

FROM KEPLER TO CHINA

What Is Mankind, Such That We Would Want To Save It?

The Feb. 18 LaRouchePAC New Paradigm for Mankind [program](#) featured a presentation by Liona Fan-Chiang, and two of her colleagues from the LaRouchePAC Scientific Team, Jason Ross and Megan Beets.

Liona Fan-Chiang: ...I think, in this time where the existence of mankind is being challenged, is being questioned, we do need to ask some of the biggest questions. One, what is mankind, such that we would want to save it? And the other question that that question answers, is what is mankind such that we can continue to persist?

What the BRICS development has illustrated is beginning to answer this question; because you saw, the Greeks can say basically, “screw you,” because of the changing momentum which the BRICS nations have outlined. People who have been following Brazil, Russia, India, China, and South Africa, have been developing a completely new structure for the world, and now, whether that will actually succeed, is going to depend on us, is going to depend on if we actually exist for that structure to succeed.

As part of this, they’ve been doing a lot—nuclear



LPAC-TV

Liona Fan-Chiang led the discussion on the Feb. 18 New Paradigm show, demonstrating how China today is acting on the principles discovered 400 years ago by Johannes Kepler.

investment, investment into creating the New Silk Road corridor, a Maritime Silk Road, building the Suez Canal, building the Nicaragua canal, all sorts of incredible things that have been on the books or have been only in conception for a long time. And yet, you see that when the political decision is made, it can be done very quickly. These are not engineering issues, although you

have engineering issues—the problem, the place where these things are held up is not in engineering. It is a political decision.

Now, the thing that Mr. LaRouche has pushed the most, has been excited about the most, is the Chinese space program. And I'd like to get at this from something he brings up, which is the Chinese space program in the context of the discovery made by Kepler. And it goes along actually with Mr. LaRouche's insistence that right now, the most important subject to take up, the largest subject to take up, is the distinction between man and beast. And Kepler was very, very explicit about this, in several places.

What Kepler Discovered

What did Kepler do? Since both of you have taken up different aspects of Kepler on this show, we'll just summarize it here. Kepler made a *huge* discovery, and this is in the early 1600s, seemingly a long time ago, but at the same time, it's not the beginning of human history. In the early 1600s he discovered the Solar System. It's a funny thing to say—"What do you mean, he's discovered the Solar System? Did the Solar System not exist before that?" But he was the first one to discover, in the human mind, that the Sun *governs the motions of the planets*. Prior to that, people had these different models. People have heard of Copernicus having planets go around the Sun. Sure, Copernicus, for example, had planets going around the Sun, but not *governed* by the Sun.

You [Ross] pointed out over the weekend, at the Schiller Institute conference (<http://www.schillerinstitute.org/>), that all of these—Ptolemy, Copernicus—their models have no regard for the distances of the planets from the Sun. The planets are where you should see them, and as long your model accounts for what you see, it doesn't matter how far away they are.

Now physically, how far you are from that hot, burning ball of fire, really matters. It's going to determine whether your planet has water, or not, or has liquid water or not, and can support life. So that's very important.

Kepler though, asked this question: What makes the planets move at all? Why do they move at all? And from that question, he was able to figure out why the Solar System is the way it is. So he proved two things: One, that the Solar System can be known as a system, as a *solar* system. But then, two, that *human beings can know it*. That a human being, namely Kepler, standing on Earth—there was no space program at this time;

there were barely just telescopes—in his own body, can come to know a *cause* of the motions of, at least as far as he knew, the entire Solar System.

And that's very big, because this is really the basis of science: You know cause. And it's not a fantasy. You know you made a scientific discovery, because you can change the universe with that discovery. You can make things happen, that couldn't have previously happened without your making it happen. And there's no doubt when you see them, you say, "Okay, a human made that." You may ask, "Well, how do you know a human made that?"

A good example is nuclear fission. Fusion happens on the Sun, but where does fission happen? Does fission happen in the 99% of the universe that's made of hydrogen and helium? No! Fission happens on Earth, and it's induced by human beings because we made a discovery about the nucleus, about nuclear processes.

