

NEW PARADIGM FOR MANKIND

The Coming Promethean Renaissance

LaRouchePAC's New Paradigm for Mankind program for Aug. 27, featured three members of the LPAC Science Team, Benjamin Deniston, who hosted, Jason Ross, and Megan Beets (<http://larouchepac.com/node/31628>). Deniston opened by referencing a discussion with Lyndon LaRouche the previous evening, about the BRICS conference in Brazil in mid-July, and the dramatic shifts that have begun as a result of that conference. LaRouche, he said, emphasized that our association has a critical role in this process. Of special note is the work that Helga Zepp-LaRouche is doing in China, including her participation in an important conference there, titled, "One Belt, One Road" referring to China's Silk Road policy. Her address was titled, "The Silk Road in the 21st Century Is the Cornerstone of Peace and Order."

The conference brought together over 100 experts, scholars, and government officials from 21 nations. Among them: China's Deputy Education Minister and Vladimir Yakunin, the president of Russian Railways.

China Daily wrote: "The 'One Belt, One Road' conference was the principle of mutual negotiation, joint development and sharing to further deepen cooperation between China and other countries along the Silk Road. ..."

Deniston summed it up thusly: "I think this is just another highlight expressing the shifting world situation: We have an open dialogue now among leading nations about how to actually cooperate in a completely new era of development, education, cooperation and

how nations can cooperate to better all mankind through these cooperative efforts. And this is now on the table in an active way that hasn't happened in many decades, if ever, really, in history. So this is an incredibly exciting period."

He then reported what LaRouche had identified as the key principle to be added to the discussion: "that this has to be the era of Prometheus, the Promethean conception of man needs to come forward, is already coming forward, but we need to bring it further forward and make it the central pillar to this whole shifting world situation."

Then Jason Ross began.

The Courage of Prometheus

Jason Ross: Yes, Prometheus is in every Renaissance, and we're on the verge of the greatest of human renaissances. That's what we have the potential for right now, especially given China's commitment to helium-3 exploitation on the Moon. This would be really bringing mankind to a fundamentally higher platform than we've ever had before, and it is a Promethean outlook.

I just want to start with an introduction to Prometheus: The story is probably familiar to those who have been keeping an eye on this website in a thorough way. To say it again, Prometheus took fire from Zeus. Zeus did not want mankind to have fire; in fact, Zeus wanted to destroy mankind. He was sick of us, he was going to wipe us out, and instead, Prometheus pre-



“Prometheus is in every Renaissance,” declared Jason Ross, and we’re on the verge of the greatest of human renaissances.” The painting by Heinrich Füger depicts Prometheus bringing fire to mankind (1817).

vented that and took this power, this higher form of power, fire, and said, I’m giving this to mankind.

But he did much more than that. So I’d like to read the best story we have on this, which comes from Aeschylus, who wrote several plays; the only one we have left [from the trilogy] is *Prometheus Bound*.¹ This is toward the beginning of the play; Prometheus has been captured by Zeus’s henchmen; he has been chained to a rock, a stake has been put through his chest, attaching him to this rock. An eagle, which is a symbol of Zeus, comes and eats at his guts every day. And, you know, he’ll live forever, so this is his experience till the end of time. That’s how things open.

1. Translation by Herbert Weir Smyth, Loeb Classical Library, Vols. 145 & 146; Cambridge, Mass., Harvard University Press (1926).

And the Chorus comes to visit, and here’s what Prometheus says:

“You ask why he torments me, and this I will now make clear. As soon as he had seated himself upon his father’s throne”—Zeus overthrew his father Kronos, and then became the head honcho—“he immediately assigned to the deities their several privileges and apportioned to them their proper powers. But of wretched mortals he took no notice, desiring to bring the whole race to an end and create a new one in its place. Against this purpose none dared make stand except me—I alone had the courage; I saved mortals so that they did not descend, blasted utterly, to the house of Hades. This is why I am bent by such grievous tortures, painful to suffer, piteous to behold. I, who gave mortals first place in my pity, I am deemed unworthy to win this pity for myself, but am in this way mercilessly disciplined, a spectacle that shames the glory of Zeus.

Chorus: Iron-hearted and made of stone, Prometheus is he who feels no compassion at your miseries. For myself, I would not have desired to see them; and now that I see them, I am pained in my heart.

Prometheus: Yes, to my friends indeed I am a spectacle of pity.

Chorus: Did you perhaps transgress even somewhat beyond this offence?

Prometheus: Yes, I caused mortals to cease foreseeing their doom.

Chorus: Of what sort was the cure that you found for this affliction?

Prometheus: I caused unseen hopes to dwell within their breasts.

Chorus: A great benefit was this you gave to mortals.

Prometheus: In addition, I gave them fire.

Chorus: What! Do creatures of a day now have flame-eyed fire?

Prometheus: Yes, and from it they shall learn many arts.”

Mankind Before Prometheus

Prometheus goes on to describe what mankind was like, before he had the Promethean gifts to mankind:

Prometheus: Still, listen to the miseries that beset mankind—how they were witless before and I made them have sense and endowed them with reason. I will not speak to upbraid mankind but to set forth the

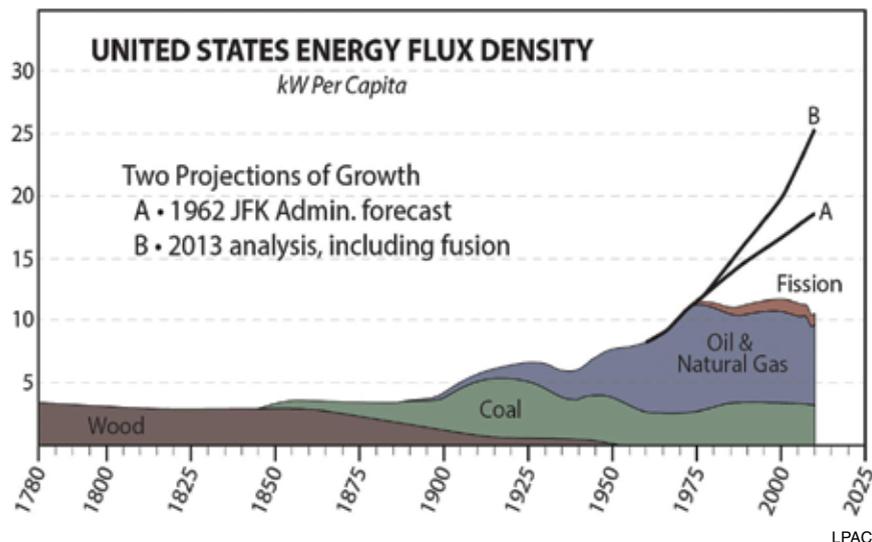
friendly purpose that inspired my blessing. First of all, though they had eyes to see, they saw to no avail; they had ears, but they did not understand; but, just as shapes in dreams, throughout their length of days, without purpose they wrought all things in confusion. They had neither knowledge of houses built of bricks and turned to face the Sun nor yet of work in wood; but dwelt beneath the ground like swarming ants, in sunless caves. They had no sign either of winter or of flowery spring or of fruitful summer, on which they could depend, but managed everything without judgment, until I taught them to discern the risings of the stars and their settings, which are difficult to distinguish.

