he’s healing but will attempt to teach that person to vibrate at the level of the shaman. If two things have different frequencies, then they can’t be in harmony. It’s only when they come to the same frequency that harmony occurs and a transfer can take place. This also explains a number of things the shamans talk about. Shamans are very vulnerable to attack. Most people don’t think that. They think they’re all powerful, but they are not. If you start to turn into a shaman and vibrate with the shaman, then you and the shaman are one. Which means that he is just as susceptible to an attack. He’s opening himself up to you too. If you want to push the shaman, then you can establish a bad vibe and the shaman will pick up on that. Usually they know how to deal with it, but not always. I don’t remember all nine of the hypotheses. In general I would say that I was marginally successful in the sense of the

unity of vibration as the key notion or key idea that seemed to explain a lot of what shamans deal with. There were some other aspects that I learned from shamans about the nature of time that I knew shamans were aware of. I took it for granted that they could time travel and go forward and backwards in time and talk to dead spirits. I had no idea however, that there's much in quantum physics that could deal with that. Looking at the latest ideas of quantum physics, the notion of things from the future influencing things of the present, are very much a part of new ways of thinking about quantum physics. So there's even more of a tie-in possible in that respect.

Q. Do you think the new physics, as opposed to the Newtonian physics seems to be moving into a direction that is very much compatible with the mystic world view.

FRED ALAN WOLF. I think so and many people think so. There are a large number of people that don't think so. They think it's just the opposite. For example, Ken Wilber who is a well known philosopher thinks that quantum physics is a dead end as far as mystical thinking and experiences, and doesn't lead to anything new. He thinks it's at odds with the mystical experience. Also, many materialists who find quantum physics is some yet to be understood phenomenon, believe quantum physics should not be used as a basis for a mystical experience. They don't believe that it is real.

Q. If you can't see it, you can't prove it. It's not real. That is a very limited way of looking at reality. Let us talk about sound...

FRED ALAN WOLF. Sound is very important because sound is essentially getting matter to vibrate. It's through sound that healing can take place. Fundamentally that's what healing is.

Q. Go on, please.

FRED ALAN WOLF. Material in motion is sound. When something is moving vibrationally, we call it sound. When we make sound with our voices, we set air molecules in motion in a resonance with our vocal chords. When my vocal chords vibrate and your eardrums are vibrating, they're in resonance. If I watched you eardrum and you watched my vocal chords, you'd see it is amazing. There's a dance of patterns going on. If you're not listening, that pattern is probably changed. You may alter how you hear something by what you do with your own hearing apparatus through you intent and your will. What you hear is not at all what's being said or maybe you're adding something to what's been said from your brain and you mind which then makes you hear things that aren't being said either. There are a number of factors here. Vibration, sound is very fundamental. In terms of common experience sound is the base. Of course qabala

and ancient spiritual practice such as the Om mantra, is fundamentally based on sound. It is the means by which there is spiritual alignment or attuning.

Q. What about out of body experiences or experiences where you enter into different realities? I know a number of people that have had encounters that suggest there is more out there. I have had encounters where, just as an example I perceived dark energies trailing me. A “common westerner” would consider this an illusion. What are your thoughts about this?

FRED ALAN WOLF. The assumption or association that what’s happening to you is an illusion comes from western culture that says there’s a separation: The mind is imaginary and what’s physical is real. What I’m trying to say is that any experience you have, any feeling like you have is very real. Modern practice today in the field of psychology or psychiatry enters into that world, “as if it was real.” A better way to say it is, “enters into that world as reality.” That’s the healthy way to deal with this phenomenon. You don’t assume that just because one person sees something and another person doesn’t that it’s not real. ‘What is reality’ has got to be re-shifted to take this into consideration. Yes, the alternate realities are real, and they might be like the stereogram where one person sees just flat. When you shift the way you see a three-dimensional object appears. Unless you tell a person how to see it nobody else may see it but you. It may be something like that. To say it’s not there would be wrong. They’re there. Whether you need to pay attention to them, whether one should shift one’s mind to pay attention or not, is a whole other question. When you start to perceive at a finer level, you’re unraveling the solidity of the world and yourself. This is what might be called schizophrenia. The schizoid, the separation. You’re unraveling the rope that makes up you and looking at individual strands. You may have had an experience where something shifted you and enabled you or possibly pushed you into having to take something apart because the direction you might have been heading on was one where you’re unawareness of that would eventually overcome you. Something was going to happen to you dark, unless you became aware of it. You needed to do something about it. Yes, you became aware of it and it may have saved you in some way. Who knows?

Q. In order to perceive other realities we have to somehow shift our consciousness. We have to tune into other realities.

FRED ALAN WOLF. It’s not always under your control to do this. It would be great if you can. I don’t know how to do it through control. I believe there are certain things I can do to enhance it, but I can’t control it. For example, one thing you can do is take drugs like LSD. That would definitely shift you mind. Another thing you could do is to isolate yourself from the environment for long periods of time through sleep deprivation, through being alone, being in a forest, being in extreme cold, being without

food which is typical of shamanic practice for Native Americans like a vision quest.
There are a number of ways of doing it.