

Man's True Nature

by Jason Ross

Jason Ross of the LaRouchePAC Science Team gave this presentation to the weekly larouchepac.com webcast on April 24.

It's an undeniable, historical fact that the thinkers who created the Renaissance held the view that human beings are created in the image of God. We are creators and we carry the nature of the universe—its actual substance, the most characteristic basis upon which it operates—within us. Yet, clearly, most are unaware of this, unaware of both the nature of the creative potentials within their own minds, and of the nature of the universe itself.

Think about something that you know; have something in mind. We're used to the childlike question that comes up, "Why?" Children ask "Why?" You tell them an answer, and they ask "Why?" You answer that question, and you might be met with, "Why?" They realize they can go on like this for quite some time.

Ask another question: "How?"

How do you know whatever it is that you know? How do new things, known as discoveries, how do they

become known to humanity? What is that process like—what is it as an experience internally, and what does it say about the nature and the action of us as a species? This experience, the creative process, is the most universal and essential of human experiences. It is a sense of the highest kind of goodness and love, as it is expressed by Diotima in Plato's *Symposium*.

Creation and Discovery

So what is it to create? And is creating different than discovering? Take the field of music: I don't think many people would say that Beethoven "discovered" his Ninth Symphony, that he was excavating, and then he found it inside a rock, that he cracked the rock in half, and there was the score to the Ninth Symphony. Clearly not. There's a lot of music that's been written, there are many ways of approaching things. We definitely *create* music. That's a human field.

What about another field, the seemingly different field of science? When scientists discover something about how the universe works, how nature works, have

they *created* knowledge? Have they *discovered* knowledge that was already there in the universe around them? Is there a distinction?

I think most people would believe that we discover things that already exist, that there are principles in nature, that they cause things to operate and unfold in the way that they do; we discover those things, and now we know them. There's certainly something to that.

However, as Cusa emphasized, and as Kepler understood in the way that he approached his discoveries, it's also an act of creation. There are two aspects to that: One, is the creation of a new idea, in the formation of an hypothesis. This gets left out, or underplayed, in the typical science fair procedures that people follow in school, where they come up with problems and hypotheses, and independent and dependent variables, and results and conclusions. The most interesting aspect, is the creation of a hypothesis: What happens when that hypothesis is of a sort that's never before been experienced?

Take Kepler: Kepler was the first modern scientist; he was the first astrophysicist. He discovered how the planets move, and he did it, not by looking at movement, but by looking at movers. He had a physical hypothesis. It wasn't entirely right. In fact, to modern ears and eyes, it seems like it's almost entirely wrong, in the way that he explained how the Sun caused the planets to move. But what he did, is he took a physical approach; he created a hypothesis of how it was that the Sun, like a magnet, could be the cause of the motions of the planets; he followed that idea through. It resulted in a kind of motion for which no mathematics existed at the time, and wasn't to exist for nearly 100 years, when Leibniz created the infinitesimal calculus.

He took that concept, that hypothesis that he had, and he had to create motions of the planets, to see if that fit. When he looked at the planets overall, as a system, he had to create a hypothesis of the musicality of the planets, of their distances between each other, of their [orbital] eccentricities, with the view of answering: how would God have composed the Solar System in order that it would have characteristics in it that correspond to musical ones, from a human point of view?

Kepler created. He discovered; he created.



The evil Bertrand Russell, who tried to eliminate both creativity and people

Problems: Euclid and Russell

So, let's look at some problems in this, and then we'll come back to examining what this says about us as a species.

Let's take up one of the most ancient of problems, take Lyndon LaRouche's view of Euclid: LaRouche describes his first experiences with Euclid in school as a young man, as a student, as being not of the most pleasant variety. He really hated what Euclid had done, and it wasn't because he really disliked school or learning in general. Think about what the problem with Euclid was.

Euclid wrote these books about the *Elements of Geometry*, in which he has 13 books in which, starting from a few basic axioms of geometry, he derives a variety of properties of geometric constructions: cutting angles in half, the sum of the angles in polygons, eventually getting to the Platonic solids, things like that.

Here's the trouble with it: One, and this was recognized by Riemann and Einstein, Euclid's space was flat, even though space didn't have to be flat. But that's not the most glaring error, although it's an easier one to understand. The other error is that Euclid presented knowledge as deduction: that from a basic set of axioms—and it's not that many, about a dozen—you could derive the knowledge of everything that there would ever be to know about geometry.

Taking that as a model for knowledge more generally is poison. It's deadly, because discovery doesn't come from deducing conclusions from assumptions that we already have. You don't get to the future from the past. You don't get to a new concept, a new scientific principle, by showing how it's consistent and follows from what you already knew. More on that in a moment.