Yes, and numbers, too, chiefest of sciences, I invented for them, and the combining of letters, creative mother of the Muses' arts, with which to hold all things in memory. I, too, first brought brute beasts beneath the yoke to be subject to the collar and the pack-saddle, so that they might bear in men's stead their heaviest burdens; and to the chariot I harnessed horses and made them obedient to the rein. . . . It was I and no one else who invented the mariner's flaxen-winged car that roams the sea. Wretched that I am—such are the arts I devised for mankind, yet have myself no cunning means to rid me of my present suffering.

Chorus: You have suffered sorrow and humiliation. You have lost your wits and have gone astray; and, like an unskilled doctor, fallen ill, you lose heart and cannot discover by which remedies to cure your own disease.

Prometheus: Hear the rest and you shall wonder the more at the arts and resources I devised. This first and foremost: if ever man fell ill, there was no defense—no healing food, no ointment, nor any drink—but for lack of medicine they wasted away, until I showed them how to mix soothing remedies with which they now ward off all their disorders. . . . Now as to the benefits to men that lay concealed beneath the earth—bronze, iron, silver, and gold—who would claim to have discovered them before me? No one, I know full well, unless he likes to babble idly. Hear the sum of the whole matter in the compass of one brief word—every art possessed by man comes from Prometheus.”

FIGURE 1



Prometheus vs. Zeus

So, who is Prometheus? His name means “fore-thought,” that’s one thing. Think about the description of all these things that he gave mankind, just to cover them again. It wasn’t just fire, right? He said, housing—people did not build houses, they lived in caves. They didn’t know what time of year it was; they didn’t have a calendar. You couldn’t have agriculture without that. Numbers, poetry, “with which to hold all things in memory.” There wasn’t writing! Take, for example, the works of Homer, those were repeated orally. We’ve got other works, from India, for example, maintained through an oral tradition over centuries and millennia; by poetry, you could “hold these things in memory.”

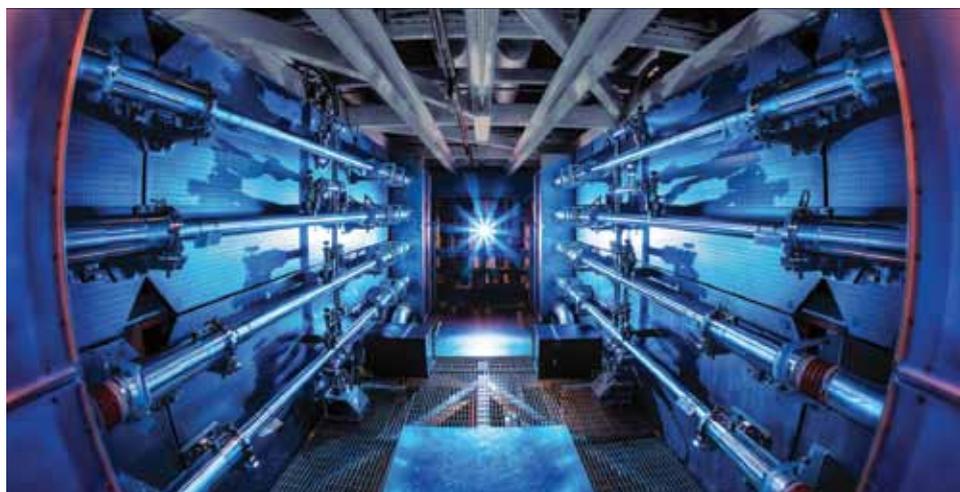
Beasts of burden, wheels, chariots, medicine, metallurgy, astronomy—all of these things, and he says, “all arts devised by man come from Prometheus,” because the ones that hadn’t yet existed, also came “from Prometheus.” That’s still a true statement.

Now let’s look at Zeus. Prometheus is real; so is Zeus. Zeus was, let’s say, the original oligarch. He wasn’t the first one, but he was the prototypical oligarch, keeping the masses of mankind in a degraded state, unable to use the kinds of powers and knowledge that he has. That’s your clearest definition of an empire. And it’s happening right now: Zeus is at the helm again.

So, let’s look at different kinds of fire (Figure 1). This is a chart of the use of energy per capita in the United States over our history. The different colors go from wood, to coal, oil, and natural gas, and that red sliver at the right is nuclear fission.

FIGURE 2

Lawrence Livermore Fusion Experiment



National Ignition Facility/Lawrence Livermore Lab

You can see, over time, we've had two things happen: one, an overall increase in energy use per capita, and two, a change in what the basis of that energy source is. We don't use more energy today because we burn more trees than our pioneer ancestors did. We burn *fewer* trees! We have more forests now than we did 150 years ago because we're not using them constantly for heat, and to make charcoal and other things.

Coal: The introduction of coal, that was a higher power—we've got coal, oil, and natural gas; we've got fission, and then what happens? Over the past 30 years—over the past, more like 50 years, since the killing of Kennedy—things still moved forward, but the trajectory shifted at that point; we haven't had this continued growth. The energy per capita hasn't increased, and where's the new source? Where's fission?

President Kennedy believed it would be up to where you see the letter A, at this point, in terms of our power use, and that would be due to increasing use of fission. Didn't happen. B is where we might be today, had we developed fusion.

Let's talk about how this happens. Here's one experiment on this (**Figure 2**). This is part of the Lawrence Livermore experiment to create fusion.

Thermonuclear fusion is the next platform for society. Unlike bears that wander around hoping to find something sitting around they can eat, *we create our food*. Malthus was wrong: The idea that we're going to run out of food because resources grow more slowly

than human population—it's exactly the opposite. I think Malthus would find that people—go back 50 years—the standard of living in a developed country was obviously far better than England in Malthus's time, despite having more people. Because people create wealth, we don't just eat it like a bear eating fish out of the stream.

