II. The Truth of Man and Nature

February 21, 1998

What Is Physical Economy?

Lyndon LaRouche presented the following speech at a seminar in New York City on Feb. 21, 1998. Subheads have been added.

GFDL/Xvolks

Authorized by Jean-Baptist Colbert, First Minister of France, in 1666, the Canal du Midi in southern France was an early physical-economic work of a government that was built to promote the general welfare of a nation.

In principle, we should know that physical economy is peculiar to human beings. No animal is capable of physical economy. But, economy obviously has existed as long as people have existed, because physical economy is essentially the relationship between man and nature, based on a consideration which exists only in man, and in no animals: the power to make discoveries, typified by what we call today discoveries of principle in physical science.

However, the knowledge of science, the knowledge of physical economy, belongs to modern times, for reasons which I will indicate. It emerged by stages in Western Europe, toward the end of the Sixteenth Century, and during the Seventeenth Century.

What is generally called economy, wrongly, in most textbooks, is actually a study of methods by which economies have been administered. Because, for a long period of time, all societies which were organized societies, had methods of administering man's relationship to nature, in matters that we consider today subjects of economy. But there was no science which explained how man interrelated with nature, and no science of administration, which studied the relationship between man and nature.

What developed in Europe after the Fifteenth Century, developed as a result of the creation of the first modern nation-state, or the first approximation of a modern nation-state. The first nation-state as such developed in France between 1461 and 1483, under Louis XI, and for reasons I shall explain. Then, following that, in England, in Germany, and in France especially, during the Sixteenth Century, there were various efforts to understand how the new form of society, and the new form of national economy, changed the way in which society related to nature.

This generally came to be called *cameralism*, which developed toward the middle and latter part of the Sixteenth Century. Out of cameralism, there came

a revolution in the last quarter of the following century, the Seventeenth Century, when the first science of physical economy was actually presented. As a matter of fact, what can rightly be called the first scientific economy was developed as physical economy during that period.

These discoveries were made by Gottfried Leibniz, who of course is the father of much of all European science. Leibniz began writing about physical economy in 1671, while he was based in Mainz, Germany, and continued to do this work from 1672 on, when he was, for a period of four years, a student under the protection, or a collaborator under the protection of Minister Colbert of France, and the French National Society of Science, where he was first associated with Christiaan Huygens, another famous scientist. From that time on, until his death in the early Eighteenth Century, in 1716, Leibniz was massively involved in the development of a science of physical economy, and in questions of administration related to that.

Portrait by Johann Friedrich Wentzel

Portrait by Ivan N. Kramskoi, 1878

Gottfried Wilhelm Leibniz (left), the father of much of European science; and Dmitri Mendeleyev, the great Russian scientist, who conceived and constructed the Periodic Table.

He is famous for his relationship to Czar Peter the Great of Russia. The first attempt at developing a modern economy in Russia, came from Leibniz, on the basis of Leibniz's advice to Peter the Great. For example, at St. Petersburg, there was established one of the many academies of science which were developed by Leibniz. In Russia, in various periods after that, the development of economy was associated with Russia's science, physical science especially. For example, in the late Nineteenth Century, one of the most important economic thinkers in Russia, was the famous Dmitri Mendeleyev, who is otherwise known for the Periodic Table.

The Land-Bridge

Just let me interpolate here one point about Mendeleyev, which pertains directly to the Land-Bridge. The first idea of the Land-Bridge came from the United States. It came in the middle of the Nineteenth Century, and particularly during the period between 1861 and 1876, when the government under President Abraham Lincoln, during the period of the Civil War, pushed the development of transcontinental railways to connect the Atlantic Ocean with the Pacific Ocean. The subsequent orientation of the United States toward Asia and

Union Pacific Railroad Company

Map of the Transcontinental Railroad route as of 1879, the model for European and Russian efforts to span the Eurasian continent.

China, in particular, came as a result of this.