Same thing with numerous other things—for example, lasers. Where do lasers happen that are the size of a table top, or in your hand? Where does coherent light like that happen? It does actually happen in large structures, as far as we know, whole galaxies, in the micro-wave scale, but where does it happen like that, except by a scientific discovery by human beings? And this is a discovery because they're not violating the laws of physics; but prior to our discovery, that law of physics was not acting in the universe. It was not manifesting in that way, in the universe.

Kepler started science from that standpoint, and really defined human beings as a creator, a creator that's capable of knowing cause and applying it. And that was very big. That's a very big statement, and we've basically lived in the wake of this discovery.

Vernadsky vs. the 'Speck' View

At the same time, that discovery is not popular. And the reason I say that is because, think about the view of human beings now. Do people think about themselves as creators, for example? Now, that's something that's relegated to religion at this point, and if you say that in science, you must be a mystic. And the reason that that is the case, is that Kepler himself, Kepler's ideas and Kepler's discoveries, were incredibly, viciously attacked for the next several centuries, by Newton, by several others, by the sect of our artificial intelligence crowd, and I'm sure they don't know it, but by the environmentalists as well—that idea of human beings.

Vernadsky, in the early part of the last century,

pointed this out very clearly, and that was 1931. And it unfortunately still applies today: Look at science now. When we make a discovery about the cosmos, you would think we would say, “Wow! We know more about the cosmos!” But when we make a discovery about the cosmos, people say, “Wow, the cosmos is so vast, that must mean that we are so small. Human beings are so small on this little planet, and just on a continent, in this little body of ours, and we’re just a speck in the middle of this vast expanse. How are we to say that we are important, that we constitute anything special? How can we say we’re allowed even to touch these other processes, or that we should change anything? Or violating the Solar System, or the rest of the universe?”

So there’s that aspect of it, which is this view of man, which I call the “speck view.” But Vernadsky was saying from the scientific standpoint, that this speck view actually leaves out large parts of the universe. So the way he laid it out was that: Look you’ve got physics, and right now physics is the physics of dead things. And he was saying, look, you’ve got all these discoveries that are specifically from life, for example, life does things that only occur at extremes in non-life, like superconductivity, or several other things. And if you don’t take those into account—his favorite one is dissymmetry, the ability to distinguish left and right, which isn’t distinguished in chemistry, but is in life—if you don’t take those things into account in your science, how can you call it universal? How can you call your law universal, if you don’t take life into account? And at that point, all these new discoveries from life explicitly were being made.

And the next step which he pointed out, is the human mind. How can you leave the scientists who made the scientific discovery out of your theory of science? That, again, your science isn’t really universal if you leave out the cause of the existence of science itself. And so, Vernadsky pointed this out, in 1931: This view that Vernadsky was attacking, this view of the “small mankind,” which is basically unnatural, still persists today and is actually very popular. It’s being taught in schools. And that has to change.

FIGURE 1
The China Lunar Exploration Program (CLEP)



That view has to be proven unscientific, as Kepler already proved. And I think that’s where Mr. La-Rouche is placing the development of space right now. So you can almost say that Kepler started the space age. But human beings first went into space in about 1961. It was a while ago—in modern time, that’s actually a while ago. And human beings stopped going past low-Earth orbit in 1974, or maybe it was ’76. That was a long time ago. The latest thing that landed on the Moon, was by the Chinese, in 2013. Before that there were 37 years of vacantsness, of an empty, lonely Moon.

The Chinese have taken this step to go to the Moon, but they’ve also taken a step to go much farther. They’ve been very explicit that they are not going to do what we did—

which was sort of, go to the Moon, do some science, and then come back, and “Been there, done that,” as Obama says.

The Chinese Lunar Program

So I want to show you something, which is the Chinese Lunar Exploration Program (CLEP) insignia (**Figure 1**), and the symbol is supposed to be the symbol for the Moon. But at the same time, it’s obviously a Moon; it’s a crescent, and two footprints. And a lot of people have pointed out that the Chinese don’t really make their exploration program very secret, as far as their intentions go. It’s a manned exploration program, and I would say, even the term “exploration program,” is also not quite right, because what they’re doing right now, is explicitly not just explorations. For example, in just the rover aspect, they’ve already pulled several of what they call “firsts.”

