

A NATIONAL POLICY DISCUSSION

Basement Team: What Is the Universe, That You Exist?

On Nov. 19, LaRouchePAC-TV hosted its first-ever webcast Town Hall event featuring “Basement Team” scientific researchers, Peter Martinson and Cody Jones, who gave presentations on the subject of “What is the real universe, such that you exist?” and then fielded questions from gatherings of viewers throughout the nation.

The event was convened during what may be one of the most definitive moments in the history of our species. Historically, it has been only the significant, fundamental scientific breakthroughs, specifically in economics and the role of mankind in the universe, that have ever effectively outflanked the historic and destructive commitment of the oligarchical principle to keep the population of man limited to a negligible number manageable by imperial means.

Today it is the British Empire that wields the oligarchical principle, employing the President of the United States as its crown puppet. If we as a species wish to survive, and further our understanding of what this universe has in store for us, this is the immediate political reality that we must address.

The webcast was hosted by LPAC

editor Matthew Ogden. The video is available at <http://larouchepac.com/national-policy-discussion>.

Peter Martinson: Defeating the Oligarchical Principle

The current British Empire, which is the current representation of an old system called the oligarchical principle, one way or another, very soon, this British



EIRNS/Stuart Lewis

The LPAC Basement’s Scientific Team’s first webcast featured Basement researchers Peter Martinson (left) and Creighton (Cody) Jones (speaking) in a discussion of the principles of the developing universe.

Empire is going to cease to exist. Now there are various ways that this is going to come about, but the entire system is collapsing right now. People have seen—it's pretty obvious—the global economic system is finished. You look at what's happening in the United States, and you look at what's happening in Europe: This system is gone. Now, that represents the end of the British monetary system, which is why they're going for thermonuclear war. Their system is finished. The attempt to get a thermonuclear war going, by getting the United States under Obama to uncork the nuclear bottle into not just Southeast Asia, but over Russia and over China—this is a death-spasm of the British Empire. This system is finished. The only question is: Are they going to take the rest of civilization down with them?

That's the issue I'm going to address right now, because we're faced with two options: thermonuclear war and the collapse of the world economy, which means the reduction of the world's population to less than 2, possibly 1 billion people. The British Empire is calling for less than 1 billion people publicly now. Either the reduction of the world's population rapidly to those levels, or the elimination of the British Empire (we can put them in a museum somewhere, so that we can learn from our younger-age mistakes). And the expansion of man's conquest into space: We are destined to become a space-faring creature, *if* we can put down the British Empire without them taking us out.

The Oligarchical Principle

What I'm going to go through is how the British Empire, as an ancient oligarchical system, works, how it's worked up to now; what we're actually up against. Now, the system is very, very old. The British Empire is just a modern representation of this old system, called the oligarchical system, which has its roots in the story of Prometheus vs. Zeus.

What's the issue? Prometheus was not a god. Prometheus was one of the Titans, one of the forebears of the so-called Olympian gods—Zeus and the rest of the gaggle. Prometheus created man; the gods came in and took power, and treated man as their plaything. Zeus is the most famous example of this. The people, the human beings, were always the chess pieces that were moved around, the toys that were played with, that were messed around with. If you wiped out civilization here or there, it didn't matter, because they're just animals, they're playthings.

Now Prometheus, who is known for his abilities of

forecasting and foresight, saw this as a great wrong. And there's good evidence that this story is based in truth, but it was turned into an actual legend. Prometheus thought that this was terrible that the gods were treating man like this. So, Prometheus came down and gave man, among other things, the power of wielding fire, which is a higher technology than hunting down roots and berries, and throwing rocks at animals to get them and eat them.

Fire is a higher development of technology, and requires an insight into universal principles. From our standpoint today, it would be possibly a primitive universal principle, but it requires an insight into processes of the universe. So, Prometheus gave man fire, among other things, like medicine, the powers of astronomy, the powers of understanding the nature of the “wanderers” [Plato's term for planets—ed.] in the sky, to look at how that impacts lives, your life on the Earth. Prometheus gave man the ability to do science.

The result of that was that Zeus got extremely angry, and stuck Prometheus on a rock, and had his liver eaten out every day for 10,000 years. Prometheus didn't care about that. What he cared about was man getting its power back over these gods.

Now, the system is an old system. It's called our oligarchical system, and it's totally in play today. The system is, you have oligarchy, a small group of people, who consider themselves a higher species of organism than the rest of the population. They believe that all creatures on the planet are animals, including humans, and that they are a higher order of species, and therefore they have the right to enslave and keep men as cattle, the rest of the population. So, the game is, how do you keep your power?

Man has the ability to be creative, and make discoveries, and increase his power over the universe. That creative power is the number one threat to the existence of an oligarchy. So, this is where the nature of oligarchical strategy comes in, if you can call it strategy. The method is to get people to forget that they're creative, believe that they're animals, and stop acting like humans. That's the game.

How do you repress scientific and technological progress? How do you repress creative activity among humans? And as a corollary, how do you keep the population of human beings down, so that you can manage them, as a manageable group of cattle? The oligarchy, going all the way back to Zeus, and then all the way up to today, instinctively acts against, represses creativity,

vival in the universe depends on scientific and creative breakthroughs in understanding the processes that create and drive our universe. The only way we make those breakthroughs, which we've seen through the history of science on the Earth, is by pushing the boundaries of knowledge, and pushing the boundaries of human capabilities. Right now, those boundaries lie in space.

So, the Obama Administration and the Bush Administration, but the Obama Administration particularly, is acting as the worst battering ram against the forefront of human science; the worst battering ram that we've ever seen in the history of man, from what I can tell.

This is a British operation. Anybody who thinks that you can negotiate with Obama on this—! You know, Congress has just passed the continuing resolution budget in order to fund certain things in NASA. If you think that you can make negotiations with Obama and save any aspect of the space program, you're wrong, because Obama is not a human being. He's human in biology, but Obama is a creation of the British Empire. He's not just a British agent; he's a British operation. Obama's mission is to destroy the United States and destroy the human population, human civilization around the world. That's why he's going after NASA, that's why he's going after the space program, that's why he's going after every aspect of science. As long as he's in there, if he remains until 2013—if we perchance survive a thermonuclear war, which is what they're gunning for now, earlier than expected—we'll have no space program. And therefore, we'll have no avenue for making new discoveries in space.

This is a British operation, and it's typically British. This is just an example of how the British operate, as an extension, as the modern representation, of the oligarchical principle, going all the way back to Prometheus. This is an example of the oligarchical instinct.

Real Science vs. Sense Perception

Now, what does the oligarchy do? In order to suppress science, besides just rampant ham-fisted bashing like the Obama Administration is doing, the oligarchy, the British as the prime example, produce what can be called "synthetic religions" to replace real science.

There's a real scientific current among the human race. For example, if you look at the discoveries starting with Plato, there's a current of scientific work, Plato through Cusa, through Johannes Kepler's work on astrophysics, through Leibniz, through Carl Gauss, through his student Bernhard Riemann, through one of

the followers of Riemann, Albert Einstein, through Russian biogeochemist Vladimir Vernadsky, up through Lyndon LaRouche today: We have a current of science, of real scientific discovery, which has as its core the idea that man has the ability to recognize that the universe that's presented to your senses is not the real universe.

