The Gifts of Prometheus: Fusion & Physical Chemistry

This program by the LaRouchePAC Scientific Team was webcast on Feb. 1, and hosted by Creighton Jones. The video, including the questions and answers, can be viewed online.[1]

Creighton Jones: What will be presented today was spurred by certain comments by Lyndon LaRouche in the wake of the decision on the part of the Ukrainian government to reject the economic offers from the European Union, and to instead adopt and accept a proposal from the Russians. What this represented was a decision between two types of systems: On the one hand, what the European Union was offering, and what the monetarist system in general continues to offer, which is extended debt, some monetary guarantees, maybe the opportunity for the stationing of anti-ballistic-missile systems in your country, and everything that goes along with that. Or, on the other hand, what Ukraine in fact accepted, was an offer for agreements from Russia, around things like energy, physical productivity, and the like.

The kind of decision that Ukraine has faced, because of what this represents globally—we've seen that it has created a real crisis on an international level. It epitomizes the kind of decision that all nations are going to have to make—whether it be nations in Europe, whether it be the United States, whether it be China, all nations.

What Is Value?

Now, it really poses the question, as Mr. LaRouche put it, of what is value, what is survival for a nation? Is value simply a question of money, something which is determined by "market forces"? Or, is value something which is physical? Is there something deeper to the idea of value than simply what the stock market says is valuable, or what consumer interests say is valuable? And that's exactly what we're going to get into today: What, in fact, is value?

This comes up in another way, when we look at, say, the recent achievements on the part of the Chinese, who landed a rover on the Moon, and have made it very clear that their long-arching intention on the Moon is to industrialize it, to mine it for such things as helium-3. What's the value of helium-3? Why would you ever want to bring helium-3 from the Moon, back to Earth? I haven't heard Warren Buffett say anything about the value of helium-3. It's not something which is often referred to on the commodities markets.

So what is the value of helium-3?

Well, in the current market context, it doesn't have a whole lot of value; it's got minimal use. It's not something which is commonly thought of as a "valuable commodity," the way people discuss gold or diamonds. But what's the value of helium-3, in the context of, say, the development of fusion technology, of fusion reactors, capable of using helium-3 to produce energy, where it's been estimated that a single shuttle-load of helium-3 brought from the Moon to Earth, would produce enough energy to power the United States for an entire year?

1. http://larouchepac.com/GiftsOfPrometheus-Webcast

There, value has a very different kind of idea, a physical idea, an idea which is steeped in an intention for the future. It has a value which is defined not by markets, but by the human mind, and by an intention to advance humanity as a whole.

And so, the fight around the question of what is value, is a fight which is as old as the hills, so to speak—or in our case, as old as Mount Olympus. And so, with that, I'll turn it over to our speakers.

I'm joined today by Jason Ross, a member of the LaRouchePAC Science Team and editor-in-chief of *21st Century Science & Technology* magazine, and also Liona Fan-Chiang, who recently presented on our weekly science show, "A New Paradigm for Mankind," a history of the development of chemistry, and counterposed the two differing epistemological approaches to atomic physics. And she'll also be available to answer questions in referring to these topics.

So, with that, I'll turn it over to Jason Ross.

"Prometheus Brings Fire to Mankind," painting by Heinrich Füger, 1817

The 'Arts' of Prometheus

Jason Ross: As the theme of this webcast indicates, "The Continuing Gifts of Prometheus: Fusion and Physical Chemistry," we're going to be using the theme of Prometheus to guide our approach to what the value is of our increasing mastery over the physical universe, our creation of new materials, and new powers.

Many of you have probably heard the story of Prometheus. He was a Titan, who, according to Aeschylus, helped overthrow Chronos and put in place Zeus, as the new chief god of Olympus. However, you may not know that this is not a myth. This is not a made-up story, this is not fantasy; this is reality.

As Aeschylus explains this to us, in his play *Prometheus Bound*, part of a trilogy (of which we've lost the other two plays), as the play opens, Prometheus is being chained to a rock by some other gods, who explain how Zeus is punishing Prometheus for what he's done.

Prometheus expresses how the goal of Zeus had been to destroy the human race. That as he was passing out gifts to the gods, when it came to humanity, he gave them nothing, and in fact, planned to destroy the human race and send it down to Hades. Prometheus says that he was the only one to object to this; that he was the one who saved mankind from what would have been its fate. He explains this is why he's being punished.

The Chorus responds to Prometheus, that anybody who doesn't understand his plight is made of stone; that anybody who would not feel pity for what he is going through would really not be seeing things right. And that actually, most of the gods do pity him:

> **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 offense?

Even beyond saving mankind from destruction when Zeus planned to eliminate the human race?

> **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.

Now, what does this mean, "I caused mortals to cease foreseeing their doom"?

