Unleashing the Productive Power of Creativity

by Richard Freeman

This is the edited transcript of Richard Freeman's June 6 conference presentation. Not all of the speaker's graphics are reproduced. Subheads have been added.

The world confronts an existential crisis. We have the immediate need to stop the spread of death from the COVID-19 disease and from famine, in Africa, Ibero-America, and sections of Asia. David Beasley, who is the Executive Director of the UN World Food Program, has sounded the alarm, saying that in these areas they face "multiple famines of biblical proportions that could result in 300,000 deaths a day" or 2.1 million deaths per week. Presently, Africa, Ibero-America, and sections of Asia don't have an infinitesimal fraction of the hospitals, hospital beds, ventilators, electricity generation, water supply, irrigation systems, or agricultural equipment to avert what will be, unless we intervene, extinction.

This is what motivated Helga Zepp-LaRouche to call for this program of 1.5 billion new, productive jobs. This catastrophe offers an opportunity, as often happens in catastrophes. There are 30,000 manufacturing plants that have shut down since 2002 in the United States. They should be, and could be, re-opened. Look at how many millions of unemployed people we have. If we do that, and add new capacity to meet and overcome this underdevelopment in these continents, and we follow Lyndon LaRouche's plan to do this, in that process we will create 1.5 billion new productive jobs in the advanced sector and in the developing world in a reciprocal way, the greatest development program in the history of the world.

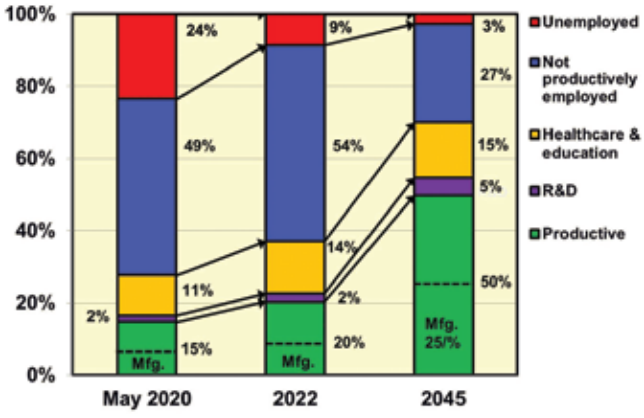
In doing that, the United States will create 60 million productive jobs domestically. This development in the United States, given what our capacity can be, will be the fulcrum to make the 1.5 billion productive jobs worldwide possible.

So, we must treat this as any great mission. In this process, the present speculative financial system, which spews out Malthusianism and halts all development, must be torn down. The British Empire must be torn down. In the United States, we must end 50 years of physical decay, which we're seeing something about on the news every night, because that is a primary issue that is on the minds of every citizen who lives in any urban center and walks around for 30 seconds.

FIGURE 1

Transforming the U.S. Labor Force

(% of total)



Let us look at a snapshot of the United States. **Figure 1** shows U.S. manufacturing employment. Manufacturing workers are those who make human existence possible; they are part of the productive labor force. Agriculture is another part, as are transportation, construction, mining, and utilities. These activities alter nature for man's advancement. Manufacturing and agriculture could be considered the two most important. Let's see how we're providing for ourselves.

In 1998, there were 17.6 million manufacturing jobs. We had the financial crisis in 2008. By 2010, we're down to 11.5 million manufacturing jobs. By 2020, we are at 12.9 million. So for ten years, we added all of 1.4 million jobs; that's 140,000 manufacturing jobs a year. That is a catastrophe, not a recovery. We're not even back to 2008 or 1998. By the standards of our mission, this is far, far short. This was the last 25 years.

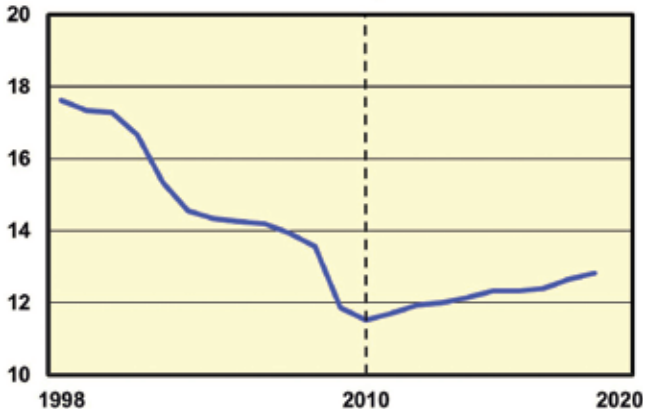
The Next 25 Years

Let's take the next 25 years. **Figure 2** is in the 1.5 billion jobs report. You can see 2020, and you can see 2045. Within this period, which is a quarter century, we are using the standards demanded by Lyndon LaRouche. If you're going to have an economy that's going to grow at a real rate of development, you need

FIGURE 2

U.S. Manufacturing Employment

(millions)



50% of the workforce being productive—you can see that in the green. Five percent is in research and development.