Gottfried Leibniz (1646–1716) developed the infinitesimal calculus, a language that allowed change itself to be substance.

Take another example: LaRouche has been emphatic about the destructive effects on science in the 20th Century, especially the role played by Bertrand Russell, in his promotion of an attempt by David Hilbert, in the very early 1900s, to do something that might seem so abstract or academic as to be unimportant, that its importance can be overlooked. Hilbert had proposed, as a study, to determine whether it was possible to turn mathematics (arithmetic, in particular) into logic. Was it possible to derive all of the properties of arithmetic—adding and multiplying and subtracting and dividing, and a few other things—was it possible to derive everything interesting about that, from *logic itself, from the deductive process?*

Bertrand Russell set off to do that. His book *The Principles of Mathematics*, later written in Latin, the *Principia Mathematica*—the reference to Newton, I think, is clear there—where Russell attempted to redefine the way that logic worked, redefines the way that arithmetic worked, to make it possible to make mathematics a branch of logic. I think he thought he succeeded.

Kurt Gödel, a couple of decades later, after Russell’s publication of this book, made a devastating proof—you may have heard of it; it’s called “Gödel’s proof,” for short. It actually has a long, more technical title. Basically, what Gödel showed, was that in any sufficiently complex system, like the logic of arithmetic that Russell tried to create, it was always possible to cause that system to break apart, to make statements that were contradictory, or to make statements that were undecidable: There was always more to discover, than could *ever* be put in any system, where all future knowledge can be derived from the past. He showed that even in arithmetic, which doesn’t seem like a very big scope—this doesn’t include the mysteries of life or how the brain works, this is just arithmetic—that even in that limited field, the attempt to say that there’s no creativity, and that knowledge can be derived from the past, from a few basic assumptions—even in that limited field, it failed.

This proved that artificial intelligence, before it had even really been created, was a waste of time. I don’t think everybody who’s working in that field, realizes that, however.

Overthrowing the Old System

So, with these examples, and with the importance that LaRouche has ascribed to them; with the problem of Euclid, which was overcome by Riemann, with the problem of Russell, and how Gödel fought against him; and to give one more example, the problems left by Kepler, about how change itself could be part of the language of science, this was resolved by Leibniz when he created his infinitesimal calculus. For the first time, it was possible, instead of things themselves, or relations among objects—*stuff*—instead of that being what was real, Leibniz allowed the way that those things changed, to itself have a real existence, and he developed a language that let change be discussed, directly. That was an amazing advancement.

What Bernhard Riemann did, in creating an anti-Euclidean geometry, was, in addition to showing that space didn’t have to be flat, that there were a lot of three-dimensional manifolds that aren’t necessarily flat like Euclid’s space, such as later, Einstein’s general relativity and curved space-time, Riemann also said: Look, the basis of our understanding of this, the basis for understanding the shape of space, isn’t in geometry, it’s in those physical principles that we discovered, that govern how things take place in space.

So with these things, we’ve got a couple of ideas

floating around now: one, the actual existence of change itself, as a concept; and two, the fact that the development of knowledge has *nothing in common* with logic, with deduction, with anything a computer can do. If you're a very logical person, you're never going to make a scientific discovery, because the universe is illogical. It's not random and unreasonable; but it is, absolutely and fundamentally, illogical.

So, how does that occur? We've discussed before—I'll be brief with it—with an example that V.I. Vernadsky gave in a 1930 paper, where he talked about how, thanks to the work of Planck and Einstein, the language of physics had dramatically changed over the preceding three decades. He gave the examples of the concepts of space and time, of energy and matter, which were totally different in his day, than in 1900: space and time used to be separate. According to Newton, they were independent things, they had no particular characteristics. Space was just a sort of galactic coordinate system in which different things would exist; time just flowed on its own, nothing special about it.