You may have heard the story of Pandora. After Zeus chained up Prometheus, he sent Pandora as a punishment—Pandora was the first woman—and she brought with her a bottle, which she was not supposed to open, but she did. And all matter of calamity came out of it, except for one thing. You may have heard that this was "hope." That's not true. If we didn't have hope, then we wouldn't have hope. Hope is an expectation of good things in the future; what was left in that jar, was the lack of free will, a foreknowledge of what your life would lead to. That's what we did not have.

Prometheus says that he prevented this from afflicting mankind by giving us unseen hopes, *by having no fixed future*. This separated us completely, from the animals, in thought already.

Since Chorus asked him, is there anything else that you have done, he responds, yes, I also gave mankind fire.

Chorus says: "Really? Do creatures of a day—mortals—do they now have flame-eyed fire?"

And Prometheus says: "Yes, and from it they shall learn many arts."

And that's what we're going to be getting into today.

Let's look at what some of these arts were. Among the arts that Prometheus has given to mankind, and that he enumerates, are basically everything that we use today. He says that although "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."

So he said, we've got construction, we've got the calendar, using astronomy, to know what time of the year it is.

Prometheus: 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 the man's stead their heaviest burdens; and to the chariot I harnessed horses and made them obedient to the rein, to be an image of wealth and luxury. It was I and no one else who invented the mariner's flaxen-winged car" (the sailing ship) "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 gone astray; and, like an unskilled doctor, fallen ill, you lose heart and cannot discover by which remedies to cure your own disease.

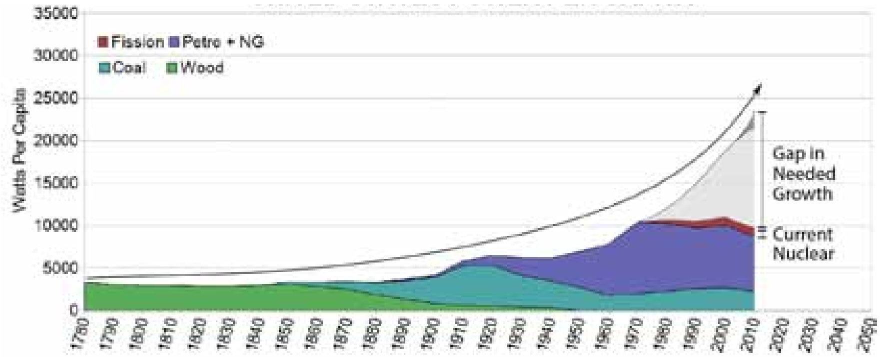
Prometheus: Hear the rest and you shall wonder the more at the arts and resources I devised. This first and foremost: if ever man fell ill, there was no defense—not healing food, no ointment, nor any drink—but for lack of medicine they wasted away, until I showed them how to mix soothing remedies with which they now ward off 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.

"Every art possessed by man comes from Prometheus."

In the story that continues as told by Aeschylus, Prometheus is visited by a number of different people. Some of them give him support, some of them tell him that he's *really* screwed up, that he's made a terrible mistake for his life; that he could have left mankind alone, he could have avoided displeasing Zeus, he could have kept the powers of the gods to be their powers alone, but he didn't. The question that comes up is: Did Prometheus err? Did he make a mistake? There are those who try to convince him that he has, but he knows better.

FIGURE 1

United States Power Per Capita



So let's get into what these gifts are and what kind of eras created them. An analysis, looking through history, shows us that the natural state of the human species is to develop, is to grow, is to be creative. And that it is only during the times of empire's control that man is held back.

So let's go through what these types of fire are: First, let's actually discuss fire.

Here you see (**Figure 1**) a chart of the uses of fire throughout the history of the United States, the amount of energy used per capita in the United States; you can see that the green is wood. We weren't using coal in the beginnings of the United States. You can see how, as the development of coal became more important, with the steam engine and things like this throughout the middle of the 19th Century, coal eclipsed the use of wood, and became the dominant energy source. Coal has much more energy per unit than does wood. It's also much more compact, and you do a lot of things with wood that you can't do with coal—you can build a house out of wood. And you can do things with coal that you can't do with wood. More on that coming up.

We then see the next type of energy source: petroleum and natural gas. Petroleum has a higher energy density than coal; you can use it in engines, we use it for transportation. You can see how it is taking over as an increasing energy source.

Then you see fission energy, our nuclear plants. You can see how that could have become our next energy, but it simply didn't. The petroleum and natural gas are decreasing slightly per capita, nuclear did not grow, and if you look at the history of the growth of these forms of fire, the amount of energy per capita that we have in the United States now, should be two to three times what it currently is!

Let's talk about why that is, why this hasn't continued, and let's look at what these uses of fire have meant for us over time.