The universe that's presented to your senses is a universe of shadows. Man has established that he can recognize that those shadows are being generated by principles that can be modeled, but they're not sense-perceptible entities. The principles that create sense perceptions are not themselves able to be sensed by any type of sense perception.

For example: Kepler showed, what man can do is, he can take an individual sense and exhaust the possibilities of that sense; exhaust all the measurement abilities of that sense. Kepler concentrated on vision, visual geometry, and audible geometry, sound; developing the musical scale, how the human sense of sound works. He exhausted the possibilities at his time, and then applied that to the discovery of universal gravitation, by showing that you have the same principle expressing itself in two different sense-perceptual realms, two different frequencies, you could say, and it presents itself differently in those two frequencies.

The task is to understand that you're dealing with a principle that's representing itself differently, and then to adduce, through the power of the creative mind, what is the principle that's generating those sense perceptions. Through that process, Kepler made his discovery of universal gravitation.

And to give a sense of what type of world we're living in such that that's possible, we have a universe which is composed such that the human mind has the ability to discover such principles. It's composed such that it will present us with senses which have within them gaps, because the principles are not reflected accurately through the senses. But it's through the human mind that you can recognize the gaps in any of those sense perceptions, and then adduce what the principle is. The universe is constructed like that. The universe is constructed according to *mind*. The universe expresses, in itself, creativity. And we see this. And I'm going to show a couple of examples of this in just a minute.

What we have is a universe which is an anti-entropic, developing universe, which is developing towards higher and higher energy-flux densities. This is reflected in the ability of man to make those discoveries,



NGO forum

Environmentalism is one of the key forms of synthetic religions created by the British Empire to destroy science. Here, a demonstration by some of the converts at the Asian Development Bank headquarters in Manila in June 2009.

and increase his own power over those principles, and thus control, run, and develop more and more, the universe around him. That's how the universe is constructed.

Synthetic Religions

Now, the way the oligarchy works is, it creates synthetic religions to replace this divine view of man. Not all synthetic religions are created by the oligarchy; for example, you look back at Emperor Nero, who was the head of the Roman Empire for a time. Some might say he was the ass of the Roman Empire for a time, but Nero did not burn Druids in his backyard at night for light to compose his poetry by. He burned Christians at the stake in his backyard to provide light for his writing bad poetry.

So not all religions are created by an oligarchy, but the religions that are created by an oligarchy are the ones that are accepted. And there are some characteristics of these religions that come up over and over, and you'll recognize some of these. The two most important are: 1) that man is not



The so-called science of cultist Isaac Newton, depicted here, is also fundamentally a synthetic religion, as it preaches the existence of a universe without the principle of creative development.

another person who maybe had something going for him when he was really young, but he turned into a total operation, which was an operation out of his own hands. It's not even clear that he wrote the books that are attributed to him. He was a result of a British committee to create a synthetic religion.

What is a religion? [Newton's] universe is composed of an empty box. We have a universe that's empty, and within that empty box there are objects floating around. Particles, little tiny particles; really, really tiny particles. Everything is made up of these particles, and they interact by ricocheting off each other, collisions.

So therefore, an accurate representation of the universe has to be one that's built up from that as its fundamental axiom. The universe is empty, and you have little balls ricocheting off each other. And this leads into every other aspect of the religions that were created since Isaac Newton. Everything has to be explained in terms of a universe that's composed of little, tiny hard balls that build up into all the phenomena that we see.

For example, the Second Law of

divine, but merely one type of animal, one type of living creature on the Earth. We also have cows; we also have mice; we also have grasshoppers. Man is just maybe a little bit more complex than one of those. Man is an animal; there is no divine spark in man. That's number one.

Number two is that your senses are giving you an accurate view of the universe, or if your senses are not giving you an accurate view of the universe, at the very least, the universe operates on principles of sense perception. Therefore, everything that happens in the universe has to be explained in terms of sense perception. That's number two.

Now, as an example of this, you look at the prototypical British operation named Isaac Newton—here's

Thermodynamics is built up from this concept. The concept is that gases, which you can't see, are made up of little tiny particles that are ricocheting off each other. There are so many of them that you need to have statistics to explain what these little, tiny balls are going to do. But a result of it is that over time, they kind of even out, and the ricochets kind of slow down after a while, and you reach what's called a heat death. It's called the increase of entropy.

One of the formulations of the Second Law of Thermodynamics is that the universe is becoming, over time, essentially more and more dead, more and more dull, more and more boring, towards a heat death. The end of heat. Which is ridiculous: that the universe is running down. I'm going to show in a moment that this is a completely ridiculous idea, which is based on this religion created by the British.

For example, where does it come in today? Pagan environmentalism, right? Environmentalism is a pagan religion; it's a religion of death. It's a religion that says that man is a creature worse than monkeys. Man is worse than cattle; man is worse than bugs; worse than bats, if you listen to the British Queen's consort [Prince Philip]. Man is an animal, and he's using up the resources. We only have a finite amount of resources, and man's using them up. He's increasing the rate of entropy, when what you have to do is, you have to sustain entropy; we have to slow down entropy, and keep things stable. But man accelerates things; man creates disequilibrium, which is leading toward the death of the planet. The death of all the other animals, which are more important than man.

It's a pagan religion; it's a pagan belief!

For example, yesterday a report came out. It's obviously a pagan belief. Yesterday, the Intergovernmental Panel on Climate Change came out with its interim report on climate change, which claims that all of the extreme weather events that we've been having, are due to global warming.

If you read the report though, it's very wishy-washy. They say it's very difficult to prove that global warming is causing these extreme weather events. They say that they think that temperatures are going to go up, but we can't quite prove it. We think that droughts are going to become more and more important, more and more prevalent, because of global warming, but we can't prove it. We think that hurricanes are going to become more terrible, but we can't prove it on the basis of global warming.

That's because it's a religion. But the way it's being reported is that global warming is destroying the Earth through horrible weather events, and that man is to blame, because man is the disequilibrium animal. So, it's a religion; this is just typical British crap. It's typical crap of the oligarchical system.

Mass Extinctions

Now, I'm going to go a little bit deeper into this, but just to reiterate: We're dealing with a dying empire. This is the end of the oligarchical system. Regardless of what happens, this system is finished. If the system doesn't finish itself, the galaxy is going to finish this system, and this is a system that's been around for well over 2,000 years. We're at the end of an arc of history that's at least 2,000 years old, which was marked by the domination of an oligarchy, with opposition that popped up periodically. The most important opposition was the American Republic, the Revolutionary War in the United States. But this system is finished. The question is, what's going to come out of it? A dead planet, or a space-faring culture, which was the original intent of the Americas?

Now, let's look at the weather for a moment. We have been having a lot of wild weather recently. If you look, since 2007, the number of billion-dollar disasters that have struck the United States has gone steadily up. This year, it's been 14 disasters in the United States that have amounted to \$1 billion or more. The latest one was this freak snowstorm that nailed the Northeast, which right now is being clocked at about \$3.5 billion worth of damage. It is becoming more and more damaging.