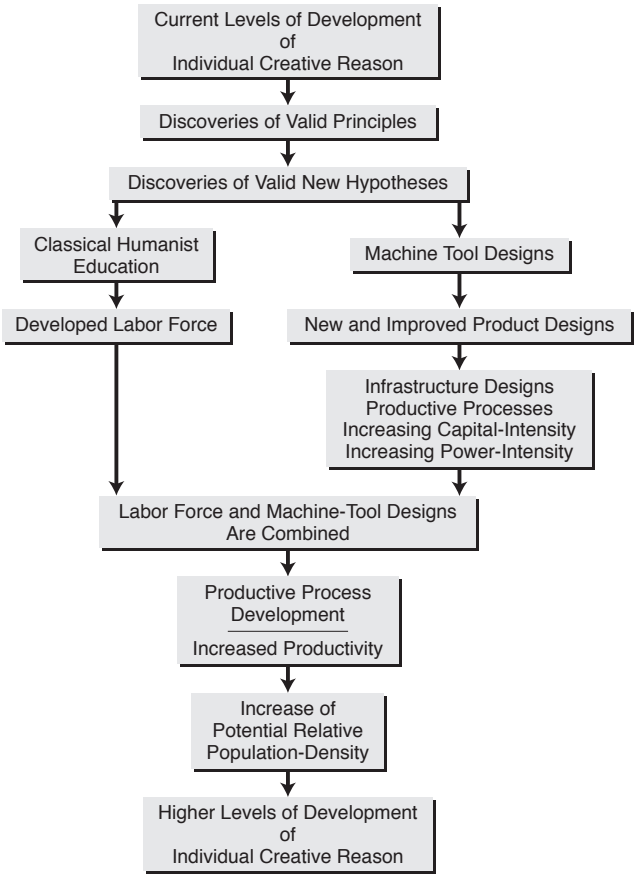
What this will do, just to identify the outline: the productive labor force will grow in this 25-year interval by 60 million workers, to a level of 91.5 million—a tripling. The science and technology sector will grow to 9.1 million workers—a tripling. And the manufacturing labor force will grow to 45.7 million workers—a 3.5-fold increase. One point immediately should strike you. If we increase the manufacturing labor force by 3.5 times, the productive level of the economy will grow by 3.5 times. So, we'll already be 3.5 times bigger. But that's only the first level. It's the spillover breakthroughs from fusion power, space exploration, and so forth, assimilated by the labor force that will actually make the 2045 economy 10 to 12 times more productive. *That's* the economy we want to live in; that's the one we're going to build.

This is increasing the power of humankind. *That* is power. Power is not how strong your muscle is; power is not your ability to intimidate other nations by threatening them with nuclear weapons. Power is the power of the mind. And what we are looking at is the machine tool principle, as Lyndon LaRouche developed it—and this was a critical idea, because he developed it after an intense period of work from 1948 to 1952. It's the idea that mankind, to exist, driven by curiosity, develops successive revolutions in fundamental principles of science.

We take these successive revolutions, and physically incorporate those revolutionary principles in machines; that's the way our creative mind intersects the

FIGURE 3

How the Machine Tool Design Principle Works



physical economy. Those machines, called machine tools, enable us to build other machines. By the designs of machine tools, we change the designs of the other machines, and those other machines now reflect the scientific revolution. This is a successive process with many such discoveries going on. This increases the productivity of an economy. And if the ideas that man's mind develops are revolutionary, then the economy is revolutionized.

The Machine Tool Principle

Let's look at a chart that Mr. LaRouche used to illustrate the machine-tool principle, **Figure 3**. There are two sides to this chart. It starts with a certain level of culture, a certain level of power of reason of the human mind. Then, we have a discovery of a new hypothesis, as you can see there. It splits. The labor force, through Classical humanist education and science and development, assimilates these ideas, and becomes a more cognitively developed labor force. On the other side, the

FIGURE 4a
Painting of Egyptian Bow Drill

Wikimedia Commons

FIGURE 4b
Bow Drill Found by Archaeologists

Creative Commons

machine-tool design makes new products and improved design. It increases the capital intensity and the power intensity. At the end of this process, where they rejoin—it says, "Labor force and machine tool designs are combined." This creates a new productive development and it's a higher-level development of individual, creative reason.