The Platforms of Power

So, let's discuss these different platforms that we've got. The first one, you can talk about, let's separate it into physical, chemical, and

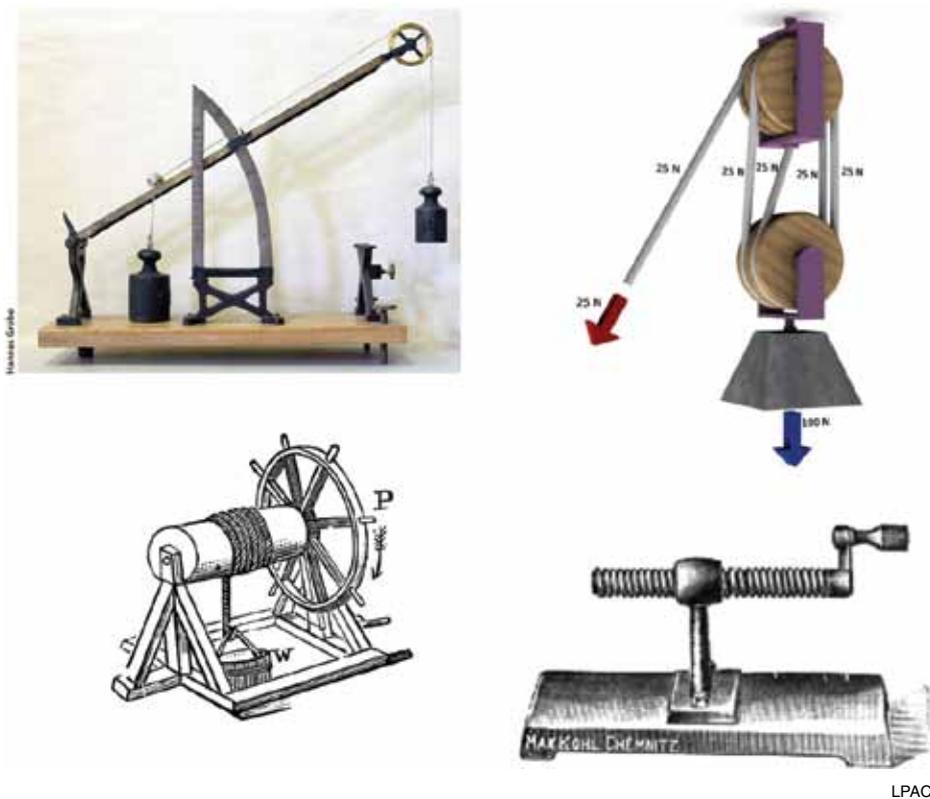
nuclear. If we look back at physical powers, these are some of the simple machines of Archimedes: We've got the screw, the pulley, the wheel, the inclined plane (**Figure 3**). These are helpful things; they let you transform motions into different directions, transform a force into different directions; with pulleys, you can lift things you couldn't possibly lift without them. So these are all very helpful, they're all physical.

If we look at the materials used in the physical era, the way we described things before chemistry or nuclear science, was in terms of physical properties: How hard is something? How flexible is it? How sharp will this rock get if I chip off parts of it with another rock? How durable is this metal?

People knew of gold a long time ago, but gold is not the most useful metal for things besides decoration—at least, it wasn't then. Color, size, density, those are the sort of things you would look at, and those were the sort of things physical machines could change. How heavy does something seem to be? When you've got a lever or pulley, it changes. You rub things against each other, you change their sizes, you change their sharpness. Things are made out of other physical things. What's a rock made out of? Smaller rocks, and you can make them by breaking them off. Or maybe dust. But that's what it was.

With the development of chemistry, we got a whole new capability of power, a whole new Promethean power, and a whole new vocabulary. This first came up with what Prometheus had described there as the "gifts of the metals beneath the earth." The first one of these,

FIGURE 3
Archimedes' Simple Machines



the first major one, was malachite. Malachite's a blue-greenish rock (Figure 4).²

It looks like a rock, it doesn't look like a metal. People knew what metal looked like. You can find bits and pieces of copper; gold, you can find bits and pieces of, just in the earth, on the ground. But this blue-green rock, if you cooked it, if you heated it in a special kind of fire made with charcoal, it wouldn't melt, it would turn into metal. That's not a physical change. You can't grind one rock with another rock, like you grind your cornmeal; you can't lift a rock with a pulley, you can't twist a screw against it; you can't put it on an inclined plane; you're not going to scrape it; you're not going to chip it—you can do all of those things to malachite—it's not going to turn into copper. Yet, the first chemical machine was metallurgy. That's the first simple *chemical machine*.

And then, the really huge breakthrough in using Prometheus's fire in a whole new way—because it had

2. See "New Paradigm for Mankind," Jan. 15, 2014 (<http://larouchepac.com/node/29507>).

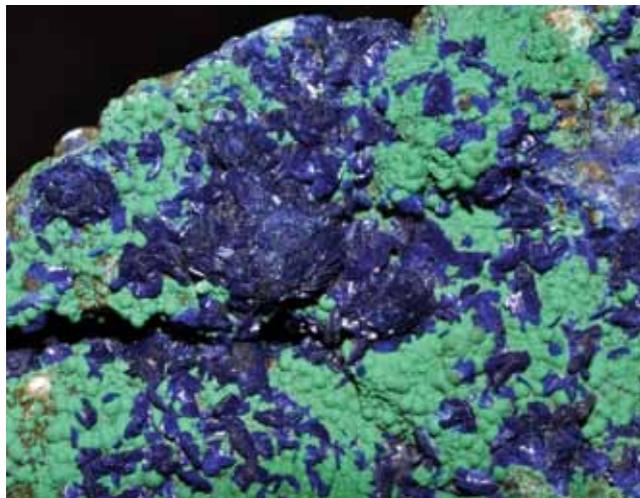
its applications in the Stone Age already—you could harden rocks with it. If you boil wood in water, you can bend it more easily for making baskets and things like that. You can cook food, of course. There's a lot of things you can do with fire—scare away animals that might eat you, that sort of thing.

With the chemical use of fuel, which we saw with coal in that chart, with the steam engine, we're now using a property of this rock, coal—we're not using how heavy it is, we're not using the fact that it's black, we're not using the fact that you could draw on another stone with it, and write with it if you felt like it. We're not using that it's sharp, or that it's durable. We're burning it. We're doing something total different with it. By burning that, and using that heat, boiling steam, using it to push pistons at first or tur-

bines and other things later, we're able to use this new form of fire, and *totally* transform what we did.

This is the first freedom from the Sun and muscles.