Not just in the United States. Look at the floods in Thailand. This is probably going to affect very poorly the price of rice on the global market. Look at the disasters that have befallen Russia, the droughts; the floods in Pakistan; the monsoons that hit China. Look at the intense cold that hit Europe last year. Things are getting more and more extreme on our planet in terms of weather. Is this due to global warming? No.

Throughout the history of our planet, we have faced extinctions of life. Life has existed on the Earth for as long as we know, going all the way back. To quote Vernadsky, no one has ever discovered the beginning of life. In the oldest rocks that we have on the Earth, we have evidence of life. For 500 million years, half a billion years, which is only a tenth of our history, we've had multi-celled life on the planet. The history of that multi-celled life has displayed periodic extinctions,



We are faced today with the question of whether mankind will go extinct like the dinosaurs, which were wiped out approximately 68 million years ago, leaving only some bones. Here, the skeleton of a Tyrannosaurus rex.

where the diversity of organisms on the planet suddenly drops.

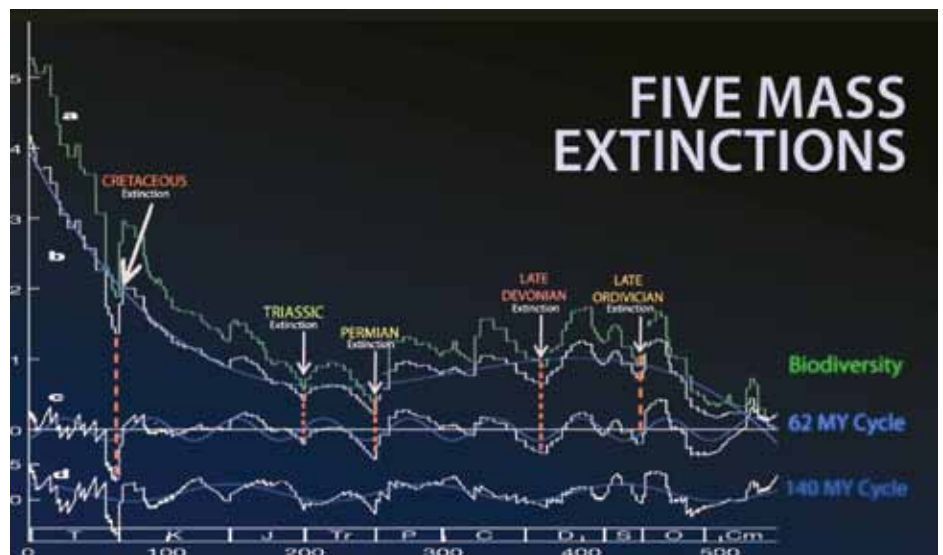
For example, the dinosaurs. Obviously, we don't have dinosaurs running around on the Earth. Contrary to what some may believe, there are no dinosaurs on the Earth right now. Maybe birds, but dinosaurs like the gigantic creatures walking around on the surface of the Earth? They're gone; they were wiped out 65 million years ago. And 250 million years ago, there was another very large extinction, where 98% of all creatures in the oceans, 96% of all creatures on the land were just eliminated. Nobody knows why. This has happened over and over and over in the recorded history of multi-celled life on the Earth.

Now, there are characteristics which have to be looked at, which are coming out in recent research, just over the past several days. Each of these extinction events, which should be

looked at more as transformation events was marked by specific occurrences. One is the impact of meteorites and large bolides, like the famous dinosaur killer (which probably wasn't the dinosaur killer). Back at the Permian/Triassic extinction, 250 million years ago, there is very good evidence that there were several meteorite impacts at that time.

Now, a new one is being investigated in France; an impact that wiped out the creatures at the end of the Triassic. Every one of these extinctions has meteorite impacts; every one of these extinctions also includes massive volcanic activity. For example, it appears that the volcanic activity 65 million years ago around India, the Deccan Traps, was a very short-lived but intense period of volcanism. The Siberian Traps 250 million years ago, same thing. Every one of these extinctions has volcanism; every one of these extinctions has apparent shifts in the motions of the continents, the creation of super-continents; the elevation of the land level to wipe out any internal seas and oceans. Each one of these extinctions is marked by massive changes on the Earth. Also, just to be complete, changes in the type of organism. They are very rapid and they are periodic. Each extinction event would select out whole categories of creatures to die and to live.

So, the point is, our planet suffers extinctions, and each of these extinctions displays the fact that it's not something that happens peculiar to the Earth, but that it's a change in the whole Solar System environment that we're going through, which potentially causes the changes on the surface of the Earth.



LPACTV

We don't know what increases or decreases volcanism on the Earth. We don't know what increases or decreases the likelihood of earthquakes and other tectonic motions of continents, like we've been seeing recently with these gigantic earthquakes we've been having.

In fact, if you look at the number of large earthquakes we've been having over the last decade, it's been increasing rapidly, culminating with the last very large earthquakes you had this year and last year in Japan, Haiti, Chile, etc. Look at the rate of volcanism as it's going up. Look at the near-Earth asteroids that are now passing our planet. Our system is changing, and it's very apparent that we're due for another one of these massive extinction events.

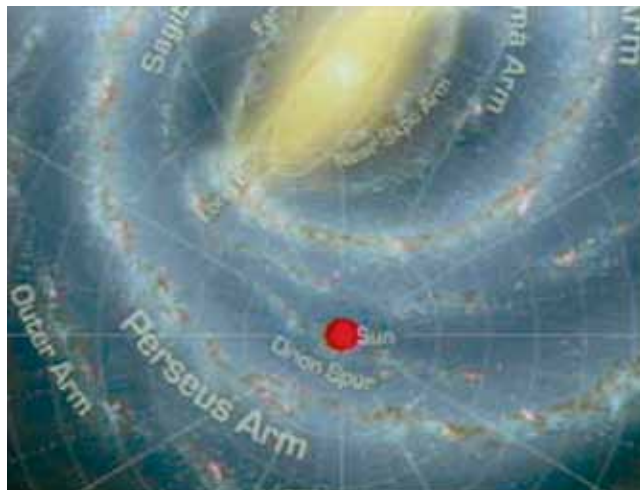
So, the whole system is changing. You look at what's happening on the Earth with the weather. As I've been going through in several of my weather reports (<http://www.larouchepac.com/mastering-nature>), and it's been known since the mid-1970s, since the manned space program, most of the effects of weather we have on the Earth—cyclones, tornadoes, hurricanes, simple rain, increases and decreases of surface temperature, changes of temperature in the oceans—are primarily due to changes in what happens located at the Sun.

If you look at our Solar System from the outside, what you see is that the Solar System *is* the Sun, plus a little tiny speck called Jupiter, and then some dust floating around in the Solar System. That's the Solar System. The Sun is the dominant creature in our Solar System. You'd think that that would impact the changes on the Earth, which is where cosmic radiation from the Sun is being transformed into activity, on the surface of the Earth.

Now, what do we know about the Sun? According to recent observations, the magnetic field of the Sun is right now dropping precariously low, going into the end of this solar cycle, and the magnetic field is one of the most important things for the interaction of the Earth and the Sun, because it mediates the impact of cosmic rays. It mediates the solar wind that's coming into our system. It mediates everything; it interacts with our own magnetic field. It directs charged matter and plasma into or away from our planet. The magnetic field is dropping rapidly, so that by 2020, 2023, the magnetic field may be so weak that we might not be able to measure it.