Materials for Mankind's Use

The history of mankind is sometimes broken up into ages, named after materials: the Stone Age, the Bronze Age, the Iron Age, the Steel Age. The Stone Age should probably be called the Fire Age, however, because man's history begins with our use of fire. During the Stone Age, we had art, we had sculpture, we had the development of tools, wooden tools of course, and stone tools. We had the use of fire to harden those stone tools. We had baking, we had cooking, we had woodworking, we had sculpting, we had fabrics and weaving, so to insult this society and say this is a "stone age" society, that we're much more advanced right now—well, you have to look in the context of where mankind is. Is it progressing?

But the beginnings of human history, of our written records, go to about the time of what we call the Bronze Age. This happened around 5,000 years ago, and it began with the creation of materials.

Figure 2 is an image of copper as found in its native state. Just like you find various gems and minerals in the ground or on the ground, copper was actually found in nature. It's a metal that exists in its natural state: 10,000 years ago, human beings were turning copper into tools, beating it, shaping it, using heat to soften it, to change its shape even more, hardening it by hammering—10,000 years ago.

FIGURE 2

The other examples in this early time were gold, which was mined over 5,000 years ago; silver could also be found. So metals were known. But the real breakthrough came with the development of materials—it seems almost like a miracle!

Here I have a piece of malachite. As you can see, it's a green rock. It looks like a rock; there's nothing particularly special about this, that would make you think you could do anything with it besides maybe use it to beat something, or that sort of thing. However, you might be surprised that this is what you can make from it: a piece of copper wire.

The copper that we use in our homes, the copper wiring and everything else comes from ores, like malachite. The original development of this discovery—5,000 years ago—was the beginning of what came to be called "the Bronze Age" because of something that was added to the copper.

You could make tools out of copper, but they weren't actually better than stone tools. You had new techniques for shaping them and for forming them, and that was very good; but the actual physical qualities of copper, once you make the tool, are not superior to, say, a sharp piece of flint for cutting. The real development came from creating bronze. To do this, not only did human beings have to transform a green rock into a shiny copper metal; they also had to know that if you added tin to this copper, that you would create a new metal, bronze, which is superior to copper, and it's superior to tin. It's a material that never existed on Earth, except maybe in very small amounts, in tiny pockets; that never existed on Earth before human beings created it.

Now, what made it possible to make this transformation? Here I have a charcoal briquette, nothing too special about it. Do you know where charcoal comes from? You might say the grocery store, that's probably where your charcoal comes from—but it's made from wood.

Figure 3 is a 100-year-old picture of charcoal production. Looks like a pleasant pastime for these people! You take a large amount of wood, you put it in a pile, and then in **Figure 4**, you see what we do to it: You cover the whole pile with soil, and you burn it. Here the wood is baking, burning with very little oxygen, for two to three days under all of that dirt. After that time, when you uncover the dirt, you find that the wood is actually transformed into charcoal.

FIGURE 3

FIGURE 4

What's so good about charcoal? Well, it burns hotter than wood does; it's much cleaner than wood. When you burn wood, there are a lot of things in wood that come out of it, a lot of different chemicals, a lot of different elements. Charcoal is almost 100% pure carbon.

The Bronze Age

So, with the charcoal and the malachite, you would get beds of charcoal; you would powder the malachite by banging it up, you would burn them together for a few hours, probably blowing in air to help the temperature get hotter and help the process, and what occurs is that—people obviously didn't know this 5,000 years ago, in this way—but the carbon from the charcoal combines with the oxygen in the malachite—this is basically rusted copper—and it pulls the oxygen out of it, leaving behind the metal. This is an astonishing thing to do 5,000 years ago! It's an astonishing thing to do today. I think if you do it yourself, it's pretty amazing.

The development of bronze meant that we had created something totally new, totally more useful. The next big thing you could do with bronze, is that you could produce cast objects with it (**Figure 5**). Casting something such as a cast iron pan, means that you have melted the bronze; you have poured it into a mold, it then hardens—here you can see the bronze being poured in—it hardens and makes whatever shape you want. This was a new thing that you were able to do with bronze that was much more difficult with copper.

Okay. Let's look at the next breakthrough. Around 1200 B.C. a shift was made, where bronze sort of disappeared from use. The difficulty in obtaining the tin for bronze meant that its use declined; you often don't find copper and tin near each other, so with the breakdown of trade routes which stretched as far as the British Isles, maybe even the New World, tin wasn't available; no more bronze.

FIGURE 5

FIGURE 6

FIGURE 7

Iron Technologies

The next material that was introduced was iron. Now, iron is much more plentiful than copper. Iron ore looks like copper ore—it's not a green rock, but it looks like a rock. You wouldn't expect anything metallic to come out of it. But if you do the same process we did with the malachite, you'll wind up with what we see in **Figure 6**. This is called an "iron bloom." It's not pure iron, it's not melted, it still has impurities in it. After you heat it, you basically bang it—this guy is using a sledge hammer—you have to beat the impurities out of it. It takes a lot of work, and all that work produces wrought iron, which is very pure iron.