So we have increased the development of individual creative reason, which is the purpose of the economy: to increase the *power of the individual* in successive developments, culturally and every other way. And then we have the next phase of development. That's getting at the concept of power.

I want to introduce you to a couple of machines. **Figure 4a** is a drawing of a machine called a bow drill, which was painted on a wall in Egypt. You can see the person has a bow, like a bow and arrow, and around that piece of wood, which is like a spindle, you will see that the bowstring has been lapped around, but with a twist; and as this person pushes the bow forward, the drill will spin in one direction, and as he pulls it back, it will spin in the other direction, drilling a hole.

Figure 4b is an actual physical bow drill, which was recovered. What would someone, using this for eight hours a day, be able to accomplish? Well, maybe eight holes drilled, ten holes drilled; that's if his arm didn't get too tired.

Figure 5 shows us foot power. This is a grinder, and you will see at the bottom, if you look at his feet: he's pedaling.

Figure 6 is a mill. Water goes through this mill, where there are two water wheels. And we're moving past the physical labor of man, to use water. This mill will grind wheat into flour. You see a chute for the wheat berries, and on the bottom, stones, which are called millstones; you grind the wheat between those stones to create the flour, from which you can make bread. This is an advance. You're limited, however, by

FIGURE 5
Foot-Powered Grinding Machine

Wikimedia

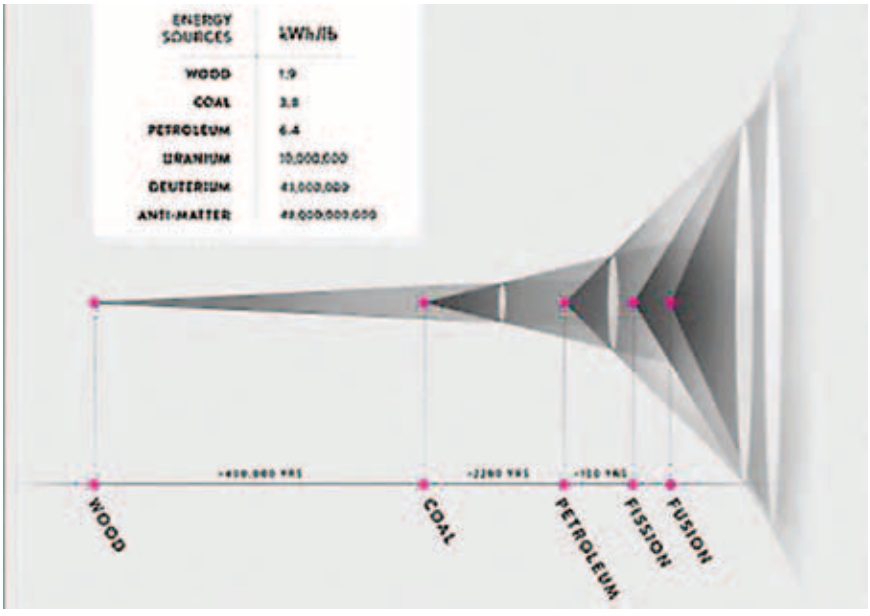
FIGURE 6
Water-Powered Grist Mill

Wikimedia

the amount of water that flows in the stream—if the water is low, or you have a drought, it doesn't work as well as you might want.

Figure 7 shows us the development of the machine-tool principle combined with the power source—combining the machine-tool principle with energy flux density. You can see wood as a fuel source, and when we get to the level of coal, we have a cone that expands outward. When we get to petroleum, you can see it expands further; fission and fusion, even further. This is a series of characteristic hyperbolic cones, and these are levels of development. You will see at the top that 1 lb. of wood will produce one kilowatt-hour (kWh); coal 3.8 kWh. And you can read the others—uranium, 10 million kWh and so forth.

FIGURE 7
Relative Power Densities for Various Fuels



21st Century Science & Technology/Liona Fan-Chang

Now, we're going to introduce a higher form than just water, and foot power, and so forth: We're going to use coal to make a heat-powered machine.

In these plants, where you start to use machines of a more advanced design, you can see belts. You have a heat-powered machine that produces heat; heat is used to produce steam, which turns a turbine to cause a shaft to rotate—you're not producing electricity yet, but you're connecting the rotating shaft by means of belts to every one of the machines in the shop; you're using the machine to actually turn other machines.

The Power to Build

Take the case of a basic slab, an steel ingot shown in **Figure 8a**. This will go into the machine-tool, and I wish I could show you the way different cutting gears and other tools shape it, twist it, on a lathe-like structure; but what you get at the end of the machining is a large boring blade **Figure 8b**, such as the blade used by the Swiss in a boring machine to bore a tunnel through the Swiss Alps. It was a 35-mile distance, cut through to connect Switzerland to Italy via a high-speed rail line.