This is coming on, and some people are forecasting that it will be a so-called Maunder minimum, which is

FIGURE 1



NASA

the last time we saw anything like this. But nobody knows what generates the magnetic field on the Sun. Nobody knows what generates sunspots. This is the big debate right now. Nobody knows what generates the processes on the Sun. It might not be fusion at the center of the Sun. It might be something that's extrasolar.

Now, if you look at where we are in the galaxy right now (**Figure 1**). Right now, our Solar System, which is represented here in this image from NASA, an artist's representation of our galaxy, according to the best estimates, our galaxy has right now, four spiral-arm density waves, and then several small pieces of arms which are scattered throughout. Our Sun right now, and our Solar System right now is passing into the Orion spur—call it an armlet, piece of an arm—which is typically the area where an arm sweeps past our Sun, that's typically the time that you start to see mass extinctions on the Earth.

Perhaps the sweeping of this system by the galaxy, sweeping it across the Sun, is what's generating the changes in the solar activity, and thus the weather activity and the tectonic and the volcanic activity on the Earth.

So, this is where we are right now. We're passing into a mass extinction period, because of the changes in what's happening around us in our galaxy. What we're dealing with is a galaxy that is acting as one organism, and we see various changes around the galaxy that are indicating this. For example, the Crab Nebula, one of the earliest astronomical phenomena that was observed, besides planets and stars, in 1054 when the Chinese documented the observation of this supernova, what we think

was a supernova, the creation of what now we recognize as the Crab Nebula.

What is the Crab Nebula? We have no idea. What we do know is that it's a very strong source of cosmic rays. We also know that it's a very strong source of gamma radiation. This is just from recent studies—it's not only a strong source of very high-energy gamma radiation, but it periodically flares up in these large, short-lived flares of gamma radiation activity.

We know now, based on recent investigations at CERN [the European Organization for Nuclear Research] and other particle accelerators, that gamma rays and cosmic rays have the ability to be, and are possibly, the main source of generation of weather systems on the Earth.

For example, the generation of clouds through cosmic rays is now a well-established fact, after the work of Svensmark and others. The generation of clouds by gamma rays could very well occur through the same processes. We know gamma rays are involved very closely with the production of lightning systems, which are very closely associated with thunderstorms. So we need to be watching as the whole galaxy is acting up right now, and sweeping this area over our Sun. We need to be watching what's happening in the rest of the galaxy, in order to forecast what's happening here on the Earth.

So, the point is this: If the British Empire wins, which means launching thermonuclear war, it will be very terrible, and you'll probably see the drop in our population to less than a billion people through the warfare, through the nuclear weapons, through disease, through hunger, and so forth. But what we have in store for us is even more devastating: extinction of the species.

Strategic Defense of Earth

Now, if we get rid of Obama, which is the prerequisite, we can dump the British Empire and launch the real American System worldwide, which is what we're intending, in collaboration with the other key nations on the planet, such as Russia and China. Then it's a different story.

Can we avoid the extinction? Yes. Man is a cosmic being. The universe is designed around the concept of



Chris Sloan

This graphic was widely used by Lyndon LaRouche in the 1980s, as illustrating the way directed beam weapons could kill incoming missiles. The same idea could be used for killing other threats from space.

man. The universe is designed for man. The universe expresses creativity. After every single one of these extinction events, you did not see just the complexity of the biological system, the biosphere, but an increase in energy-flux density expressed by the biosphere. The biosphere got better and better and better.

It wasn't because of the extinctions; it was in spite of the extinctions. The extinctions allowed the increase of energy-flux density to be very obvious to our scientists. But the anti-entropic development of life on the Earth is an inherent principle. We might not survive the extinction, but we can.

Now, I'll end with this: Matt mentioned this proposal of the Russians to relaunch LaRouche's Strategic Defense Initiative in the form of this Strategic Defense of the Earth. Now this is very interesting. First of all, yes, it would defend humanity from a nuclear war, because you could take out nuclear weapons with the space-based weaponry. It would mean collaboration between Russia and the United States, and probably China also. If you look, the Chinese and the Russians are very close, in terms of their science activity right now. Represented, for one, by this unfortunate Phobos-Grunt satellite, which was a Russian satellite carrying a Chinese probe to orbit Mars, including a tiny capsule of living organisms designed in the United States. [Although it failed,] it's a symbol of the potential collaboration that could exist under this SDE, the Strategic Defense of the Earth.

But what that really represents, is a mission for our military. The tradition of the United States military, which was copied around the world after the early history of the United States—originally our military was based on Lazare Carnot's and Gaspard Monge's Ecole Polytechnique in France. We modeled our West Point system on that. Our military is not primarily a military that shoots and kills people. That's not the mission of our military. Our military is trained to do that, but in order to further goals that don't include death of people. Our military is designed as a scientific engineering capability.

If you look at the early history of NASA, who were the original astronauts? These were military officers. The military's mission should be directed to defending civilization in space. Space is the direction of the military; this is the future job of our military, not to have wars. It's too expensive to have wars now, because you have the threat of nuclear weapons all the time. We can't have wars. They're worthless anyhow, most of them are being driven by the British. If you look around the world now, all the major wars were started by the British, all the little revolutions and so forth. You can always find the British spoor in the background.

For example, it's kind of funny that Iran has this interesting term for the British Empire: They call it the Old Fox, because the fox is the image in Persia of deceit. But, one thing about the old fox is that the old fox gets cowardly when driven into a corner. If you're about to beat the pulp out of the British, they'll spasm, try to launch a nuclear war, and then get all cowardly. All the wars on the planet right now can be brought back to the British. If we end that, there's no reason for war.

We turn our military's engineering capability to space, and then we start doing real weather forecasting. Because yes, the extinction is on its way, but the way we defeat that is not by turning the Sun off, or turning off the galaxy or something like that. We do that through forecasting the future, and then acting based on those forecasts. We have the potential to become the uni-



NASA

Man's exploration of the "very large" is epitomized by his travel into space, where he has been exploring the environment now for decades. Here, the launch of the shuttle Discovery, February 2011. Here he finds the same principle as in the "very small," creative progress.

verse's first immortal species. And it may turn out to be that we're not the only immortal species, but I'm sure the other immortal species would benefit from meeting us at some point.

So, with that, I'll turn it over to Cody Jones.

Cody Jones: Scientific Paradox and the Human Mind

All right, I'm going to pull a couple of threads from the tapestry that Peter has just woven for you, and in doing so, really challenge a number of what I presume are conceptions that most people have, about space, about time, and about the nature of the very universe itself, including your idea about the nature of man.

Now, as was brought up by Peter earlier, the conception has been sort of forced upon the thinking of mankind, that, were you somehow to remove everything from the universe, what you would be left with is some sort of empty box, of space infinitely extended in three directions; and combined with that, would be this sort of other infinite expanse known as time. And that that is what is really *apriori* and ontological about our universe, and everything must take place and unfold rela-

tive to these infinitely extended conceptions of space and time.

That's what's in dispute now.