It's a tradeoff. Iron is much more plentiful, but it's much more work to produce it. However, since it's so readily available, fundamentally it's a far superior source for us, than copper is. (That's "shingling," the process of banging the bloom.)

Now, if we look at **Figure 7**, we can see the production of a kind of steel. Steel is iron with carbon in it; the blade you're seeing here is called "damascus steel." We actually don't know how this was made; we can't produce it any more. We produce metals that look like it, but they're not actually the same. What you do is you take the iron, you lay it on top of charcoal, and you bang the iron into the charcoal: It actually picks up carbon from that charcoal, and the outer layer becomes steel. It would then be heated, folded, again and again, maybe 12 or 15 times, to produce the metal that you see in this dagger here.

The next big breakthrough, to move ahead through metallurgy, was the use of pig iron, around 1200 A.D. It took this long, two millennia in Europe; it was used much earlier in China, but we'll focus on Europe; it took two millennia for the development of pig iron, which is when iron is heated so much that it melts. When iron melts, it picks up a lot of carbon from the charcoal around it, and it becomes hard, but very brittle. So if you have a cast iron pan, which is made from melted pig iron, those pans can crack very easily. If you bang it with a hammer, it's not going to slowly bend into a new shape, it'll just break! If you change its temperature too rapidly, it'll break. Not the most useful substance.

What made pig iron so useful that it completely replaced the earlier, very labor-intensive process of banging iron blooms to get all the impurities out (to create wrought iron). This involved the Bessemer steel process. This was around the time of the U.S. Civil War. What Bessemer did was to blow air into melted pig iron. The oxygen from the air would combine with the excess carbon, and gas out as carbon dioxide, leaving behind pure iron again, which you would then have to add carbon to, by beating it into carbon—it was a lot of work to make steel at this time!

The next big breakthroughs were the use of alloys. In the 1910s, stainless steel was developed. Stainless steel, unlike regular steel, won't corrode, won't rust, as long as you take care of it, and don't let it sit in saltwater all the time. And other things like this. We now have a huge number of different kinds of alloys, very small, trace amounts of other elements, like molybdenum, nickel, titanium: These are added to the steel to give it unique properties.

So we've really come a long way. However, in all of this, the basic understanding of the materials has always been, what is their *physical* nature? Is it hard? Can I make it sharp? How much can I pull on it before it snaps? How much can I push on it before it compresses? How much can I twist it before breaks? Physical characteristics.

Science of Transformations

The next application of fire to look at is the development of chemistry. Now chemistry really helped us both make sense of things that we were already doing, and it totally transformed the potential of what we were able to do, because we now understood not only the physical properties of things that we had made as wholes, but also how the very elements of nature would interact.

Let's take a look at Dmitri Mendeleyev's table (**Figure 8**), the Periodic Table, on the left. It does not look identical with the one on the right, which you're probably more familiar with. But what Mendeleyev had done was to decode matter, to understand two very important things. One was that elements are not materials. For example: Charcoal is made out of carbon; diamonds are made out of carbon. Charcoal and diamonds are very different materials. Mendeleyev said that there's a difference between the form that an element takes and the transformations that it is capable of undergoing. He said, the composition of a compound is the expression of those transformations of which it is capable.

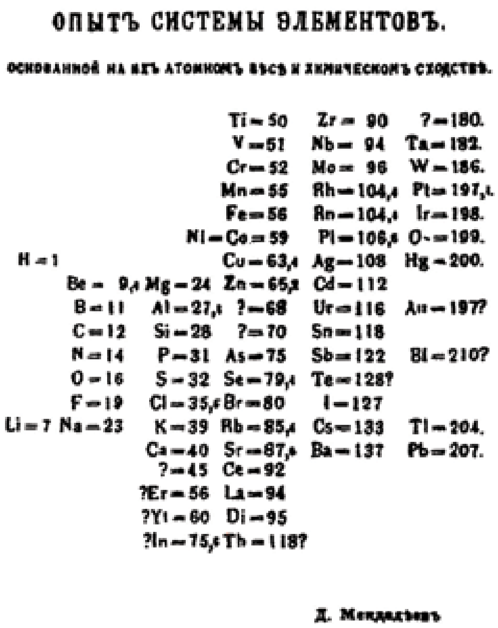
So his idea of the elements wasn't the properties of material, like how dense it is or anything like that. His understanding of the elements, was what kinds of transformations was it capable of participating in? What could it do? So, oxygen is not a gas. Oxygen by itself does form a gas, but oxygen in that green malachite rock—that's not a gas. Malachite is not copper plus a gas; it is copper and oxygen.