FIGURE 4
Malachite



NASA

There are water wheels for mills and things, but the steam engine is a *total* transformation. Just as a comparison, the energy that you get from burning 1 kg (2 lbs) of coal, using it in a steam engine to run a factory, or today, we're using it to make electricity—but let's use it in terms of a factory, the amount of motion that you can get from a steam engine, from burning 2 lbs of coal. That's the same as if you had 200 *one-ton* bricks of coal, each raised to the height of a person, and let's say that they're all sitting on top of levers or pulling on pulleys or that sort of thing: 200 *tons* of coal, falling through the height of a person, would be able to give the same amount of push, or to spin that axle the same amount, as burning just 2 lbs of it: It's a *million* times more powerful. You could think of it that way.

Now, that sounds silly—you wouldn't do that with coal. But we do it with hydro plants all the time. A huge amount of water has to go through a plant, a lot more than the amount of coal that you burn.

Chemistry's New Vocabulary

With chemistry, we've got a whole new vocabulary. Our understanding of the world is totally transformed. Chemical properties came to exist. For example, diamond and coal don't look very much alike; in fact, they don't really look anything alike! Except that neither looks like a metal, but other than that, one is clear, one is black; one's hard, one's not very hard. Their conductivities of heat are very different, their electrical conductivities are very different, their densities are different. There's really nothing in common about them in the physical world. In the chemical world, we would now say, oh, they're both made of different arrangements of carbon.

What's carbon? Carbon's not clear, and it's not black; it's not a resistor and it's not a conductor; it's not a dense material and it's not a light material. Carbon is a potential to participate in chemical transformations and compounds. So a whole new vocabulary has to exist for these chemical properties, like things like enthalpy, which is the amount of heat evolved in combining atoms into molecules; or valence, related to the electrical potential of different elements. The word "element," the idea of breaking down, Mendeleev laying out the table of the elements, something periodic about the nature of matter. "Atomic mass." So there's a whole new vocabulary that simply doesn't appear in the physical world. You don't think about what the atomic mass of a rock is; it doesn't have one. There isn't a "valence"

for wood. Those are chemical properties.

To move ahead to nuclear, once again, we're looking at a whole new domain of matter. We're both getting smaller, and we're getting more powerful. So the first form of nuclear power we're able to use, this nuclear fire, this new Promethean ability, is fission, which is breaking apart large nuclei into smaller pieces.

If you've got some uranium, you see that there's a difference between radiation, which just makes rocks get warm, and what happens in a nuclear power plant. Nuclear power plants don't operate by radiation—that's when elements emit a little bit of energy—it's not very much. What we do, is we speed that process up by a nuclear configuration that causes a process to occur where these nuclei start to break apart and shatter, instead of just emitting things. That's what fission is. That's a million times more powerful than coal. If you have a pound of coal, and you have a pound of uranium, you get a *million* times more out of that pound of uranium. It's as much of a difference, as using rocks to push on levers, or rolling them down a hill so that they'll push a wheel at the base of the hill, and spin something for a factory, compared to burning them in a steam engine. Uranium is exactly a comparable shift in terms of its being six orders of magnitude more powerful.

The other way, fusion, the combining of elements, think about this: Many of the fusion experiments today are based on trying to fuse deuterium and tritium; those are two kinds of hydrogen. If a chemist combines two hydrogen atoms, what do they get?

Deniston: Hydrogen?

Ross: They get H₂, they just get normal hydrogen gas, like you fill the *Hindenburg* with. That's all you get, if you combine them chemically.

You combine those *same two things*—instead of normal hydrogen, let's say, deuterium and tritium, but you can combine them chemically as well, if you combine them in a nuclear way, you now get a million times more out of that combination than a chemical combination. Totally different way of operating on these things.

The last thing to say about this, and about helium-3, which makes it so important, is that helium-3 really represents a higher level than fusion, and we don't really even have fusion right now. We have it in bombs, and those haven't been used for peaceful purposes, or useful purposes, as of yet, but helium-3 takes us to another level. Because in today's nuclear plants, the way we get the energy is, we've figured out this very clever way of getting these nuclei to hit each other with neu-

trons and split apart, and hit neutrons to other nuclei, and, in the end, all it does is get hot. In the end, it works just like a coal plant: It gets hot, it heats up a working fluid like water, it boils it into steam, it blows through a fan and makes a shaft spin—that’s all you’ve got, that’s all we do right now.

With helium-3, because we’ll be able to produce products which are charged, we’ll be able to directly create electricity, we’ll be able control the output of this, we’ll actually be having a *nuclear* power plant, a nuclear technology. Right now, it’s physical nuclear, it’s still based on heat, this physical property. Boiling water, that’s physical, it’s not even chemical, and we’re still tied to this right now. It’s silly.

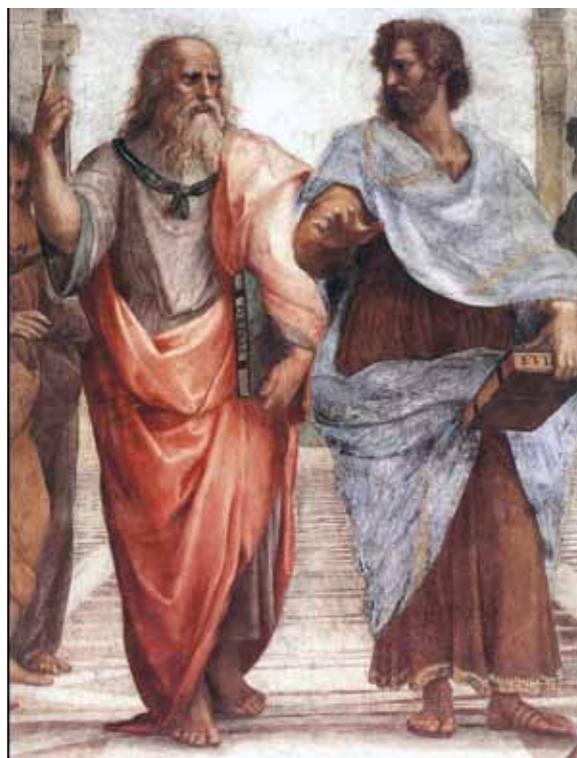
So, the question all of this raises, is well, how did we do that? First off, this is a characteristic of the human species. We don’t have fixed resources, we don’t have a fixed carrying capacity. LaRouche uses the metric of potential relative population density as a measure of economic value. He says, if your society is acting in a way that the *potential* relative population density—the number of people you can support in a certain area—if you’re acting in a way where that’s increasing at a growing rate, then you’re contributing economic value to society. Economic value is not about what people are willing to pay for whatever they’re willing to pay for. Economic value is not about how much the going rate is

FIGURE 5
Nuclear Isotope for Medical Testing



NASA

FIGURE 6
Aristotle and Plato, The School of Athens (detail)



From Raphael's great fresco in the Vatican (1509).

for a prostitute in Las Vegas; it’s about how are you changing society to be part of this process, this human process?