Now, when people think about, say, scale, about size, about space, you have this idea from our perspective, from our vantage point and our given scale, that you have two directions in which you can go: You can either go into the increasingly small in space, or, you can go out to the increasingly large in space. Both of those, though, have some sort of physical boundary to them, that is really an idea which, again, is foisted on people: that, if you were to go deep enough into space, and into the material of space, you would eventually reach the final building block of all substance, the very smallest element upon which everything is built up, some little, hard ball.

And that, if you were to then go and extend as far as you could physically, you would reach the end of space. And this all stems from the "Big Bang," some 15 billion years ago, this Big Bang event, which occurred in this box of space and time, and that the universe has been expanding ever since, and hypothetically, we can locate where that boundary is. And so, from our vantage point, you have two directions: You can go in, or you can go out.

What I would contend, and the history of mankind in this universe demonstrates this to be true, is that, in fact, there really is only *one* direction: that what we consider extending out, and going in, are actually bound by one single direction of creative progress. That is, through an increased density of creative progress, that we actually increase mankind's power to both go deeper into the substance of the universe, but then also extend man's reaches farther out towards the stars.

Reaching Out in the Universe

I'll get at that by looking at the history and also the future of what would be manned space flight, or something tantamount to manned space flight.

If you just look at the history of travel, one of the first things mastered was a very macroscopic type of process: wind. We developed sails, by which we captured wind that enabled man to master and transport himself across seas. At a certain point in that process, we went in a little deeper, and we gained control of minable substances, like coal. Coal, then, with a greater density of power and energy-release being burned, enabled us to power things like locomotives, trains. That gave us an ability to then go beyond and to start to con-

quer the continents.

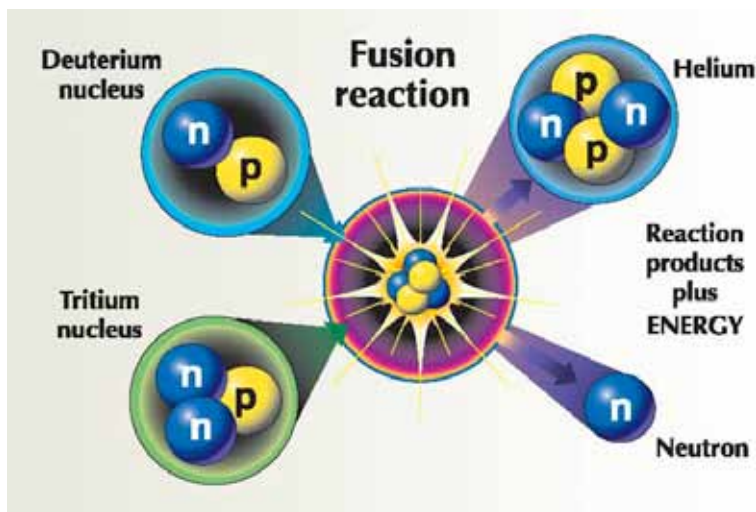
At a certain point, through the development of other types of chemicals, molecular processes, we were able to refine things like oil, and develop gases, fuels. These fuels allowed us to fly, to where we could get around the entire globe in a matter of a day or two. There was, again, a sort of going in, so to speak, beyond just the ore process, to now, when we're looking at the mastery of chemical processes.

At a certain point, that had a limit to it, and we see the outer limit with what we were able to accomplish with Apollo: that through the use of chemical rockets, we were then able to reach really what is the feasible boundary of what man can do using simple chemical reactions.

The next step is what we discovered and developed with nuclear processes. Now, people may or may not be aware of this, but in the original development of the Apollo project, the intention was actually to develop nuclear rockets; that the use of chemical rockets was just an immediate requirement, but that the idea was eventually to develop nuclear rockets, which would allow us not just to have a simple one-shot to the Moon, when we'd have to detach, lose most of what was the weight and substance of the spacecraft and float down to the Moon; but to where you could develop reusable and guidable large craft, utilizing nuclear power.

Now, in moving from chemical processes, such as what you have with combustion of gases and other fuels, to nuclear processes, we then made a transition. In a sense, we went further in, we went deeper into the substance of the universe. That largely came out of understanding the ability to control the splitting of the atom and the massive amounts of energy that were released, as forecast and hypothesized by Einstein.

Now, beyond that, and this is really now moving into the future, would be the development of fusion-powered rockets. With fusion, you're moving beyond a relatively simplistic understanding of what's happening at the atomic level, to where now you have to really understand, what is a higher level of understanding of the structure, the curvature of the atom; that in order to get a fusion process, which is the bringing together of nuclei to form new substances, which release orders of magnitude more energy than what you have with simple nuclear, you have to overcome things like what's known as the Coulomb barrier. In order to bring nuclei together, you have to overcome the natural repulsive force that you find between like-charged nuclei, to get



Lawrence Livermore National Lab

Exploration of the “very small” takes us to the atomic level, opening up other potentials, such as the generation of huge amounts of power through nuclear fusion, a process shown in this schematic of a fusion reaction, done for the National Ignition Facility at Lawrence Livermore National Lab.

beyond a certain critical curvature, to where now, what were repulsive forces, become binding forces.

And this is something which a former member of the Fusion Energy Foundation, someone who was at the core of the scientific movement that was behind the SDI project, Dr. [Robert] Moon, was investigating, in understanding the structure, the geometry, so to speak, of the nucleus, thinking: Is there a least-action way to get beyond what is now a very brute force method of trying to generate fusion? Is there a kind of least-action way that taps into an understanding of what we might call the “curvature of the physical space-time” at that level, to achieve fusion in a very producible and efficient way?

With fusion, and beyond fusion, we will have the ability to not just go to the Moon, but to have real human flight to Mars. With fusion, because of the energy-density created relative to the weight of the apparatus and the fuel, you now would have the ability to take man and material to Mars, and to do it in a relatively short order, utilizing something we’ve discussed, known as 1 gravity (g) acceleration, where you utilize the processes of fusion, and the control and direction of the products of fusion, to create the thrust, to move up to a constant acceleration equal to the acceleration we recognize here on Earth, of standard Earth gravity.

So, 1 Earth-gravity acceleration could, theoretically, get us to Mars in a matter of days. Now, they

might extend it a little bit, because you have to do a reverse maneuver as you decelerate in, and there are other things to consider, but that’s a very workable time frame to get to Mars in a matter of days, weeks, using a 1g acceleration through a breakthrough in fusion.

Beyond that, is the next higher step, where now we’re moving beyond just understanding processes that would allow fusion, to the domain of matter-antimatter reactions. A lot of this gets complicated by just the language that gets used in popular science now; but effectively you’re bringing together matter, which has opposite characteristics, opposite charges, what have you, and that through bringing them together, you get a perfect annihilation of matter, transformed into energy. Now, this represents several orders of magnitude of energy-density, power-density, beyond even what you have with fusion.

With matter-antimatter, not only does that now take us beyond the Mars limit—for fusion, Mars and slightly beyond Mars, is pretty much the outer limit of where mankind could go. With matter-antimatter, in what’s being initially discussed as the potential, you have the ability to accelerate a spacecraft up to the outer limit of about 0.58 the speed of light, which would put us at the nearest star, Alpha Centauri, in a matter of nine years.