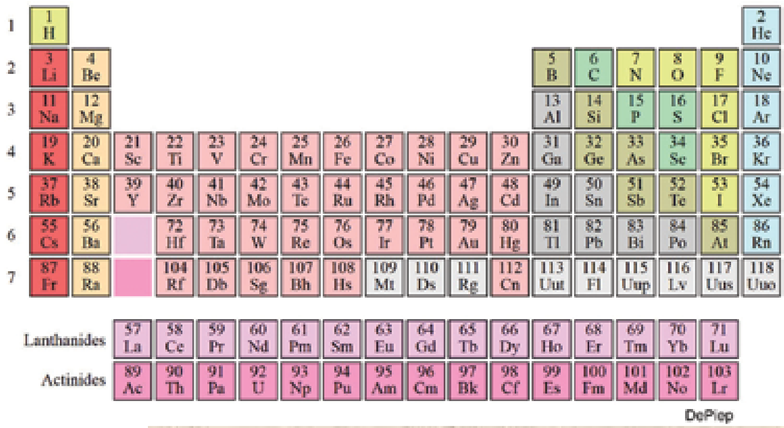
So from this understanding of what was really going on in the very small, we had a whole new dimension of materials: the chemical dimension. We're not only looking at the physical properties, but now we're getting into the chemical properties. This meant that we could do new things, such as by the use of electricity, which is the next thing to talk about.

A New Dimension: Electricity

Electricity is an entirely new dimension of knowledge. Electricity began as sort of an amusement, and it existed that way for actually thousands of years! The word "electricity" comes from the word "electron." It's a Greek word and it means—you'd probably never guess this—it means "amber." What does electricity have to do with amber? What do we do with amber? We collect bugs in it or make jewelry out of it or something. Well, if you rub amber, just like if you rub a balloon on

FIGURE 8
The Periodic Table of Elements





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Texas Public Library Archives

Dmitri Mendeleyev (1834-1907)

a sweater, you get what we call "static electricity." The Greeks referred to the material that did it "amber," "electron." So that if you rubbed amber, it would pick up little bits of feathers and things like this, and that was about all you could do with it.

Around the time of Benjamin Franklin, electricity had really come a long way. Generators were made that operated by rubbing. The first electrical generators were based on rubbing, spinning a wheel and rubbing, and they would collect this "electric fluid," and could do experiments with it. Some famous experiments involving frogs' legs that twitched under an electric current and other things, started to increase appreciation for what this substance was. And before 1800, the first source of *flowing* electricity was introduced: the battery. A chemical process created a flowing of the electric fluid. Before that, all electricity was what we would call *static* electricity, a buildup of a certain kind of electricity which might flow out through a spark, or something like that, but it wasn't a flow; with batteries, we had a flow.

This meant a total transformation. What it meant was the connection between electricity and magnetism—magnetism was also known to the Greeks—only with flowing electricity could it be discovered that these were actually two facets of the same process. So with an electric battery, an electric cell, a moving current—current means running, like in a stream, that has a current—Oersted discovered around 1800 that magnetism was actually like a flowing of electricity.

That completely transformed its use! People did try to make telegraphs before the connection between electricity and magnetism, but they were very bad, and they weren't very useful. Once you had the connection between electricity and magnetism, then you could make things move: You could have the telegraphs that we're familiar with, where one person creating a current, makes a tap-tap-tap noise somewhere else.

Then, the really big breakthrough, that made electricity more useful than for doing some chemical experiments, where it could be used to pull apart different elements, was with the ability to create electricity by motion. We went from rubbing, to chemistry, to moving electric and magnetic fields. The generators of today operate by moving a magnetic field past wires, which induces a current in those wires. Once this was discovered, and once effective generators were made, once effective dynamos were made, electricity *really* became something that was useful. Many of its first applications were for lighting; even before the filament bulbs that we're familiar with, it was used to make a spark between two pieces of carbon, an arc light, which was very bright.

But then the *tremendous* breakthrough, that fundamentally transformed how we act, was the development of the electric motor. In the late 1800s, electricity made the breakthrough of being able to be created by mechanical motion, meaning that we could use the steam engines that already existed, and now, instead of powering mechanical motion by it, we could use that steam to create a flowing electric current, which is much more easily moved than mechanical motion. You may have seen pictures or videos of old factories, where one steam engine with a bunch of leather belts that were just waiting to rip your arm off—there was definitely no OSHA back then—was a very difficult way of moving motion. With a wire that goes to a motor, you can now have control of individual machines that are able to be distant from the source of power. You could make a very large power plant, that would serve many different customers. And that's exactly what happened.