Before I go through that, the father of the lunar exploration program, Ouyang Ziyuan has explicitly said, we should be there, we should be on the Moon, we should be developing, we should be mining helium-3 for fusion, we should be prospecting for helium-3, and so on. That’s a very good measure, that philosophy of the father of the lunar program will probably tell you where the lunar program is going, more than the explicit statements of what the next mission is, and so on;



Ouyang Ziyuan, the father of the lunar exploration program, has said we should be on the Moon, we should be mining helium-3 for fusion. This tells you where the Chinese lunar program is going, said Fan-Chiang.

it gives you a longer arc of where it's going.

But, too, even just what has been done shows you something that is much more than exploration. Prospecting for materials, that's already happening. They're testing for 14 different elements, one of which is helium-3, or helium, trying to figure out how much is there, how can it be utilized, and so on. The other aspect which isn't one of the "firsts," is observation from the Moon.

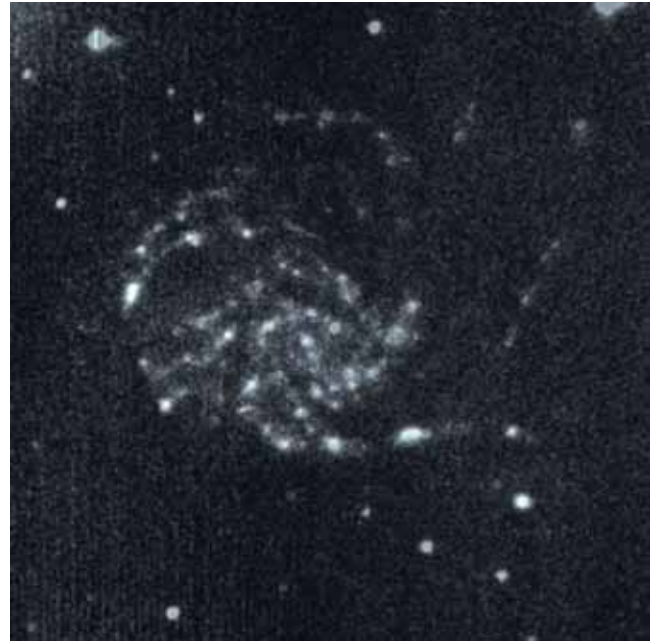
So, they do observation *of* the Moon, that is also happening; but they're doing observation *from* the Moon, which is one of those dreams of astronomers. Astronomers have always talked about being on the other side of the Moon, not exactly the dark side, but it's the other side of the Moon, for example. But even just being *on* the Moon and doing observations: The Moon has very, very low atmosphere, but also spins very slowly, and so, for example, you can look at the Earth, for a very long time—not only for a very long time, but also be able to see an entire half of the Earth. This, for example, is one of their preliminary pictures (Figure 2); most of what's come out is preliminary, tests of the cameras and things like that.

Jason Ross: This is from the Chinese lunar landing.

Fan-Chiang: This is from the last Chinese lunar lander, and this is of the Earth, of the Earth's plasmasphere. And so, now you know that this is what they're going to be observing, one of the things that they can observe with their near UV instrument, is the Earth's plasmasphere.

The other thing that they're looking at, is outward, the other way. They have a UV telescope looking for

FIGURE 2



China's Chang'e Lander's LUT (Lunar-based Ultraviolet Telescope) captured this photo of Galaxy M101.

galaxies, binaries, quasars, active galactic galaxies, all astronomical phenomena, which are hard to see from inside the atmosphere of Earth, and this is the first observatory now on the Moon. So you can see how many different firsts you can define for that one, but there's an observatory on the Moon, explicitly looking at different cosmic phenomena. So actually, these were one of the two firsts, this observatory of galactic processes on the Moon, and the other one is the observatory of Earth, on the Moon (Figure 3).