Obviously, there are all kinds of other considerations that go into that, around the biological aspects of what that would require. It opens up a whole other domain, which hopefully, we will take up in some of the Q&A, but, theoretically, in nine years, through matter-antimatter reactions, we could be at not only a simple star, either: Alpha Centauri is a binary star. There are all kinds of other aspects of being able either to get there with human beings, whatever shielding would be required, but in any case to investigate it, to get something there, that could get into a new domain of our universe, to understand more fundamentally how these processes work.

Discovery of New Physical Principles

Now, I’ll go through a couple of statistics, to give you a sense of what we mean by this.

From a simplistic standpoint, it seems as though we’re going in deeper and deeper, in order to gain the

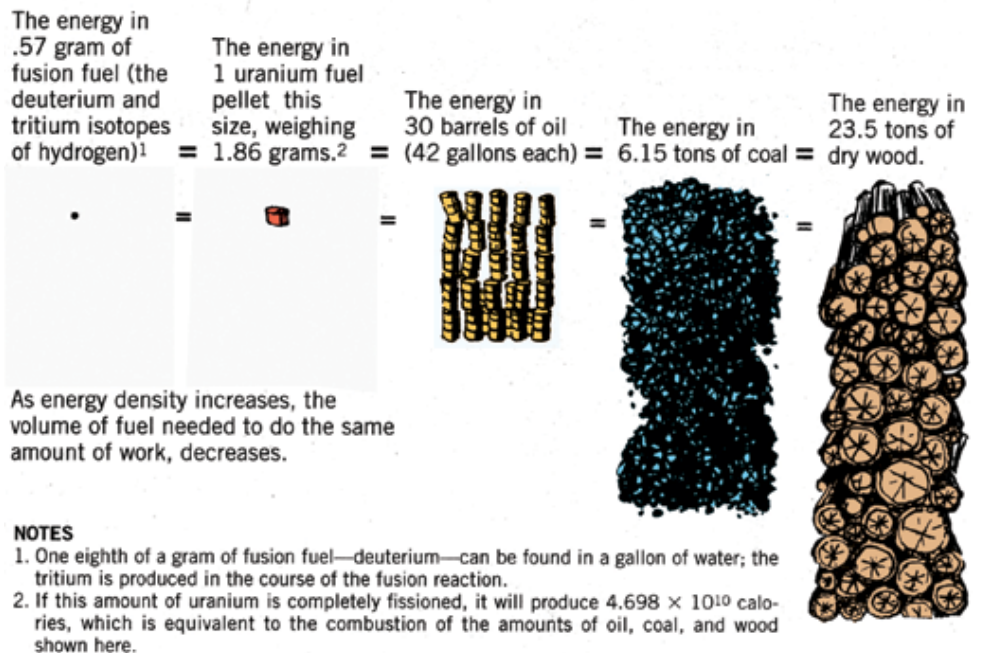
power to go out further and further. This is why I say that, in fact, these scales of extension out, and drawing in, are actually bound by one single idea, or one single concept, which is the concept of *the creative discovery of the human mind*. That, in fact, what's happening, as we probe deeper into the subatomic—it's not that we're going deeper into spatial relationships; what's actually happening, is that we're discovering greater degrees of freedom about the way that the universe is organized. We're discovering new principles that constitute the very structure of our universe.

And it's that, which then has the correlate that we discuss in economic terms as an increase in energy-flux-density: that each new discovery actually gives us an ability to bring more power to bear on a particular space-time location, which would otherwise not have been possible prior to the discovery of that new principle.

To give a sense of what this kind of increase in power means: A pound of coal, when burned, gives you about 1 kilowatt-hour of energy; a pound of gas when burned gives you 6 kWh of energy; deuterium, which would be at least the main fuel source for fusion, which we would use here on Earth, gives you 40 million kWh. And when we start to talk about matter-antimatter, this is sort of a rough estimate, but assuming you get some sort of perfect annihilation energy release, for 1 pound of matter-antimatter reaction, you'd get in the order of 1.1 billion kWh of energy release.

Now, there are some other complications that might reduce that in some ways, but I think you get the idea of what kind of scales we're talking about, and what kind of potentialities exist. One of the blocks to that now, is that 1 gram of matter-antimatter production theoretically would cost, at this point, about \$26 trillion.

Now, that is not to say that matter-antimatter reac-



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tions are outside our domain. That speaks to nothing about the problem of matter-antimatter. What it actually speaks to is the problem of our current economy; it speaks to the problem of the current thinking, of how we organize our economy, and really, the nature of the way the population itself thinks. That cost could be reduced, in terms of the same scale of increase of power we get from matter-antimatter; were we to move in that direction, you would actually have the same sort of inverse decline in the cost, because of the new breakthroughs, and organization of our physical economy that would ensue.

This brings up a bigger problem: If we're going to go into this domain, to get mastery at that level, at the subatomic level, it's going to require a fundamental revolution in science. We will not progress to this next level, unless we declare, once and for all, that empiricism is dead! Greenie-ism is dead! It's got to go away; it's got to be eliminated like a cancer from our species. And in fact, we must now launch a full-throttle revolution, to say that what must become primary in our understanding of science, in our investigation of the universe, must be an understanding and investigation of the powers of the free creative mind. That, in fact, mind, and our understanding of mind, must be that which takes precedence in our investigation of the physical universe.

Let me get at why I say that: Things become very paradoxical, whenever you get to the level of investigating the subatomic, and this is what comes up in what's now discussed as quantum physics. These paradoxes, unfortunately, have led those who have bastardized science, those who have acted on behalf of the British establishment, to declare that because of the paradoxes that come up, this domain is unknowable. We can't know what's happening at that level, because we can't explain what's happening at that level in terms of simple sense-perceptive notions of space and time!

And since man, being a beast, is limited only to his biology, and therefore limited only to his ability to interpret sense-impressions in a literal fashion, since the subatomic does not lend itself to a simple interpretation, in terms of sense-based space and time measurement, well, therefore, it's fundamentally unknowable. By doing that, they've declared science dead, and have rendered mankind a virtually extinct species. They've declared man as a future extinct species.

What I'd like to show is that, in fact, these very paradoxes that we find in the domain of the quantum *can* and *must* be resolved through an understanding of a characteristic of mind, a recognition that *the universe itself is characteristically creative*, and that the creative nature of this universe is in tune, in fact, with the willful creative nature of the human mind itself.

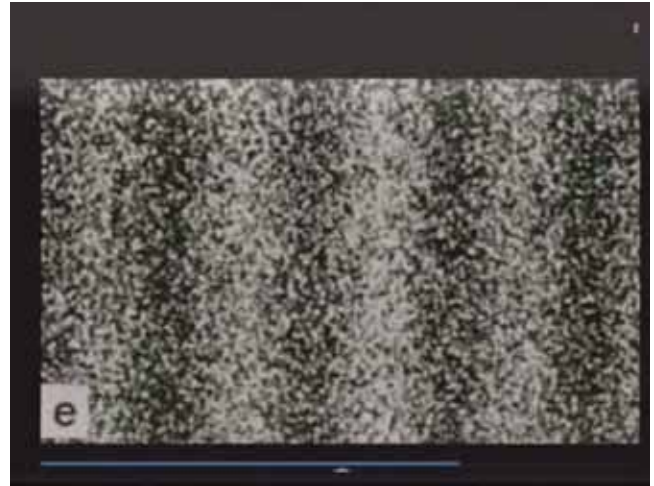
So, let's look at a couple of different experiments which show what some of these paradoxes are.