Now, what's the accumulated power of this arrangement?—and we're moving now not just from the power of the machine tool, but we're looking at what it produced in another machine. Compare an advanced machine tool to the bow drill. How many times more powerful is it? I did some rough jottings, and I calculated that the machine is about 1,200-3,000 times more powerful than that bow drill. This is power: Man's mind continuously improving. This is *civilizational* power. This marks the development over about 2,700-2,800 years from what the power of a civilization was then, to what the

FIGURE 8a
Large Steel Ingot

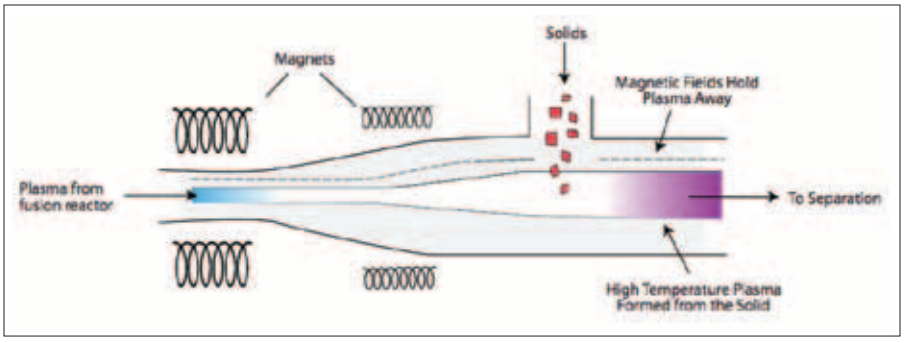
CC/Ray Jones

FIGURE 8b
Large Rock Boring Machine Blade

Wikipedia/Wolfgang Meinhart

power of a civilization is now through the machine-tool principle.

This same boring machine could bore underneath New York City, or Philadelphia. Or part of New York City, like the South Bronx; or Paris. Because we have to take these older cities and renovate them, put in modular electricity and infrastructure and water systems. And we have to be able to get under them while we keep the city on top and rebuild the city on top. And that's a *critical* issue that we are facing right now in the streets. People may not enunciate it, because they may not know that they need such a machine-tool concept, but that's the power of civilization.



USAEC/Bernard Eastlund & William Gough

Schematic of a fusion torch processing solid waste.

Take your mind back to Figure 2, Transforming the Labor Force. When we get to this new level of economy, not only will we have 3.5 times more workers, but we're going to have a far more productive economy. Keep that in mind.

The Power of Fusion

Let's go to the fusion process. Nuclear fusion reactions produce great heat, commensurate with the heat of the Sun, but the critical feature is not just the heat; it's the ionized gases in a magnetic field—that's plasma, known as the fourth state of matter. Interestingly 95-96% of all matter in the universe is in a plasma state.

A plasma has within it solitons, it has various vortices, which are singularities, but simultaneously, overall, it's highly organized; the plasma functions as a system. I want to list two applications of fusion energy, beyond the use of fusion to generate electrical power. These provide some of what we can look at that goes beyond more basic machines.

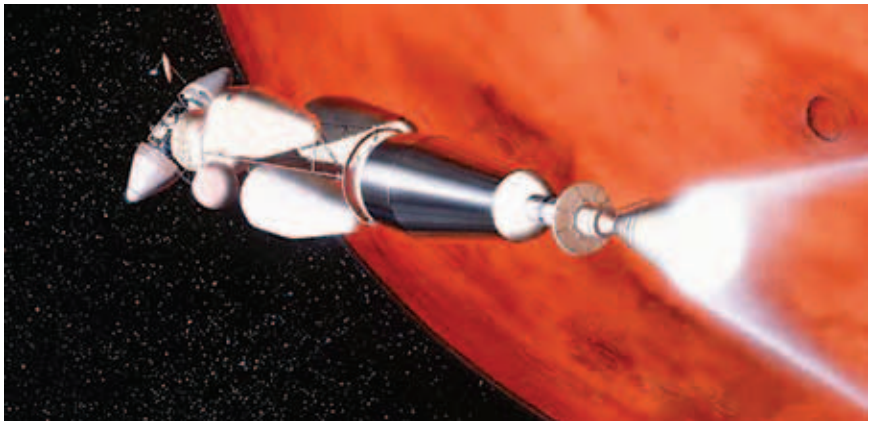
The first is the fusion torch. A fusion torch will ionize anything. You could take a cubic mile of garbage or of earth, and a fusion torch will break it into its constituent elements.