FIGURE 3

Earth's Plasmasphere, Seen from the Moon by China's Moon Rover, January 2014

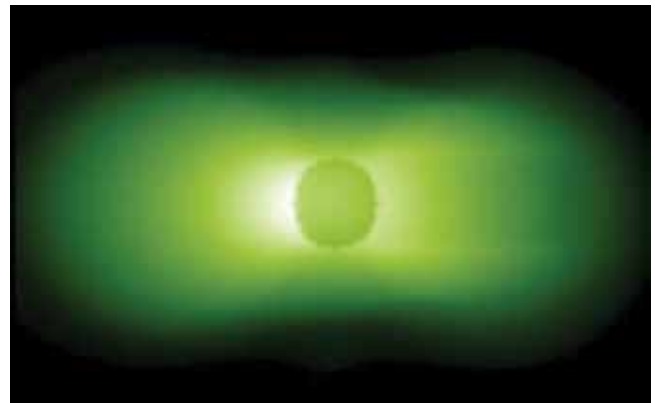
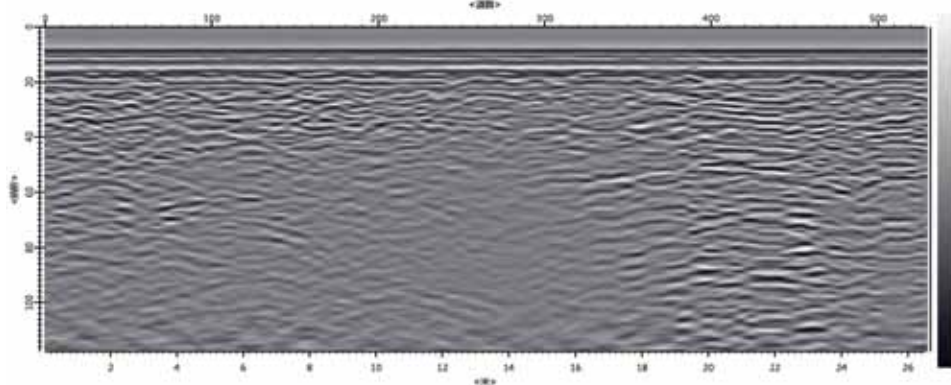


FIGURE 4

Primary Test Result of the Moon’s Geological Structure



This is a picture of, I think it’s radar (**Figure 4**), which is to see 100 meters below—the last tick on here is 100 meters down into the regolith of the Moon, or the ground of the Moon. So this is definitely one of the firsts, being able to prospect 100 meters down, underneath [the surface]. And I’m actually wondering how this is going to pair with the two...

Megan Beets: U.S. GRAIL [Gravity Recovery And Interior Laboratory] orbiters?

Fan-Chiang: Yes, because GRAIL did the gravity map of the whole Moon.

And then the other thing that they’re doing is using an X-ray spectrometer that looks for materials (**Figure 5**). As I already mentioned, they’re prospecting for materials, and it’s obviously also to look at the different composition of the Moon, evolution and some of these other things.

So, this is also very big, for a pretty young program! I don’t know if people realize this, but their official manned program started—which is pretty much the beginning of the actual space program—in ’92. Their official Moon program, though, didn’t start until 2004.

So this is all since 2004.

Given, the U.S. moved

very, very quickly when we were doing this. But in this span of time, when no one else is doing anything, this is actually very fast.