The Double-Slit Experiment

The first thing we're going to look at is what is known as the double-slit experiment, that was conducted a decade or so ago at Hitachi Laboratories in Japan, by a U.S. physicist. The experiment has been declared perhaps the most beautiful experiment of the 20th Century, though the reason they give for its beauty, is actually an evil one. But I think we can find real beauty in it.

So, what you're going to see here (**Figure 2**), is the effect of an experiment that was set up, where you have an apparatus created with two holes, and they're going to be shooting electrons in such a way that they're get deflected to either the left or the right slot, and then, as they pass through either the left or the right, somewhat randomly determined, they're going to impinge themselves on a screen behind that. Seems simple enough, and they're pretty certain that they were able

FIGURE 2



to capture one electron; however, you want to capture an electron, shoot it through, and the next one would not actually move through one of the two holes, until the previous one had hit the screen and been absorbed.

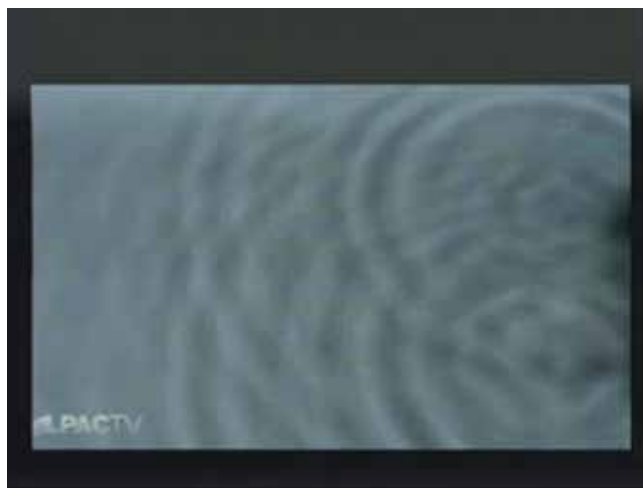
Well, what actually is the effect that was registered through this kind of experiment?

Let's take a look at the particle experiment. Here you have a registering of these different particles as they go through these two holes and start to build up on the screen. And you see, obviously, there's some sort of pattern emerging, which doesn't at all seem to correspond with what you would think would be the kind of emergent pattern if it were just simply particles shooting through one hole or the other.

Now, we've seen this kind of pattern elsewhere. And we will go to a depiction of where this comes up in a phenomenon which we would expect it to come up in, which is a simple wave-interference pattern. Here you're going to see a depiction of two wave sources, which is basically the equivalent of the two holes, using a wave tank, using waves in water, where two waves are simultaneously moving toward an end-point, an end-screen.

Here (**Figure 3**) you have a similar set as the one I discussed with the electrons, but here you have waves in water. You've got two sources producing waves, and you get the typical effect that you would surmise from simple geometry, or just an understanding of this: an interference pattern, where the two waves are interfering in such a way that they either have constructive interference, where they amplify each other, or they

FIGURE 3



cancel each other out, so that you get this alternation: light/dark, light/dark, light/dark.

A similar thing happens whenever you shine a light source as a wave source through two small holes: You get an interference pattern. It makes sense; you could deduce that this would be the effect from the relationship of waves. But, whenever you look at the particle buildup, you see that you get something very similar to that what you saw in this wave characteristic. That, in fact, whenever we're using what we're told are particles, we get a buildup of these kind of light and dark interference patterns.

Which seems to be very contradictory to what most people would think should occur. Typically, you would think, little bullets going through two different holes should just form two patches on the other end. But instead, you get particles, combining to produce a wave-interference pattern. How does this happen? Supposedly, these are only single particles being shot through. So it seems as if, as one particle hits the screen, it's somehow informing the next particle, "Hey, buddy, you need to take this path, in order to build up this particular pattern." There's no physical interference occurring, supposedly. The idea is that, only at the point that one of these electrons hits the screen, does one come about.

So, how, if you're just having a succession of events of this type, do you get this buildup of a kind of interference? How does one particle know what the previous one did? How does it communicate to the next one, what it must do?

It was out of these kinds of experiments that all

FIGURE 4



sorts of weird concoctions were cooked up. That what we're obviously seeing here, is what we've come to know as the duality characteristic of phenomena, of light, or of particles. That at the quantum level, things exist as both seemingly particle, under certain kinds of experiments, like some of the experiments conducted by Einstein with the photoelectric effect, or coming out of Planck's discovery of the quanta, which seems to demonstrate a kind of particle view; but then, other experiments, like this double-slit experiment, seem to say, actually it has a wave-like characteristic, because you're getting interferences which are typical of wave-type activity.

This sent the world spinning in a very bizarre way. Now, instead of saying, "We've got something paradoxical here," this was taken to say, "Well, in fact, this is demonstrative of the fact that you *really can't know* what's happening at that level."

Super-Fluidity and Super-Cooling

And actually, if we can go to the super-fluid video (**Figure 4**), we'll see another demonstration of a kind of process which demonstrates characteristics which have no representable notion in the simple ideas of space-time, as derived from our general understanding of sense-impressions of these things.

This is an old video that was done with liquid helium. You've got helium in a container, which has very fine capillaries at its bottom. These capillaries are so fine that the liquid can't pass through under normal circumstances, because of viscosity and friction

FIGURE 5



among the particles. But, when cooled down below a critical temperature, all of a sudden, this fluid takes on completely new characteristics, and it starts to flow readily through this very small, porous bottom, and it takes on what's known as this super-fluid characteristic.

Now, it's said that what's occurring is that the fluid is losing all of its viscosity, that there's no internal friction to hold it there, and it just passes right through. The same substance, but now at a critical temperature, passes through with zero viscosity. There are all kinds of discussions about what's behind that, and I'll get at some of the explanations of this very paradoxical characteristic.

Now, the next thing you're going to see here (**Figure 5**) is a demonstration of effectively the elimination of entropy on the part of this fluid. What you're seeing is that the very dark bulb at the bottom has a hole in its bottom, and it's filled with a very fine kind of powder. And this powder has very small spacing between it, it's super-packed, so the spacing between it is as fine as the previous example, with the holes at the bottom of the container.

They've now dipped this vessel, with this powder packed into the bottom, but with the hole underneath it, into supercool fluid. They're now heating the top; they're using a beam to heat the top of that black bulb, so it's actually warmer towards the top, than it is at the bottom.

Now, typically, as we understand the domain of thermodynamics, we're told nothing ever flows from a

colder to a warmer place; it always flows in one direction. Heat always flows from a warmer to a colder place. But here, what they demonstrate is that a very super-cold fluid is flowing through that black bulb which is being heated, and it's actually moving from a colder to a warmer spot, as you see demonstrated with the rising of the fluid in the flask here.