In 1876, Japan had already entered a period of industrial development, under direct U.S. direction, the so-called Meiji Restoration development in Japan, which is the basis for the modern industrial structure of Japan. In 1877, Germany, which already had a very close relationship with the United States, picked up on the same principles of development which had occurred in the United States between 1861 and 1876.

Remember that at that time, the United States was closely allied with the Russia of Czar Alexander II against the British. From the 1850s, the Crimean War period, until 1905, England, the British Empire, was the total enemy of Russia. Until 1901, the British Empire was the enemy of the United States. So, Russia and China, after the Crimean War, under Alexander II, had developed a close relationship. With the defeat of our enemy, Napoleon III of France, France also became friendly to the United States again.

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Helga Zepp-LaRouche (right), with associates Jonathan Tennenbaum and Mary Burdman, at the Eastern Terminal of the New Eurasia Land-Bridge in Lianyungang, China, in 1998.

Later in the century, Sun Yat-Sen of China, who was educated in Hawaii, who was also an enemy of the British, and the British were enemies of his, developed a plan for the development of China, based on railway and other development, based on the American and European model.

So, during this period, from approximately 1877 on, leading thinkers and influential thinkers in France, in Germany, in Russia, in China, Japan, and elsewhere, were moving for a transcontinental railway connection, like that which had been successful in the United States, in going from the Atlantic to the Pacific. The issues of wars, the underlying causes for two wars in Eurasia during this century, were the efforts of the British to prevent the development of such a land-bridge. So that, when I proposed a land-bridge approach in 1988, anticipating the collapse of the Soviet system then, and as Helga and I and others worked on this with Jonathan [Tennenbaum], for example, to extend this further, to the Pacific, many of our ideas were original. But the basic concept of the Eurasian Land-Bridge was not original. It was based on these precedents, from the Nineteenth Century.

So, these were the kinds of ideas which came out of this process. And Leibniz was, in a sense, the originator of this approach to global economy, including his famous papers and studies on the question of China, which he did at the beginning of the Eighteenth Century. So, it was out of Leibniz's views, these views of physical economy, that these developments occurred. The opposition in Europe, came from the opposite faction.

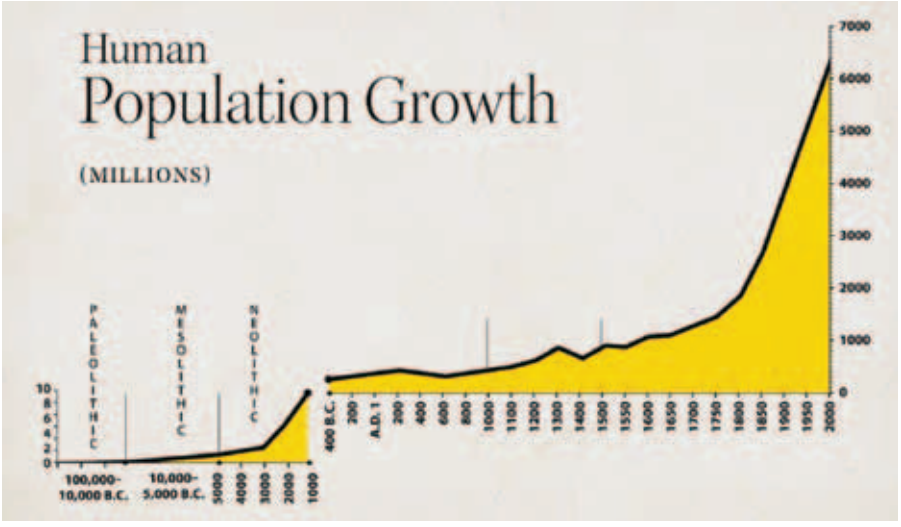
More Than 6,000 Years

Remember that if you're talking about relations with the civilization that came out of Western Asia and Europe, and then later the United States, you're talking about a period which is about 6,000 years old, actually longer, but in terms of history, about 6,000 years old.