A Galactic View of Mankind

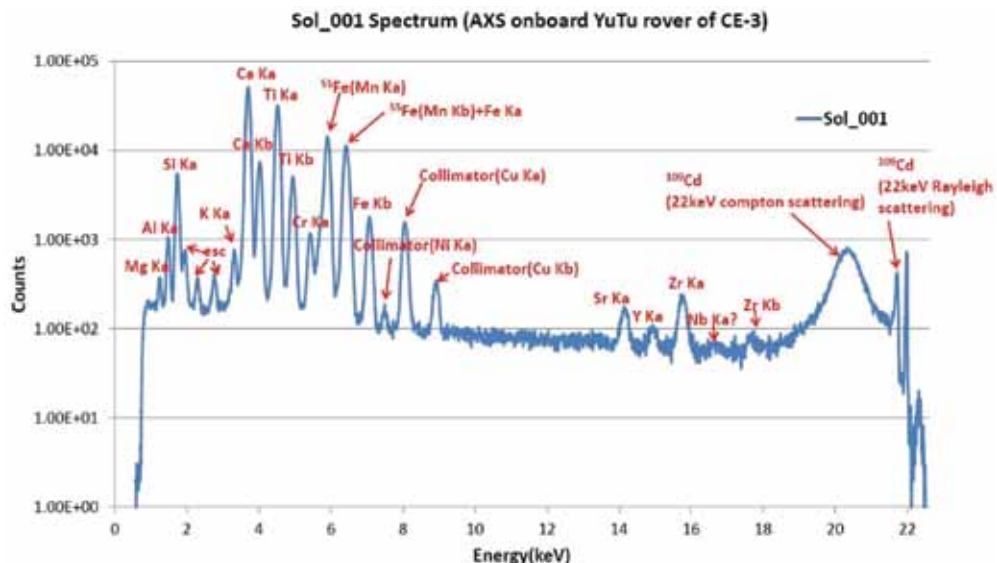
Now, what is this doing? We’ve got China, which is part of this whole consortium to change the dynamic, the geopolitical dynamic out of geopolitics entirely, of the entire globe. But at the same

time, leading with this concept, which has been transforming—I mean, people all around the world are incredibly excited that there’s a commitment to take human beings into the Solar System. And not just into the Solar System to explore, so-called, but to actually conquer, to actually manage, to come to occupy, but also to be part of the creation of the Solar System. That, and also as you see with these observations, which will be paired with, I’m sure, the grand observatories—these are the space telescopes—to look out, to take that next step beyond where Kepler already had us.

Now Kepler already had human beings defined as a Solar System species, as we are just now sort of filling that out. But you have to fill that out to be able to take

FIGURE 5

Chang’e 3’s Achievement



the next step. And Mr. LaRouche just said yesterday, that you've got to take that step and look *in*. Now, you've got to look *in* at the Solar System, from beyond that. And that would be your next discovery: One of the next discoveries will be this view of mankind that is galactic.

And as I said, it is not just a so-called scientific research subject; it is: What's the identity of mankind? Do we consider ourselves as having the responsibility to take advantage of a capability we've already been proven to have, which is to come to know causes, and to create based upon that, and to create something that's more ordered, more active, and more creative, and take that as an identifying aspect of the human species and that which we would want to fight for?

So, as we watch, it really is this potential that Mr. LaRouche sees in the space program, more than where it is at any one point. It is this potential that would define what we're looking at, what makes it so that mankind can persist, say, after we get out of this crazy existential period.

Kepler and Cusa

Beets: I want to go back to something you said throughout, which is the discovery of Kepler, and really, all discovery. It's not so much a discovery about the *thing which is discovered*, although that's a significant factor, because putting that into practice revolutionizes mankind's economy and capabilities; but the real, higher level discovery is *a new discovery about man*. And as you referenced, Kepler's discovery was not just that the principle of the Solar System was knowable, but that *man* could know it. That this was knowable by mankind.

And that is really the exemplification of the principle that Kepler had an intimation of in his youth, when he was looking at the work of Nicholas of Cusa. And what really stuck with Kepler about Cusa's work was Cusa's analogy, or metaphor, of the relationship of God's mind to man's mind, in the relationship of the circle to the inscribed polygon. And Kepler said, "In this, Cusa seems to me divine," in that he identified the relationship of man to God.

That is an idea that he clearly stuck with and developed throughout his entire life's work; and look at Book IV of his *Harmony of the World*, which was one of his last major works, where he's extremely explicit in his attacks on the Aristotelean ideology, which was the counterpole to the Renaissance: the idea that man can

only know through the senses, that man's mind is nothing but a receptacle which receives impressions from the outside world and collects them in this box of junk, and that composes mind.

But Kepler said, no, that's not true, and first of all, he said that Aristotle should be thrown out of the Christian religion for that reason; but also he said that the mind is inherently composed of ideas. And Kepler said the relationship of the mind to the senses is such that, if the body did not have eyes with which to see, the mind would not only *demand* eyes, with which it could see the outside world, but it would also determine their structure and their composition to fulfill its purposes. And I think that statement sort of exemplifies how Kepler went about his work.