And then, with the development of the AC motor, in, I believe, 1888, now we could have long-distance transmission of electricity, because, you can use a transformer with alternating current; we can use it to create motion, and now, we've got a fundamentally different relationship to all the forms of fire than we had before then. You could use wood to power a boiler and make motion; you could use coal, to power an engine, to make motion; you could use petroleum to power a motor to make motion like in your car. But, by adding the new dimension of knowledge of electricity, those motions can now be transformed, transmitted as electric current and used for all sorts of things: lighting, heating, air conditioning, which are based on motion, motors, etc.

So we've got a new dimension: charge. Remember, we had physical properties of metals; we had chemical properties of substances, and now, we've got specifically electrical properties of materials; we're adding new dimensions to our knowledge, literally new dimensions.

Nuclear Power and Beyond

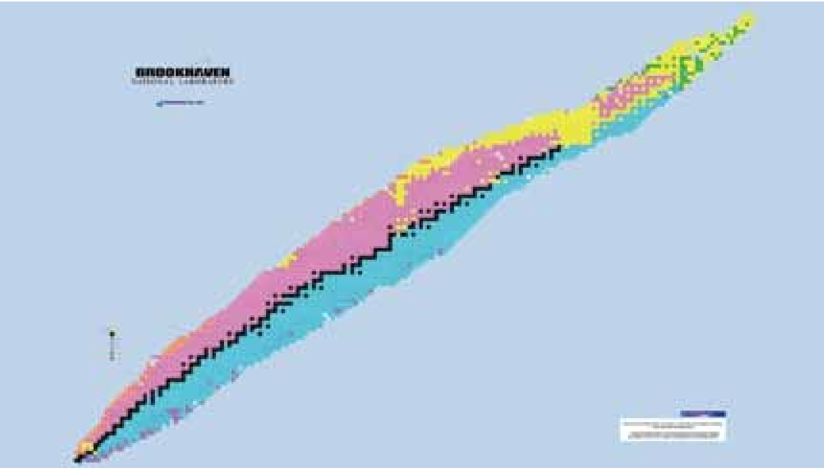
The last domain to take up in opening here, is nuclear. Now, everyone has heard of nuclear power. Many people don't really know how it works at all. Briefly on this, nuclear is yet another new dimension. It's a whole ability to look at the nucleus of materials which have characteristics that are different than the chemical properties of elements. For example, before nuclear science, you might say "well, what does this element like to combine with? Can we burn it, what materials does it make, what compounds does it form?" But now with nuclear science, we start asking totally different questions. We ask, "Does this element emit radiation? Is this element susceptible of being cracked in half, the process called fission? Is this element susceptible of being fissioned to create a large amount of power?"

So the discoveries that led into that, I'm not going to go through right now, but based on our knowledge today, we have a new domain of consideration, a new dimension. **Figure 9** shows a new periodic table—well, it doesn't emphasize the periodicity of it, but this is a table of the nuclides. On this chart, moving up is more protons; moving to the right is more neutrons; the black elements are stable elements, they're not radioactive. The different colors that you see there indicate what kind of radiation these nuclides emit.

What kind of processes are they capable of? Uranium, for example, which as a chemical element isn't really all that exciting, uranium oxides fluoresce, meaning that shining light on them makes them emit a different color light. That's kind of interesting. It was used to tint stained glass. That's something. It's very heavy, it's very dense, that's somewhat interesting, but none of its chemical properties are what makes it important to us now.

What's important is its nuclear property, the fact that we can set up uranium in such a way that we can cause a cascading action of fissions, where one fission causes another to occur, and use the incredible amount

FIGURE 9



of energy that comes out of that. This is an energy over a thousand times more powerful than chemical energy. We can now use that as a new dimension of our action.