So, in case you’re wondering about this image (Figure 5), this is the production of a certain kind of nuclear isotope for medical testing. This actually is a nuclear application, unlike our power plants, which still just create heat.

Plato vs. Aristotle

So, how do we do make this all happen? How did this discovery occur? These two men have *very* different views of this (Figure 6). This is the center of Raphael’s painting “The School of Athens.” On the left you have Plato, or, you have Leonardo da Vinci, who is standing in for Plato; and on the right you have [a portrait of Michelangelo] as Aristotle.

And Raphael definitely got something about these two guys. If you want to compare: they’re wearing different colors, I don’t know what you can say about that, but they’ve each got their hands in a certain position, they’ve each got their books in a position, and you can see their feet in a position. You can see Aristotle’s really nice sandals and his gold-fringed clothes there; you can see Plato is barefoot. But you see their positions—take a look: Plato’s feet—he’s walking forward; Aristotle’s not walking anywhere. That’s the way you stand when you’re staying put. And he can’t walk anywhere, because this book he wrote, that he thinks is so

smart, is standing right in front of his leg. So he's not going anywhere. Plato's carrying his knowledge with him and moving forward. Plato's pointing up. Aristotle is either trying to keep away people who are demanding his autograph, or he's saying, "Nope, reality's down here." This painting is a very accurate portrayal of these two guys.

So this is a very important distinction. It comes to us today, even if you haven't heard of these fellows, the fight between these two methods, which is a Promethean and a Zeusian method—you know, they're not just two "Greek philosophers." That's like saying Beethoven and Hitler were "both Germans." (Well, actually Hitler was Austrian.) Anyway, but you know—they're totally different people.

This is a quote from Aristotle on maybe the aptly named *Posterior Analytics*. He talks about how do we discover things, how did all this happen, how do we change this energy-flux density? How do we figure out nuclear power? How do we figure out metallurgy? Aristotle says, "We have already said that scientific knowledge through demonstration is impossible, unless a man know the primary immediate premises." So it's already about words and language. "How does man know? . . .

"We must possess a capacity of some sort which is at least an obvious characteristic of all animals, for they possess a congenital discriminative capacity, which is called sense perception. . . .

"So our sense perception comes to be what we call memory and out of frequently repeated memories of the same things develops experience; for a number of memories constitute a single experience. From experience again . . . originates the skill of the craftsman and the knowledge of the man of science. . . ."

It sounds more like he's talking about how you train a dog—that experience and knowledge come from frequently repeated memories, from doing the same thing again and again. You can certainly learn things about how to do various technical skills and things that way, but where does the man of science come from? How's the discovery come out of that?

Well, here's another quote from Aristotle in his work *De Anima (On the Soul)*, where he explains what it is that makes human beings different, and it's not just that we walk on two feet and don't have feathers. He

FIGURE 7

Aristotle Contemplating a Bust of Homer



Rembrandt (1653)

says:

"Since, according to common agreement,"—and there's no better way to know things than "common agreement"—"there is nothing outside and separate in existence from sensible spatial magnitudes, the objects of thought are all in sensible forms, both abstract objects and all the states and affections of sensible things. Hence, no one can learn or understand anything in the absence of senses, and when the mind is actively aware of anything, it is necessarily aware of it along with an image, for images are like sensuous contents. . . ."

("No one can learn or understand anything in the absence of the senses," so, what makes our senses special?)

Aristotle says: "While in respect of all the other senses, we fall below many species of animals, in respect to touch, we far excel all other species in exactness of discrimination. That is why man is the most intelligent of all animals."

Here you see, this is a painting of Aristotle using his technique to discover how Homer thought (**Figure 7**).

He's feeling his head. I think that's probably one of the big problems with education. He would say, if only more people felt Albert Einstein's hair, we'd have a lot more physicists today who could do things! So, here he is: Look at his eyes. He looks kind of sad and clueless, so he's looking at Homer's head and he's feeling Homer's head. It looks kind of like Homer [who is blind] is looking at him, and thinking, "Keep your hand off me, you creep!" This is a painting by Rembrandt ["Aristotle Contemplating a Bust of Homer"]. It's in New York at the Metropolitan Museum of Art.



Socrates (second from right, as depicted in Raphael's "The School of Athens"), taught that the soul has the ability to know the truth, and that it can be elicited through "recollection."

So, according to Aristotle, we have this magnificent sense of touch; that's pretty silly. That we only learn things by repeated experience, that we have understanding in terms of the senses. And Aristotle's view about proof, or knowledge, or demonstrations comes from syllogisms, which are—well, it wouldn't be right to call them word games, but logic. That's the basis of his understanding: logic, that we combine thoughts that we have in a way that's not surprising, and then we come to new conclusions. That's Aristotle.

Socrates: Where Do Ideas Come From?

Let's look at Plato; he has a different view. Plato is the man who wrote down the dialogues that Socrates appears in, as a character. The *Timaeus*, which is the book that he's holding in his hand, is a dialogue in which Socrates has a discussion with other people. Socrates is a real person, but he appears as a character in Plato's dialogues—that's how we know of him.

So, Socrates (or Plato) would say, "Well, how does an idea like equality come into the mind? You never experience two things being equal, where did that come from? Was that already there? How do you induce, by repeated experience, a new concept? If you experience something, in a certain way, using a certain language, looking for certain things, and you do it repeatedly, where is the language for a new concept going to come from? Where's metaphor going to come in? It won't.

So I'm going to read a short section from *Meno* dialogue, in which Socrates is speaking with Meno about exactly this topic. Socrates tells Meno that he's going to explain to him an interesting theory that he heard from somebody. Here's Socrates [translation by Benjamin Jowett]:

Socrates: The soul, then, as being immortal, and having been born again many times, and having seen all things that exist, whether in this world or in the world below, has knowledge of them all; and it is no wonder that she [the soul] should be able to call to remembrance all that she ever knew about virtue, and about everything, for as all nature is akin, and the soul has learned all things; there is no difficulty in her eliciting, or as men say learning, out of a single recollection—all the rest, if a man is strenuous and does not faint; for all enquiry and all learning is but recollection. And therefore we ought not to listen to this sophistical argument about the impossibility of enquiry: for it will make us idle; and is sweet only to the sluggard; but the other saying will make us active and inquisitive. In that confiding, I will gladly enquire with you into the nature of virtue.

Meno: Yes, Socrates; but what do you mean by saying that we do not learn, and that what we call learning is only a process of recollection? Can you teach me how this is?

Socrates: I told you, Meno, just now that you were a rogue, and now you ask whether I can teach you, when I am saying that there is no teaching, but only recollection; and thus you imagine that you will involve me in a contradiction.