And you look at his *Harmony of the World*, where he was able to solve the problem of the composition of the motions of the Solar System, and the identification of why these motions are in these planets, and not otherwise, and how that was all an expression of one principle of the Sun, he was able to work with the data to compose a certain paradox in the data, which couldn't be solved by the numbers in the data.

And then, what he did, is he actually put all the data to the side, and he went and reflected upon his own mind and the principles of human composition and the principles of human music. He invented things in his planetary harmonics, which would come later in actual musical harmonies, in musical practice. And the setting up of that irony, and the composing of the data to show the irony in the system that couldn't be solved by number, but could only be solved by an experience of the mind, which is a very real experience, in that, Kepler did exactly what you said: He took man's residency off of the Earth and put it out in the Solar System. Man's mind now subsumed the Solar System. And this goes back again to the work of Cusa and the breakthrough of the Renaissance.

So I think that is the point to be made here: that Kepler, seemingly observing from Earth, was able to put man in the Solar System, and now with the actions and potentials of the Chinese, we can now use that discovery of what man is, put ourselves on the Moon, and look out beyond to confront the greater paradoxes and ironies of this galactic system, and in that way, fulfill Kepler, but also transform mankind into something completely new and more powerful.

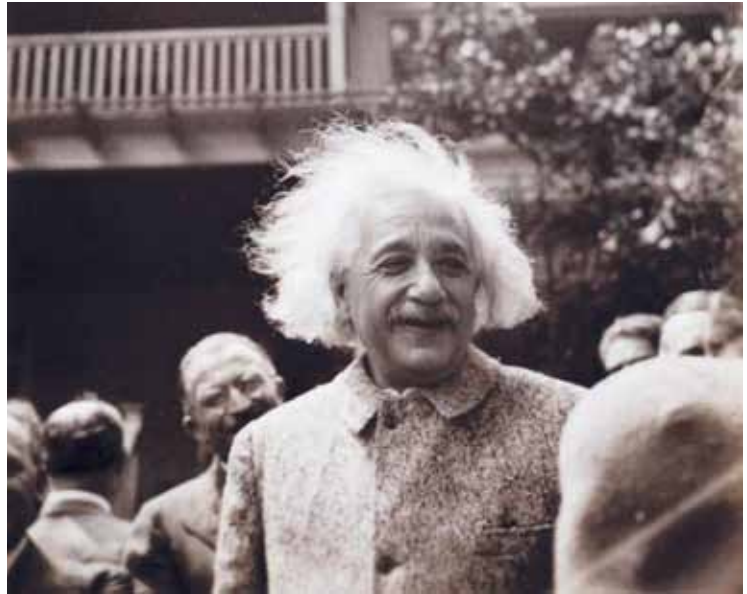
Fan-Chiang: Yes, I think it is the transformation.

One of the things about space exploration is that

people know that you have to have the Moon. One, it's incredibly convenient that we happen to have a moon; but then, you're not going to send frontiersmen out and just leave them there. In other words, in order to actually develop a space which you're managing, you have to have infrastructure, you have to have development.

But yes, I think it is this idea of transforming the human species into something which it is not now, and then fighting for that.

You know, it's a funny thing: How do you fight for something, if you can't imagine that it doesn't exist yet? Well, human beings have a great faith that we can make discoveries of things we don't know yet. That's how we make investments, that's why we have education, and so on. And that's its defining characteristic.



Did Kepler believe that he was discovering how God put the universe together? Yes. It makes you think, said Jason Ross, about Einstein's famous remark: "I want to know God's thoughts; the rest are details."

Knowing God's Thoughts

Ross: Yes, including the passion that drove Kepler—I mean, Kepler did *a lot* of work. He did a lot of work to figure out what he determined. You had brought up that Cusa seemed divine to him, for this reason. And it's amazing the extent to which the most powerful concepts were pushing Kepler forward. Did he believe that it was possible for the mind of man to know these things? Yes. Did he believe that that was something that was about human nature? Yes. Did he believe that what he was discovering was how God put things together? Yes—that's the level he was thinking about. He makes you think about that quote from Einstein about "I want to know God's thoughts; the rest are details."