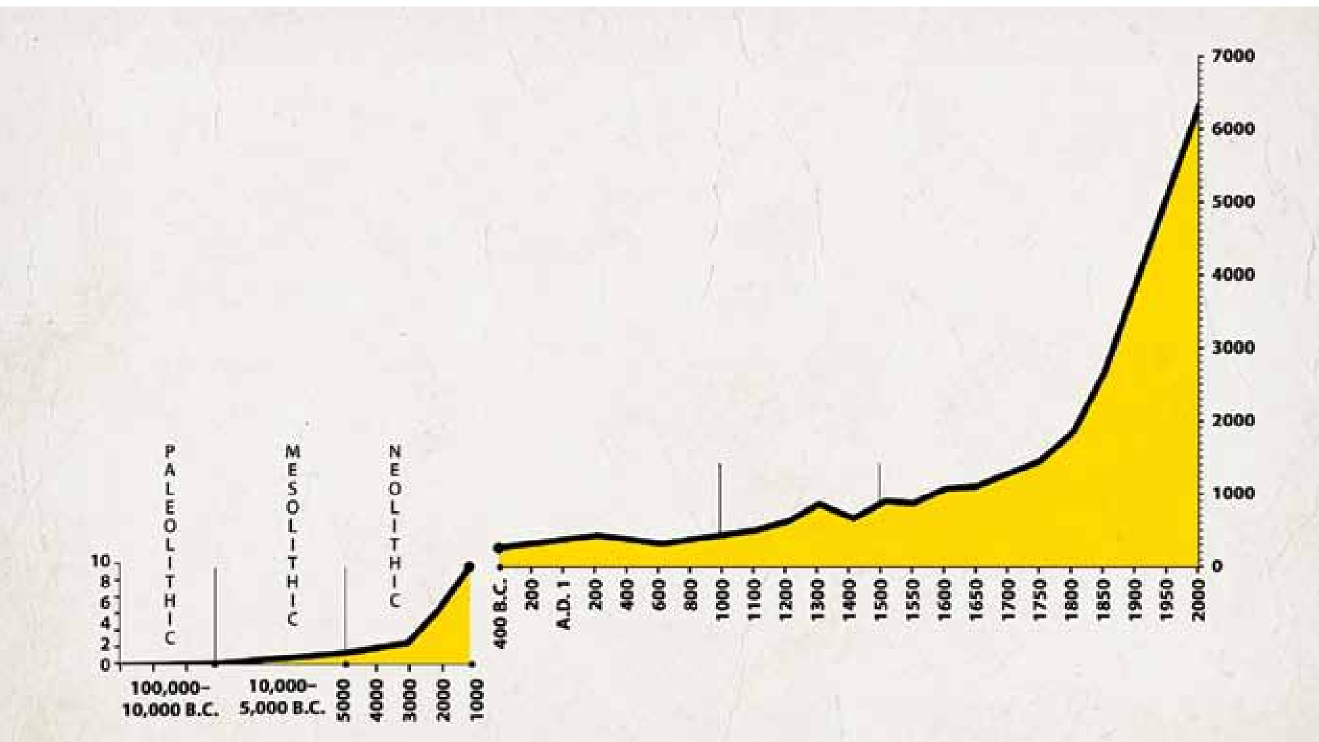
So, what this means for us, is that we've gone through a whole series of different transformations, different dimensions of our knowledge. The application of them, that's the next thing to look at. Because, why have these powers not been implemented? When we saw the chart originally of the different forms of fire, it changed what we were able to do, from wood, which makes you warm and cooks things; to charcoal, which is hot enough to use for metallurgy; to coal, which is much more convenient than destroying your forests—some of the first laws about the environment were passed about 700 years ago, when regulations were made to reduce the destruction of forests for the production of charcoal! So using coal is much more environmentally friendly than using wood.

And then, the use of fission: Why didn't fission go up? Why have we stopped increasing our power?

The Oligarchical Mindset

Figure 10 shows the population growth of the human species, and it goes up to 2000. Now, there's something very characteristic about this, as you know: It increases. It increases very dramatically around the time of the formation of the colonies of the United

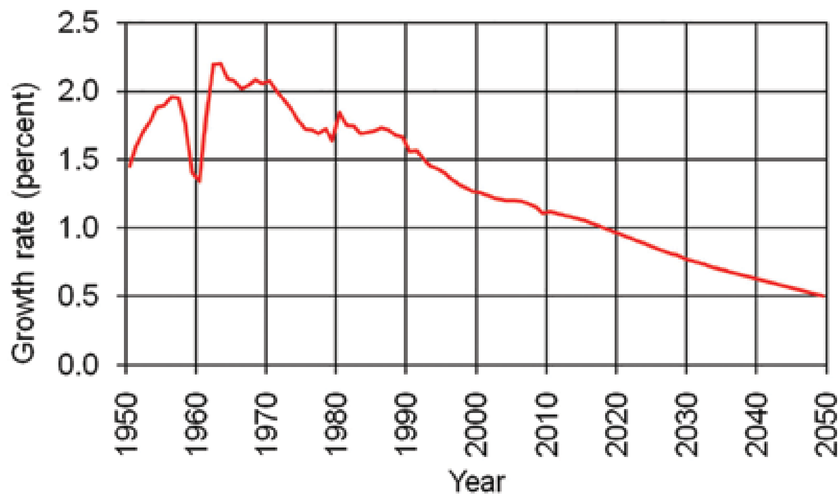
FIGURE 10



States. We also see times of major setbacks, what you might call a dark age. We've seen times where plagues destroyed a third of the population in Europe, in times of economic collapse caused by empire.

Figure 11 shows the rate of population growth: Now, some people say that the world's overpopulated. They don't usually offer to help that themselves—they usually offer to other people as their guinea pigs—but the Queen of England believes there should be about 1 billion people on this planet. Like Zeus, like earlier societies,—you can go back 4,000 years and hear the gods complaining about overpopulation. Today's environmentalists—really, anti-humanists—who use "environmentalism" as another word, they say we've got to cut the world's population.