Meno: Indeed, Socrates, I protest that I had no such intention. I only asked the question from habit; but if you can prove to me that what you say is true, I wish that you would.

Socrates: It will be no easy matter, but I will try to please you to the utmost of my power. Suppose that you call one of your numerous attendants, that I may demonstrate on him.

Meno: Certainly. Come hither, boy.

Meno calls one of his slave boys for this demonstration, where Socrates has said that learning is actually recollection. That, in a certain sense, the soul already knows everything, and that you don't get taught by something being pushed into your soul from outside, but that you have to elicit it. That learning is this recollection.

He demonstrates it with this slave boy, by going through a geometrical problem, which I'm not going to spoil by going through it, if you haven't seen it yet, but he shows that this boy, despite not having any knowledge of geometry—Meno didn't have his slaves take geometry classes—he found out an actually tricky geometrical demonstration. And Socrates demonstrates that by the time the boy comes to discover what the answer is, to figure things out, that that boy's knowledge that he's right, his *ability to have the conviction in the rightness of his thought*, couldn't have come from outside. That didn't come from somebody, your teacher, saying, "Yes, and that is how you think." And everyone saying, "Oh, good, that's the authority."

Socrates says, no, the authority's from *within*; your soul has an ability to know what's right and you have to elicit it, you have to cause it to be recollected.

Cusa: Learned Ignorance

This was taken further by Nicholas of Cusa, who created the Renaissance. He brought back this method of Plato and Socrates. And what he did was look at how it is that we elicit these higher concepts. He distinguishes between perceptions; there's a language of perception, there's a world of perception, there are state-

ments about perception, but none of them are about *why* anything happens. That above perceptions, there are reasons. And that it's only by the contradictions in our perceptions, that we come to know the reasons—not by the repetition of our perceptions, allowing us to make an induction about what other perceptions we might have, which is what Aristotle said.

So, Cusa says in his *De Docta Ignorantia*: "It is not the case that by means of a likeness, a finite intellect can precisely obtain the truth about things. For truth is not something more or something less, but is something indivisible." You don't get close to the truth in a more or less way, it's its own thing. "Whatever is not truth, can not measure truth precisely. Hence the intellect, which is not truth, never comprehends truth so precisely that truth can not be comprehended infinitely more precisely."

In another of his works, *De Beryllo*, which means *On Beryl*, which is what's used to make eyeglasses, so it's sometimes translated as "On Intellectual Eyeglasses," here's what Cusa has to say about the relation between perception and knowledge:

"Therefore, the diversity of perceptible objects is proportional to the power of the cognitive nature in the human senses, which partake of the light-of-reason that is united to them. For perceptible objects are the senses books; in these books the intention of the Divine Intellect is described in perceptible figures. And the intention is the manifestation of God the Creator. Therefore, if regarding any given thing you are puzzled as to why it is such and such or why it exists in the way it does, there is an answer: namely, because the Divine Intellect willed to manifest itself to the perceptual cognition in order to be known perceptibly."

How can the Divine Intellect be known perceptibly? How can you describe something that's indescribable, using a language that's not adequate to describe it? How do you go about trying to do that? Cusa tells us:

"For instance, why is there in the perceptible world so much contrariety? You are to reply: 'because opposites juxtaposed to each other are more elucidating, and because there is a single knowledge of both.' Knowledge in terms of the senses is so weak that without contrariety the senses could not apprehend differences. Therefore, each of the senses desires contrary objects, in order better to discern."

This leads to the final point on this, which is about LaRouche's concept of metaphor: that we evoke knowl-

edge in others, we cause this kind of learning, we do this kind of communication and this kind of discovery, by contradictions. Aristotle said that one of the bases of reason is that A and not-A cannot both be true; but they can. I used the example earlier of a circle that seems to have an infinite number of sides, like a polygon of an infinite number of sides, and also seems to have no sides. That lets you know that trying to use that sort of language is inadequate. Our understanding of quantum phenomena is inadequate, a particle and a wave are contradictory phenomena. You can't put them together: *They give rise to contradictory expectations.* That means that the language we're using is below what's necessary; it means we've got a discovery still to make.

This is what Kepler did, when he took the vicarious hypothesis, just like Socrates does in his dialogues; Kepler used it in his astronomical work, to show all the other astronomers that they had to listen to him. To shake them up, he took their mathematical approach, their geometrical approach, and showed that it gave two contradictory indications for a certain astronomical distance, the distance of the center of Mars' orbit, from the Sun. He showed that two equally valid ways of trying to determine that distance, supposedly equally valid, gave different distances. He said, well, if our understanding was right, then we wouldn't be getting these two different distances. I think what Cusa said here is, "Whatever is not truth cannot measure truth precisely."

So, Kepler used that to say, we need to move to a higher level, we need to look at a physical cause of the motion of the planets. That's the whole way that we do things.

Now Cusa goes a little further than Plato on this, in emphasizing the role of mankind as a creator, and this goes back to Prometheus. The soul's recollection, as a metaphor, as a way to describe that our minds aren't blank slates, like Aristotle thought, that there's a disposition to thought in our mind, that the ideas certainly



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Richard Dawkins (right) believes that man is an animal; that it would be immoral to give birth to a child with Down Syndrome, but that cloning humans is fine.

don't come from without; they don't come through our senses; they don't come from things that we get from the outside world: They're created within the mind. That's definitely true.

The Antithesis: Richard Dawkins

Now, what does that mean about the practice of science? I have a quote from an awful person on this, Richard Dawkins, who wants to kill all fetuses with Down Syndrome—or he doesn't really want to, it's up to you, he'd just hate to make a decision for you, but if it was up to him it would be immoral to give birth to a child with Down Syndrome.

This is from a 1997 article that he coauthored on why cloning humans is just fine. He says: "As far as the scientific enterprise can determine, *Homo sapiens* is a member of the animal kingdom. Human capabilities appear to differ in degree, not in kind, from those found among the higher animals. Humankind's rich repertoire of thoughts, feelings, aspirations, and hopes seems to arise from electrochemical brain processes, not from an immaterial soul that operates in ways no instrument can discover."

Now, it's just irresponsible and kind of shameless for any scientist after Gödel to make any statement like this—that the functioning of the mind, which operates in a way that creates new language, creates metaphors, and goes beyond any logical system, that the characteristic of the mind, can be explained in terms of

processes which are presumed to be understood in terms of rules that are logical systems. I mean, since Gödel, you've got no shame if you try to claim anything silly about the mind being only a combination of chemicals.