The following is from a video on the fusion torch, produced by LaRouche PAC.

> Inside a fusion reactor, the fusion plasma consisting of an ultra-hot ionized gas, reaches temperatures of tens and hundreds of millions of degrees. Some of this plasma can be funneled off as a direct process medium for industrial purposes. The plasma will first be taken through a connection zone to isolate it from the plasma of the reactor, and remove high-energy neutrons from the process plasma.
>
> It is then moved to what is called the interaction zone. With the ultra-high heats and energies of fusion plasmas metal ores or any other known material fed into the fusion torch, are not merely melted, but are immediately shock vaporized and become part of the plasma, as separate, ionized elements, and electrons.
>
> This, now low-temperature plasma, full of the elements which made up the ore or other material, is discharged from the fusion torch to a separation chamber, so that the individual materials can be separated from one another and recovered.
>
> Once in a plasma state, various methods can be used to select the desired elements and isotopes, based on their atomic, as opposed to chemical properties. The plasma separation process utilizes the unique resonating frequency, or cyclotron frequency of specific elements to selectively separate them. As the plasma, spiraling around the guiding magnetic field is passed through a chamber, it is zapped with a very specific electromagnetic frequency, precisely tuned to the resonant frequency of a selected isotope. The targetted ions are energized, widening their orbits just beyond the width of a series of collection plates at the end of the chamber. The rest of the non-energized materials simply pass through.

So that's one of the applications of the fusion process. The second application is a high-velocity rocket

engine. The Artemis Moon-Mars program will get us back to the Moon, but to get to Mars, we're going to have to use this application. We must get beyond liquid and solid chemical rocket fuels, and that means we have to get to fusion reactions as a propellant. A chemical rocket burns liquid hydrogen and liquid oxygen, and the vapor that comes out is an exhaust, and that exhaust determines your speed to a very important extent. The exhaust of a chemical rocket is traveling at 3,000 meters per second. But the exhaust from a fusion-powered rocket travels at 100 million meters per second, which is 30,000 times faster. So that's what we're going to need.



NASA/Pat Rawlings (SAIC)

Artist's conception of a fusion rocket orbiting Mars.

And when we get to space, when we get to Mars, we should actually build a smaller-scale fusion torch, because that's going to allow us to separate out things on Mars. We can't just sit there and simply dig all this stuff by hand; we need that torch for Mars' development.

Let me talk about the petawatt laser, which is used in one branch of fusion research to trigger the fusion reaction. It provides laser pulses at a quadrillion-watt level peak power, and it does it in pulses of one-quadrillionth of a second. This is on the order of 2,000 times the power of the *entire* United States energy grid. *That's a resource!* This has great potential—and it uses the same amount of energy your 60-watt light bulb uses in 3 seconds.

Unimagined Power to Create

If we have this petawatt laser, if we have the fusion torch, which redefines mining, and if we have a fusion energy engine for rocket ships going to Mars, by 2045 in the United States this labor force's productive power will be 10-12 times greater. If each worker is hooked up to this process, each worker, himself or herself, as part of the whole, can become perhaps 25 times more productive. If we were to multiply this increased productive power by 3.5 times more manufacturing workers by 2045, we could have an economy that's 30, 40, or 50 times more productive.

And that's what we're going to create. It's not there yet, it's not a blueprint. But man's mind, which is the power for achieving what we're talking about, will do it.

Now, to draw this together: We're going to develop this; we're going to take those 30,000 plants that have closed and open them. They are filled with literally millions of machine tools; some of them are rusted, some of them are ancient, but some of them we can use and we're going to put new ones in there. And we're going to put probably anywhere from 5 to 10 million workers to work in those plants. If we do this in the United States, in China, in India, and in Russia, Japan, and Germany, we will start to effectively address the urgently required industrial development of Africa, of Ibero-America, of parts of Asia.

But we will not just do that, we will start to develop those countries. Basic things will come first, such as cement and bricks, that's the easiest thing to start with, because you don't want to lug those around the world. We could then build steel plants in those countries in about 18 to 20 months on a crash basis.

You want to work with those populations with the technologies which they input; but then develop their powers of labor, so that they will then develop the machine-tools, they will then develop nuclear fission, they will then develop nuclear fusion. They will develop all of these powers themselves. If we do this, simultaneously in the so-called advanced sector and the developing world, and reciprocate back and forth, with a Four Power New Bretton Woods, we will *have the new paradigm*. We will have the development of mankind. We will be transmitting power to these countries—not just giving them bread or water—we're giving them power! And the whole world will be driven by this power: That's a new development. That's what Lyndon LaRouche was pointing to, for his entire life.