FIGURE 11
World Population Growth Rates: 1950-2050



Source: U.S. Census Bureau, International Data Base, June 2011 Update.

And if you look at this chart, it's happening. The rate of growth of the world's population has been decreasing since the early '60s: Since President Kennedy's assassination, the growth of the world population, the direction of change of the people on this planet, has been going down.

So, this isn't an accident. This is being done intentionally. The main way that's being done is through a new word for oligarchy, or Zeus, which is "green," which says that the best goal for the human species, is not to exist! According to a Greenie, according to the green ideology, our goal is to have no impact on the world around us, that somehow "nature" is good the way that it is, and it's bad if we change it.

Now, you wouldn't apply that to anything else, unless you just don't like to change anything. I mean, if you've got something that's set up very well, that's good. If it's badly set up, change it!

For example, the water flow on the North American continent is horribly designed: A ton of water gets caught by the mountains along the western part of our continent, the rain falls, and it flows right into the ocean. Useless, wasted water! Terrible design! If you had an engineering firm that designed this, you'd fire them!

But that's the way our continent is designed; there's nothing good about it. We need to improve that, bring the water inland, make it more useful, increase the productivity of this water cycle: That's natural. That is opposed by the oligarchical forces which say that it is easiest to control a population, treated as animals, when they are kept stupid and when they are kept poor.

I'm going to read two quotes about this. The first, this is a quote from *4,000 years* ago, from a Mesopotamian epic, the Atra-Hasis. Here, the gods are complaining. They say about people:

> The load is excessive, it is killing us,
> Our work is too hard, the trouble is too much,
> So every single one of us gods has agreed to complain to Enlil [Zeus at that time]
> The country was as noisy as a bellowing bull
> The god grew restless at their racket,
> Enlil had to listen to their noise.
> He addressed the great gods:
> "The noise of mankind has become too much,
> I am losing sleep over their racket.
> Give the order that the surrupu-disease shall break out!"

"Overpopulation" is not new.

I couldn't help but notice that this sounds exactly like Zero Population Growth founder and fellow of the British Royal Society Paul Ehrlich, who evidently has some social problems, in addition to his other difficulties. In the prologue to his stupid book, *The Population Bomb* (1968), which is completely wrong and should prove to anybody that he's an idiot, he wrote:

> I have understood the population explosion intellectually for a long time. I came to understand it emotionally one stinking hot night in Delhi a few years ago. My wife and daughter and I were returning to our hotel in an ancient taxi. The seats were hopping with fleas. . . . As we crawled through the city, we entered a crowded slum area. The temperature was well over 100, and the air was a haze of dust and smoke. The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, and screaming. People thrusting their dirty hands through the taxi window, begging. People defecating and urinating. People clinging to buses. People herding animals. *People, people, people, people!* As we moved slowly through the mob, hand horns squawking, the dust, the noise, heat and cooking fires gave the scene a hellish aspect. Would we *ever* get to our hotel?

Now, I don't see a big emotional difference between the outlook of Paul Ehrlich and the god Enlil, in the 19th Century B.C., of a hatred of having too many people around, disturbing the peace of a few who should be ruling over the rest of the mankind, ideally capriciously—that's the ideal type of ruler. And the techniques used to implement that today, best fit under the category of Greenism, which says: no development, no nuclear. You know, every plant is a Fukushima. Fukushima! There was an earthquake and a tsunami! This wasn't a nuclear plant that had a problem: ask all the people who died there. They weren't killed by that nuclear plant.

Defeat 'Greenism'!

It's something we have to completely eliminate as an outlook. We can't compromise with Greenism. It has to be swept away, and we have to replace it with a fight for the development of the human species, to the level where all human beings—this is the goal—will have the opportunity to contribute something of truly lasting value.

Five thousand years ago, the creation of bronze was developed. We don't know by whom, we don't know their names, we don't know what their family was like. Well, what those people did, whoever it was who developed this, if it was one person, or maybe many people independently, what we do know is that action had an effect which continues today, which fundamentally transformed the human species.

Not many people in history have had lives that contributed to making that happen. And the times when it's most possible have been the times when empire was the weakest. The creation of the United States was the opportunity to rid humanity of control by oligarchism, as expressed in Europe at the time by those who founded the United States, to create a society that was able to resist oligarchism, to develop for the well-being of people, and where the pursuit of happiness, the increasing perfection of others, could become the goal of its citizens.

That's the goal that the United States has to take up again, which will only be possible by ousting Obama, making a *complete* 180 on our economic policy, the re-implementation of Glass-Steagall, the creation of a credit system, and the adoption of long-term projects for future wealth creation, for the future creation of *value*, which, as we've discussed today, comes in physical transformations in our ability to live.

So that's the mission that we have to have, and I think that this very short overview, considering how many years of history this involves, gives a better idea of what is really valuable, and on what economic wealth exists.