So in terms of where this takes us, in terms of where we are in history right now, the need for a revival of the Promethean outlook, take the case of morality. Many people look at morality in terms of a list of do's and don't. We've got a famous list of ten of them, for example; we've also got affirmative ones, "Treat others as you would like to be treated," "Don't cut in line," etc. But true morality requires that you put your life in the broadest context: that we're all actors on the stage of history; that there's no special gene that Abraham Lincoln had, or something like this. Historical individuals take on an historical identity and choose to look at themselves, and locate themselves on that level: In that case, morality requires not finding that list and adhering to it, *it requires writing new rules to that list*. Morality can require doing things you're not capable of doing.

Right now, history is demanding that a great number of us do things that we're actually not capable of doing. So we can measure this morality. As I said earlier, Lyndon LaRouche uses potential relative population density as a good measure of that. That a society that's not increasing in that way will fail to exist, for physical-economic reasons, and for cultural reasons; that that humanity of ours is being rejected.

Promethean Freedom

I want to end with a provocation on this, about freedom. That we get different kinds of freedom. People might think of "freedom *from*..." "You can't tell me not to do X; you can't tell me I have to do Y; I'm free from you!" You know Franklin Roosevelt's "Four Freedoms," the "freedom to..."—well, he also had "freedom from...": "Freedom from Want, Freedom from Fear." What about the freedom *to* live a happy and productive life? What about the freedom to be able to make it in the world? What about the freedom to be healthy? What about the freedom to live a long time? What about the freedom from error? What about the freedom from living in an arbitrary way? What about the freedom from uselessness? What about the freedom from the fear that your life might not have meant anything?

How about being free from oligarchy?

So, the last thing I wanted to say was that, what

seems like a contradiction between science and culture but really is an important thing, which I don't know how much we're going to get into today, but, in science, it's indubitable that there is a metric outside of what we feel like thinking. You do experiments—is what you're trying to make happen, does it happen or does it not? Okay, maybe you can figure out if you're right or wrong, by testing things out. Are those things that we discover, created by us, or are they already there?

Another question would be about the practice of science: Are we creating that, or is that already there? Was the process of discoveries as they've come about, was that necessary? Or was that free, was that created by us?

Then in music, we definitely create new things, but there's been an attempt to destroy culture altogether and remove what Beethoven expressed very simply in his instructions in his *Grosse Fuge*, his *Great Fugue*, he wrote for the instructions, "*So streng, wie frei*"—"As rigorous as it is free."

So there is a freedom in holding yourself to lawful standards. There is a freedom in recognizing that culture isn't arbitrary. That's a very *liberating* realization to make. Music is not just what people happen to like, or not, but there are laws to what works in music, and to what form culture ought to take. And that's a real freedom; that's Promethean freedom. Not the freedom to do whatever you want, but the freedom to improve, to be "as rigorous as you are free" and it's a real blessing that we have to be able to look back to that culture, claim that as our own, and to move forward with it.

Megan Beets: Yes, I think it's a crucial point that what you're really getting at, is that, you said at the beginning of your presentation, we're facing the potential to create the greatest renaissance in human history, and that is inherently Promethean, as are all renaissances. And it really does point to the unique capability, the unique powers of the human species in the universe. I was provoked by what you went through, and I was thinking, as you went through your presentation, about the relationship of music and culture to all of this. Because what you're really describing is a process of *mind per se*. Not of the senses, not of the biological characteristics of humans as a certain species on planet Earth, but that, what you've identified, is that there is a process of *mind per se*, and of *creativity per se*, which is beyond all of this.

What's the relationship of that to what's been developed in the human species as a musical culture, or a

culture of Classical composition? And I was thinking about the horrible culture today, where the idea is that music is just sound, and it's "my preference," I like this set of sounds, I don't like this set of sounds, you like that, I like this, and so forth. But that is a totally degraded idea of culture.

And if you go back to a better time in human history—take for example the tradition of music coming out of the Renaissance, of Bach through Brahms—and you take that tradition and then, as that continued into the great conductor Furtwängler, you had an absolute commitment to the idea of the progress of the human mind's capacity to apprehend concepts which are indescribable, as you said earlier. That the development of the human mind's power to apprehend these profound, unspoken concepts, and then to be able to express those in a language that other people can participate in—and I think that's the key thing: The power of poetry and the power of music is the development of this capacity to apprehend something which has never been apprehended before, express it, and allow others to participate in that process of creativity itself.

And that's music. Nothing outside of that is music, and there was a sense of the tradition from Bach through Brahms, and then into Furtwängler, of actual progress in that, that music is a real power being expressed by mankind, and we were coming to a higher and higher, more developed form of that. And that really is the standard that subsumes it all, and I think you expressed it well, that if people talk about science versus culture or something like that—there really is no separation. But you are talking about the highest development of this capacity of the mind.

Ross: Yes, and are you trying to go somewhere with it? Sometimes it's tougher with music that doesn't have words. A play where people are saying things—that's I think a little more approachable sometimes: I thought of a couple of Schiller examples of ennobling—like the actual stories of *William Tell*, for example, or his *Maid of Orleans* on Joan of Arc. Or his poem "Sehnsucht," set to music by Schubert. To sing that song, requires a challenge to be able to actually convey that honestly. You have to become somebody that you're probably not, just coming into that song, to be able to really convey it, to actually say that, and do it right musically, to really get it across.

It's not that challenging, ennobling, or uplifting, to sing some song about how you been dumped and you're

mad about it, or you know, you enjoy Summertime or, I don't know, you're mad at somebody and you want to shoot them. That doesn't require a lot; that doesn't require you've got to really get into it, to be ready for this performance, because you're not sure if you're "up" to representing that character, representing that person to the audience. "Is that really me? Can I really represent that? I don't know if I'm that good of a person." You don't have that trouble when you're singing about trite, everyday things.

There are people who *try* to create culture and improve it. And we've got these people who acted deliberately to uplift people with it, with a higher concept of music and of humanity; so people like Bach, like Mozart, like Beethoven, like Schiller, like Shelley, like Keats—these are people who *had an intention!* They weren't just making music for sounds, they had goals. Mozart was a political guy, for example! He wasn't the only one among those; obviously, Schiller, they all were, to varying degrees, based on the times they were in. But culture should be part of your whole culture: Where are we trying to take mankind? Where are we trying to go? How are we trying to improve ourselves in our society? And we've got poets and musicians and playwrights, they can play a very powerful role in that, in improving and ennobling our self-identities.

And it's not that it's just a bad job that's being done right now, for the most part—I don't think that's the conception or intention of a typical musician.