Kepler was very excited about the Copernican hypothesis; the Ptolemaic hypothesis gave no distances between the planets; the Copernican one did, although it wasn't based on the Sun. And Kepler was really excited about that, because he said, this also means we can figure out why there are—he had a hypothesis that he thought also explained why there were as many planets as there were, why they had the distances they had, instead of other ones. Those seemed like questions that people today think wouldn't even be worth pursuing. Why are there as many planets as there are? "I dunno, there was just some dust and it made some the Sun and its planets, and who cares?"

Kepler said, No, no, come on, nothing happens without a reason. So, he looked for that. In order to determine whether he was right, he realized that he had to

reform *all* of astronomy. So in the *Mysterium Cosmographicum*, in 1596, he's got this hypothesis. The *New Astronomy*, which comes out in 1609, is where he developed a whole new astronomy, based on the physical cause of the Sun, to understand the actual orbits of the planets, to then be able to come back in his 1621 work, the *Harmony of the World*, to revisit the question of why the orbits had the characteristics that they did, from the standpoint of human music and—it was pretty daring!

To say that human music, which seems to be a human creation, that there's something universal about music, about composition, such that it's not just in our making songs for each other, but that you would even find that out in nature as a whole. It's a specific example of saying that you're going to find creativity or the mind, or humanity, out in the rest of the world.

Which I think goes to what you had said about Vernadsky, that Vernadsky took issue with anybody trying to claim a thorough, overall view of physics, that didn't include physicists. Or "here's our view science that doesn't include scientists. He says science occurs within *people*; science doesn't occur in a beaker. It's in people, in their minds, in their social activity. How do we understand that as a physical force?"

So sometimes it's easy for people to look back at the past and say, Oh! Those poor benighted fools, we're nothing like that anymore. People used to believe this



Megan Beets (center): “Kepler’s discovery was not just that the principle of the Solar System was knowable, but that man could know it. That this was knowable by mankind.”

superstition or that superstition, the Middle Ages, how medieval! But you may ask yourself, if you take one of these people today who’s so brilliant, if he had actually grown up in that society, what would it have taken to move that forward? What brought things out of that? And sometimes, people today like to pooh-pooh Kepler, and say, well, yes, he did some things but his view of inertia was wrong, and you know.

Okay, what made it possible to make these breakthroughs? What really launched science forward? And this total break from Aristotle, or the idea of understanding of that world out there as an external thing, versus Kepler’s view that what would seem like a human cause would also be a universal cause? Even his use of physics in astronomy was considered controversial, because [for Aristotle] physics is about Earthly things; the stars or the planets are ethereal, and perfect, and they shouldn’t have anything do with our physics. He said, No, no, the way we understand things, is—in other words, a universal science.

And so, you think about what it means today. It’s a little bit funny to try to have to make the case for space science. You’re an idiot if you’re not thinking that way! It’s just the most sensible thing for mankind to be doing right now, is to move out and explore and develop the infrastructure to learn more about and take advantage of the vast majority of the universe which is not the Earth! Most of it’s out there! . . .

It’s easy to look back and say, Aw! How silly people

were! But what are people going to think about us today? Where are the really new leaps going to come from?

Some people like to say, well, the BRICS are just doing what the West has already done. It’s really not that impressive. Oh, they’re building toilets in India, great. We’ve had those for a while—so what? *That’s a really stupid outlook!* Because, doing something that’s new to you, new to your culture, new to your country—that has a power that goes beyond the specific thing that you’re doing,

whether or not it’s new to humanity as a whole.

For example, take education, that experience of discovering something that’s new to you as a student’ if that happens, and it’s rather rare, but it should be the way education works. Say, okay, how was this discovered originally? You as a student are going to work through how this new thought was developed, and you’re going to have that experience in your mind.

Now, that’s not the same as the person who actually figured it out the first time. Going through how Mendeleev determined the periodic system of the elements is a powerful experience. Obviously, Mendeleev did it first. But as a basis of culture, and as a basis of a person doing things you personally haven’t done before, it serves as an inspiration to others as well.