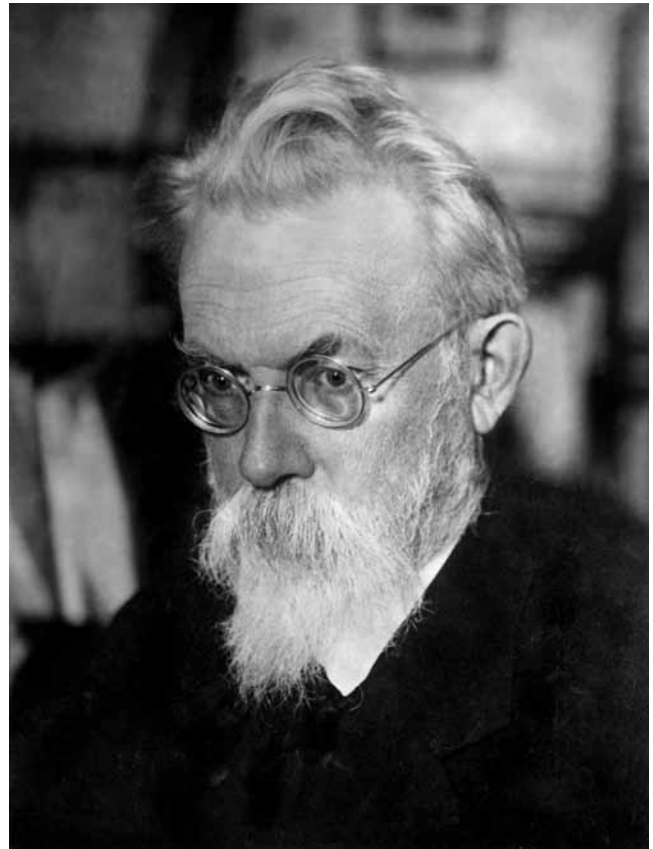
Einstein showed that there was only action in space-time, combined; that space had a shape to it, that time could vary in its duration, based on the motion of different observers watching a process unfold; and that even the concept of "now," of simultaneity, would be different for different observers. This totally blew apart those very basic concepts of space and time, which seemingly had been around for centuries. The other two, energy and matter—Einstein showed that energy could become matter and vice versa, this is what happens in nuclear processes. Planck showed that energy came in pieces, like the matter of atoms.

So, those examples show how, just at the beginning of the last century, the very basic language, the basic concepts used to even *discuss* the universe, all changed fundamentally—and not by additions, not by deriving something new to add to them, but by fundamentally *replacing, overthrowing, invalidating* the old concepts. Discoveries aren't additions: They always overthrow something that's wrong, because they're arrived at by a contradiction.

Man and the Developing Universe

The other aspect of this: What does it mean about us as a species, that we do this? How do we change the universe? How do we understand it?

First off, let's think about thought as a physical force. There are a lot of physical forces that are commonly



Vladimir Vernadsky, treating mankind as a scientific phenomenon, knew that the world view of Newton would have to give way to one in which thought itself was a physical force.

considered: gravity—people think about that—friction, magnetism, electricity flow, Ohm's law, springs, all these kinds of things.

We understand these in a way that's different from the animals. Take a dog. Now dogs try to understand things around them, and there are some things they can understand; they figure things out about the world around them; they try to train people in ways that they're susceptible of being trained.

We do something different, right? Our thoughts create things that have never existed before; thought is acting as a force of nature. Take an example from Vernadsky: aluminum. Pure aluminum, native aluminum, aluminum all by itself, not as a compound, exists *nowhere* in the Earth's crust. Well, now it does exist. But it didn't exist before people: We created something that never existed before on this planet.

Nuclear fission: Although the principle upon which it's based predated the 20th Century, the process of fission that takes place in a nuclear power plant doesn't occur anywhere on Earth (except perhaps one unusual



LaRouche references Raphael's *School of Athens* as representing a simultaneity of eternity, in which thinkers of different eras meet, outside of time.

place in Africa, [Oklo in Gabon – ed.]) but overall it's a process that really just doesn't occur. Or consider the kind of fusion that we're working on creating in our laboratories. Although it's based on what we believe to be taking place in stars and other things, the way that we would be creating it, is something that's never happened before. Or coal burning and then producing motion: That doesn't happen without people.

So, thought is a power in the universe; if it weren't, then the universe would be fundamentally unreasonable. It wouldn't work internally, as something that *does* let us understand things about that world, and it wouldn't work externally, letting us transform ourselves as a species, increasing our, what you might call, "carrying capacity," as Ben had referenced, that we have transformed the potential population of our species. Animals haven't done that; they won't do it—they don't, unless there's other creative life somewhere else in the universe.

So, in this way, we're like the universe itself. The universe develops. Look at the development of life over evolutionary time on our planet; look at the new technologies, you might call them, that have been introduced. Look at the development of galaxies over time. And then think about people who are worried about entropy and the heat death of the universe, and you can discard that as a concept. The universe develops.

And, consider this: Our discoveries, those principles

that we've discovered, they're never actually, completely right. None of them is so right that it won't in the future have the potential of being replaced by a discovery that supersedes it, as in Vernadsky's reference to the early 20th Century, where everything was overturned; all of the laws of physics were overturned, and basically every one of them was replaced.