So you have something occurring which is overcoming our whole notion of entropy.

The way some of this is discussed is that what's occurring, to create this kind of superfluid condition, is a superposition: that these molecules, or these atoms are able to be in multiple states at the same time. The same thing can have two states of existence simultaneously, which seems to be impossible from the reductionist standpoint; or, you're getting two different types of atoms which are occupying the same space, which again, seems confounding. It's like saying these two objects could somehow occupy the same space at the same time. Again, it seems to violate our understanding of the way that space and time operate.

So a number of different ideas were spun out. They say: Okay, you've got things like superposition, things having more than one state of existence. Or, two different things occupying the same position in space-time, that's completely not understandable. Or, where something that is acting on something at one place in space-time, seems to instantaneously determine the action or effect at some other place in space-time. That, if by acting on this [righthand pen], it instantaneously determines what could happen over here [lefthand pen]. Again, it seems to completely violate our idea of the propagation of effects, action at a distance. This is what's discussed as "non-local effects," "non-locality."

So, the conclusion was made: Yes, we see experimentally that things do act in this very ambiguous and paradoxical way. But since we can't explain it from the standpoint of simple sense-based ideas of space, time, motion, propagation, etc., we must declare that, in fact, *these things are unknowable*; that really, all we're left with are probabilities. That the wave characteristic that we see, for instance, in the first experiment, is a probability wave, which isn't real, has no existence, but is a statistical probability that determines where the particle, the little hard ball, is going to hit.

And that's as good as we can get: All we can have is statistics and probabilities, about the likelihood that

something is going to happen one way, versus another way. And that because of these probabilities, whenever you act and determine one thing, it changes the probability of how something else is going to act, and that's how you're getting these non-local effects, because it's all tied into the probabilities—but these are unknowable. They're only fictions that we can use, with our limited minds and whatnot, to have some, at least, control over what's around us.

That thinking will never get us to Alpha Centauri! That thinking will never allow us to master the principles of matter-antimatter. And in fact, that kind of thinking will doom the human species!

The Domain of Metaphor

Is there another option? Well, in fact, there is. Where, and in what domain do these kinds of paradoxical qualities become commonplace, so to speak? Where do they become, in fact, characteristic of the domain? That is the domain of mind. And I'll give some examples, just to play around with this for a little bit.

If someone were to say to you, in Shakespearean fashion, that “the key to a happy marriage, is to lie with your wife,” you might think, “Hmm, what are different ways that we might think about what this word ‘lie’ means?” It might mean, you need to lie about where was the last place that you lied. It might mean that you need to tell a lie in order to get a lie. Or, it may mean both at the same time. Maybe the key to a happy marriage, is both to lie with your wife, and lie with your wife.

That, from the standpoint of irony, from the standpoint of metaphor, from the standpoint of the way that the mind communicates, all of these very funny characteristics that we find in the domain of the quantum, become very real—they actually become necessary to the development and communicative potentials of mind. That the key to marriage is to lie with your wife, can mean both things at the same time; or depending on how you understand it, that determines what it means.

To give another example of this, if I say: “What is left, when nothing goes right?” That can mean a couple of different things. It could come out of, say, an investigation of the ideas of space and time. If, as I said in the beginning, there is only one direction, there's only progress, then we say, “Okay, left and right, those are understood as opposite directions, to the left or to the



The irony expressed in the poetry and plays of great poets such as William Shakespeare (depicted here) lies at the heart of creative thinking, and thus of science.

right.” But now, if I'm investigating the idea that there's only one direction, let's say, we eliminate right, well, does left have any meaning? What is left, when nothing goes right? Okay.

Or, I might be in the midst of some existentialist reveling: I've just lost my job, lost my home, and Obama's still in the White House, and I say, “Oy! What is left, when nothing goes right?” Well, there again, left and right mean something very different: What remains when nothing seems to operate in the proper fashion.

So the same discussion—what is left when nothing goes right—depends on a couple of things: one, context. The context will give me an idea of which left and which right I mean. It also depends on directionality: If, in saying, “what is left when nothing goes right?,” once I determine in my mind, upon hearing that that left is directional, then the right that I speak, must also be directional.

If on the other hand, I say that for me left means “remaining,” well then, the thing that makes more sense is

that “right” is “proper.” What is left when nothing good remains? What is left, when nothing goes right?

It works in the opposite direction though, in time: There are two different ways it functions in time. If I say, what is “left,” I’m sort of astute, and I’m thinking, “left” could be directional, it could be “remain,” I’ll let both possibilities exist simultaneously in my mind. When I get to “right,” depending on what I determine as the notion of “right,” that’s going to determine retrospectively, which “left” it is. If I say, what is left, when nothing goes right, as soon as I say, “right” means direction, instantaneously, simultaneously with that determination, this one now becomes directional. If I think of “left” as what remains, then all of a sudden, retrospectively this one becomes determinational.

But it has this property which is discussed in quantum physics, that it’s non-commutative: It actually flows differently in one direction, than it flows in the other direction. Something which, again, contradicts some of the main problems you find in things like thermodynamics, which actually state that both possibilities, left and right, are actually indistinguishable.

So we see that, when we go into the domain of the way the mind works, the way that human communication works, many of these paradoxical characteristics that we find in the domain of the quantum, actually become readily accessible.

Now, lest you think that these are some parlor tricks, as Pete brought up, it was actually this quality of mind, this thinking in terms of irony, this thinking in terms of metaphor, which has been at the core of all advances in science.

The most typical one is what is brought up with Johannes Kepler, in looking at the Solar System, one object, having to counterpose both the notion of what seemed to be a harmonic ordering of the planets, ac-



The principle of metaphor is key to both Classical art and science, which was developed to its highest level in the Florentine Renaissance. Here, artist-scientist Leonardo da Vinci's Portrait of a Musician.

ording to a vision-based geometry, the nesting of the Platonic solids, versus another notion, which came to him as a harmonic ordering according to a sound-based harmonics, a time-based conception. So, you’ve got vision and hearing, space and time, being counterposed against each other, as a metaphorical counterpoint, to lead you to what must be really the higher idea which subsumes the entire thing, which is neither sight nor sound, space nor time, but which is something which is characteristically, of mind.

And in fact, it was this understanding, which led someone like Wolfgang Köhler, the founder of Gestalt psychology, to state something that he got from someone whom he studied under, Max Planck, who said to Köhler that he believed that many of the discoveries, and the resolution to many of

the paradoxes that Planck was encountering in the domain of quantum physics, would be resolved by the kind of method being employed by Köhler, into the investigation of mind. That among the greats, Einstein, Planck, they recognized that the domain of mind is the most ontologically superior and effective, efficient principle in the universe. That whether you’re looking at the very small, or the very large, whatever, it’s mind which is pervasive.

It’s the creative principle of mind, which characterizes and bounds the universe. And that the only way we’re going to be able to understand, and gain necessary and efficient mastery of this universe, is to the extent that we incorporate our investigation of mind, as what becomes the dominant principle by which we investigate the universe as a whole.

That becomes a problem right now, whenever we’re led by a President who, himself, has lost his mind. So if the universe is characteristically of mind, it doesn’t make a lot of sense to be led by someone who, himself, has lost his mind.