Freedom, Again

Deniston: This point you made about freedom, I think could be drawn out, just from the example you gave in the beginning. You know, freedom being tied to human creative development, being the essence of what you're dealing with, and these examples you gave, and drawing out the language, I think is really helpful, too. You're talking about the whole domain of physical activity, the whole physical platform, and how the moving to a chemical domain required completely new *discoveries*, and a completely new language culture to go along with that. But it also gave new freedoms, that didn't exist, in the lower domain.

When you're talking about real freedom, you have now completely new domains of action that you're free to take, which you couldn't access before. Now that's freedom, and there's a culture that goes along with, as



“The power of poetry and the power of music is the development of this capacity to apprehend something which has never been apprehended before, express it, and allow others to participate in that process of creativity itself,” said Megan Beets (center). Left to right: Jason Ross, Beets, and Ben Deniston.

you’re saying, that develops those capabilities, that allows society to be able to do those types of actions, to take those new steps into areas that give you fundamentally new, entire domains of what you call freedom, or potentials for action.

Ross: Like freedom from polio, like freedom from smallpox. You know, those are even better freedoms than—I don’t know, some other freedoms you might be thinking about.

Beets: Yes, but I think the Beethoven quote that you raised is very appropriate: “As rigorous as it is free.” And I think this does bring out something which we should develop more in the future, which is this unique, seeming paradox of the total freedom of the human mind, and you think of the action of the creative artist, the action of the mind of the creative artist: It’s completely new, it’s an original action and creation in process of that human individual. And, *yet*, there’s the recognition, and the best artists had that recognition, that those processes of the mind were themselves, somehow, part of the lawfulness of the universe.

And I think the exploration of that really will take us to exploring what you brought up: How does man move to do those things which have never been done before? How does man move to achieve something which was unthinkable before, impossible before? Well, the mind

has to be able to operate and somehow has to have the power to think, that which it couldn’t have thought before, which means you’re really going beyond language, you’re going beyond what can be expressed now.

I was thinking about Percy Shelley; that was the basis of his essay, “A Defense of Poetry,” the recognition that the mind is reflective of the lawfulness of the universe, and that the most powerful poets could take that and actually turn it into language. And that, I think, really does get at the crux of that, that’s something we have to develop.

Ross: Yes, that is a very free moment, that creative mind-state. First off, that’s when people are really most themselves, because you’re creating yourself, as you’re doing that—that’s you, you’re making yourself. This isn’t something you got from the neighborhood you grew up in, middle school, and the TV shows you happened to see, etc., etc., etc. That’s you being able to really be—that’s what’s most *you*.

And on this issue of truthfulness, you know, music itself, musical statements, It’s just, again, it’s so much easier when there are words, like somebody writing some poem about how people are a pox on the Earth and we need to take better care of Gaia, and whatever. You know, I don’t care if it rhymes nicely, and their use of alliteration is just divine—what they’re saying is wrong!

That’s the other thing: Is what you’re saying actually right? Now that gets harder to recognize sometimes, if you don’t get into it in music, that there are musical ideas, there are musical statements. Like when Stravinsky says something, he’s not using words, he’s speaking with some violins, or whatever, and some drums in the *Rite of Spring*—he’s saying something, and he’s completely wrong! He sounds like an idiot! He sounds like an *insane* idiot! It’s like listening to a crazy person ramble on, and people sitting in their seats listening to that. You wouldn’t do that, if somebody were *saying* something that was actually, patently absurd.

(Actually, people do that all the time, they listen to speakers saying stupid things.) But it's like that, musically, too. Even when there aren't words, you can still be saying something stupid, or you can be saying something just like that ennobling Schiller poem, set by Schubert, you have to become somebody to perform that, the same challenge exists in music that doesn't have words.

Beets: Well, you see it, and Stravinsky said that explicitly, because he said, "I have no use for musical development," development being an actual unfolding of a musical idea, and the taking of the mind through a certain process of thought, Stravinsky himself said, "I have no use for development." And so what was he left with? The senses. Sensual impressions.

So yes, it just goes there. There is this distinction, and there is a right, human, lawful mode of culture, and there's a lawful mode of art. And that really is the source of all human progress.

Ross: Yes! And anybody watching, this might shock you. "Aw! That's fascist! You can't say music is good or bad," or whatever. Just *listen* to it. You might pretend some people like some things and some don't, but pull

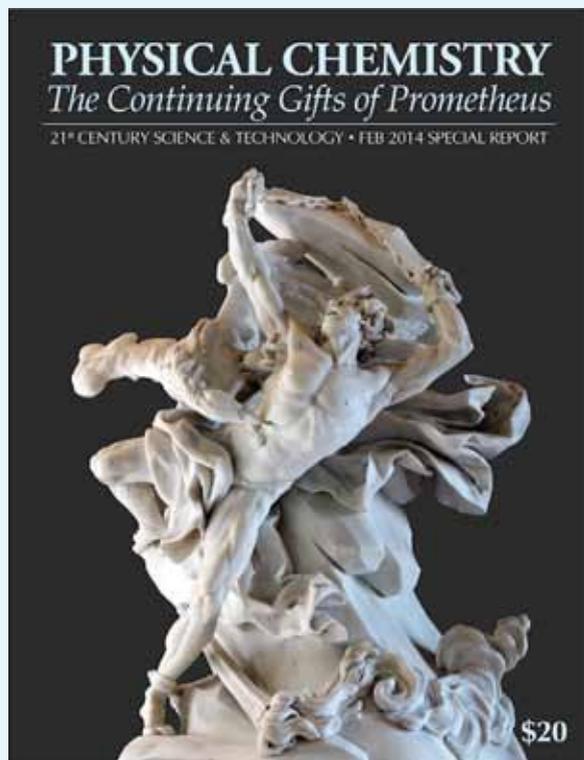
up Stravinsky's "Sacred Dance" from the *Rite of Spring*—I just think it's hilarious, I just start laughing. But I don't want to prejudice you, dear viewer. But take the "Sacred Dance" from the *Rite of Spring*, and compare it with the second movement of Beethoven's Seventh Symphony. There's a Furtwängler conducting of that on YouTube [<https://www.youtube.com/watch?v=6kNw9faABzk>]. Actually listen to those, and I think you'll find it's completely clear what the distinction is. I think you'd actually have to *try* not to get it.

Deniston: Anything else? This is quite an array you gave us here. This is very exciting.

Ross: That's it for now.

Deniston: Yes. I think there's plenty to fill out and continue. I think just to close: You had opened with the reference that people create wealth, and this is the creation of wealth, what you're going through here, this focus on the human mind, culture, the ability of the mind to generate new things: That is the source of wealth and that has to be what governs this whole new era we're going into now.

Deniston: Excellent: Thank you for joining us, and we'll be here next week with more.



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