So, the fact that the universe develops, that it responds to our developing discoveries about it, and our ability to create new things in the

universe that would not exist without us, I think bridges the gap between the notions of creativity and discovery: *We are creators*. That image from the Renaissance—that was absolutely a living image in the minds of those who created it, that human beings were made in the image of God. Think about that in modern terms.

The Experience of Discovery

So, let's talk about, what that world's like, that universe out there: How do we get there? How do we make discoveries about it?

As I think I've said, briefly, new insights into it always come from contradictions in our current understanding, overthrowing our old thoughts, by developing a new and necessary idea. Think about the experience of time, when we do that. You think about a timeline, as you might imagine it in a history book, or looking at geological ages; you know, time moves along. It moves from the past, into the present, and then into the future.

The thing is, when you introduce something that's new, the development of steam power for example, if you said humanity was on a timeline, well, was that an inevitable discovery? When that occurs, is that just the past going into the future? Or is that a willful creation of something that had never existed before, actually changing time, changing where we would be going? Acting on that process of moving into the future itself?

I think it is.

And I think that that experience, the experience of discovery, the experience of the creative process, in science, or in developing a greater insight into music, poetry, etc., that in doing that, we get to experience that reality that lies outside of time. Mr. LaRouche has re-

This is something that's absolutely within our grasp. If the universe can do something, we can discover how it does it, and we can do it ourselves.

ferred to a "simultaneity of eternity," as seen in Raphael's *School of Athens* painting, where thinkers from different periods of history are all together. When you act on the trajectory of our species, and therefore the trajectory of the development of the universe itself, yes, it happens at a time, you might say, but the experience isn't one of being in time; it's being in eternity.

The greatest duty, or mission, or opportunity of so-

ciety, of government, is to provide the greatest number, an increasing number of its people, the opportunity to participate in a process that really is immortal, that goes beyond a lifetime, not only in the sense of being remembered, leaving an impact that can't be effaced, but in changing what that idea of the future even could be. That's been something that not that many people over history have been actively engaged in, and which, at an increased rate in a society that understands that as the nature of human beings, will be able to progress in ways that would seem unbelievable to us today.

It would certainly be a society where, going into space wouldn't be a difficulty; where controlling asteroids or comets that might destroy our planet, or at least life on it, wouldn't be out of the question; where we have fusion power, for power here on Earth, for transportation and as an energy source, for controlling the Solar System, and actions in it. It certainly wouldn't be one where we would worry about whether the Sun happened to evaporate water which we were then fortunate enough to have land in a place where we would want it. We don't do that with food presently: If there's no food in a farmer's field, he doesn't say, "Oh, there's a food crisis." His neighbor might say, "Well, you forgot to plant during the planting season, that's why there are no crops there now!"

With water, we can control the water cycles. This is something that's absolutely within our grasp. If the universe can do something, we can discover how it does it, and we can do it ourselves. Even on the very, very practical level—maybe this might bring it down a notch, but—even the amount of money that California was ripped off by the Enron fiasco around the year 2000, [\$70 billion] that would be enough money to build desalination plants for all the metropolitan coastal areas of the state, for 25 million people: just the amount of money that was stolen during the Enron fiasco.

So, the kind of humanity that we need to create, the idea of culture that we ought to strive for and develop, and exist in and live as, is one where these problems are surmountable. These aren't things that we can't deal with.

And we'll be able to engage ourselves in more interesting problems: How does the Sun work? How is the galaxy developing in the way that it is? You know, fun things! New music, fun and exciting things. We won't have to worry about things like, why is the governor of California such an idiot?

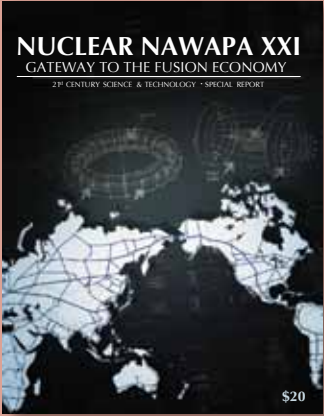
Nuclear NAWAPA XXI
Gateway to the Fusion Economy

A 21st Century Science & Technology Special Report

By the
LaRouchePAC Scientific Research Team

Articles include:

- A Call for an International Crash Program: Creating the Fusion Economy
- Increasing the Productivity of the North American Water Cycle
- Nuclear NAWAPA XXI and the New Economy
- Nuclear Agro-Industrial Complexes for NAWAPA XXI
- The Pacific Development Corridor: Maglev Through the Bering Strait
- The 'Common Aims of Mankind': A Strategic Defense of Earth



Available from
21st Century Science & Technology

Print **\$20** post-paid
PDF **\$10**
Print report with one-year subscription **\$40**