The Experience of Newness

So you see these things that the BRICS are doing, that are “new to them,” but that’s patronizing. These things actually are new to the world as a whole. and so, people looking back on our times will be astonished.

You know, Liona, you’ve talked about how time sort of speeds up; you pointed out that going to space first in the ’60s, this is 50 years ago, but it’s 50 *modern* years ago! Like having done something 50 years ago in the 1500s—it’d be like 500 years ago in the 1500s.

So looking back on today from the future, and from out in space, it’ll seem like probably the nuttiest thing that—wait, there was a fight or a debate about whether

to continue developing in space? There was a *debate* about whether to make the breakthrough to fusion?! That would be as stupid as we would think of people saying, “Oh, the steam engine, it’s really too much of a bother, why bother? We shouldn’t develop that, we should keep using horses. We can just have better insulated stables for our horses, or something.”

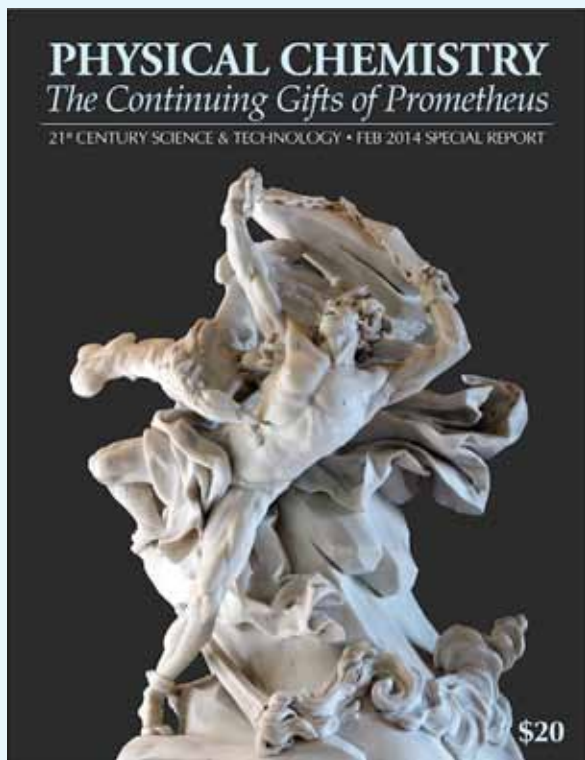
Fan-Chiang: Yes, I think this point you made, too, that Mr. LaRouche challenged us, saying, look, every day you should be doing something that’s new to yourself. Because you want to get a sense of doing that, you want to know, you want to be comfortable with doing something new for yourself all the time. And in that process, you may do something new relative to humanity. But that process isn’t isolated. That’s very unique.

Ross: And that’s where you touch on human identity, that universality of human identity, that experience of newness, of creation, as Kepler experienced, and then left for us to experience, through his very kind work in writing out thoroughly how he had worked on things. Thank you very much, Kepler, for doing that. Now we can benefit from it.

But that’s the most characteristic human experience, and now China is moving forward on that.

Fan-Chiang: This also brings me back to a book, a very long essay, that Mr. LaRouche wrote, on *Earth’s Next Fifty Years*, where he discussed this idea: that the only way you can create actual international collaboration, is around universal ideas, universal ideas of man. And something which I mentioned on this show before, that he’s mentioned, that a new government or a new way of ordering, a new international collaboration, is not going to be a conglomeration of old things that we have. It’s going to be based on a new discovery about mankind, and hopefully it’s going to be based on an already-transformed mankind.

I think it’s one of those paradoxical situations where the solution for a war is to not fight the war; it’s actually going to be getting at the reason the war condition even exists at all. Obviously, you can do some band-aid measures, kicking out Obama and such things; but trying to get at the persistent reason that we would even still have war in the first place, that that even exists as plausible. That type of thing is really going to require us to evolve out of this—Helga Zepp-LaRouche called it an adolescent state. And I think Krafft Ehrlicke goes even further. He says that we’re still in the womb, the womb of the Earth....



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