Originally, in this part of the world, as in every known part of the world, society was divided into "upper" and "lower" people, a two-tier society. A very small upper group, less than five percent of the total population, who used the lower people, who were over 95 percent of the population, like human cattle. They were not considered full people, full, true people, but they were used as talking intelligent cattle. They were not developed. They were expected to do as their fathers, their grandfathers had done before them. This was called the oligarchical system, as it was known in Babylon.

This system continued from Babylon, the Persian Empire, the Roman Empire, the Byzantine Empire, and European feudalism, where this two-tiered society existed, oligarchical society. In Europe, in ancient and

medieval times, you had two classes which were the predominant oligarchical classes. One, were landed aristocrats, powerful landowners, who owned much land, and owned the people who lived on the land. The second group were people who engaged in financial speculation. They were financial parasites, a parasitical class. Europe went through a great crisis—I won't go into that whole history, it's not relevant here—but through a great crisis, over the effects of these two combined classes, the landed aristocracy and the financial aristocracy.



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Beginning about 3,000 B.C., and rising at an ever-increasing rate, there has been a great growth in human population, because the material conditions of life have been constantly improved to support this growth.

Today, as a result of developments of the modern history, the landed aristocracy has almost disappeared from Europe, from European civilization. But the other aspect of feudalism continues, the financier aristocracy.

What happened in the Fifteenth Century, which is a whole subject in itself, was that there was a revolt, in the attempt to create a new form of society. The basis for the new form of society, was derived from a Christian principle. The Christian principle is that all men are the same, all men and women are the same. They are made the same, and each has a creative power, which may be developed differently in different people, but by their nature, human beings are all the same, are all equal. And therefore, it was wrong and unjust for 95 percent of the population to live as cattle, under the domination of a handful of powerful feudal lords and bankers, or financiers.

The center of the issue was this. If man is good, if all persons are good because they can be educated and developed, then *all* persons must be educated and developed. If they are educated and developed, they must be given the opportunity to do the kind of work and live the kind of life that fits this education and development. And so, there was an effort to create a new society, in which society was obliged to protect these two principles, the improvement of conditions of life through the development of everyone, all children, and through providing the children, as they became mature, the opportunities to do something good, and to be of benefit to society. No longer should man be like a cow, or a horse, or a pig, to do the same thing, and end up the same way as his father, grandfather, and so forth.

The Nation State

This effort, which was not a complete success, but a beginning, occurred with France, with Louis XI, between 1461 and 1483. It caused a great struggle, an internal struggle in Europe, which goes on inside European civilization to the present day. At first, the powerful landed aristocracy and the financier aristocracy, attempted to crush this movement, which is the period of wars of the Sixteenth Century in Europe. Eventually, over the centuries, the landed aristocracy was defeated. But another part of feudalism succeeded: the financier aristocracy, which is typified by the British Empire and London, and what it represents in the world today.

So, throughout the world, we have two forms of society generally, since that time, wherever European civilization has had an effect. We have forms of society which are struggling to create national economy, that is, benefit to educate all people, and to provide progress within the nation for all people, and to provide these forms of work and life which fit people. At the same time, we have, on top, in most parts of society, a financier parasite class, which wishes to keep the national economy down, or suppressed, or destroyed.

Now, here's where national economy, where physical economy begins. If you look back in history, or at prehistory, and you compare man with great apes, and

you study man from the standpoint of the methods of ecology which are used for studying animal populations, or monkey populations, during the past two million years on this planet, in the conditions of life which existed, if man had been a great ape, not man, but something that looks like man, but is a great ape, the population of mankind would never have been more than several million individual persons.

But we know that before—2,000 years ago, the population of this planet had reached over 100 million persons. By the middle of the Fourteenth Century and the beginning of the Fifteenth Century, the population of this planet had become over several hundred million persons. Today, after the beginning of the nation-state and national economy, the population of this planet is over five billion persons. And China of course is a part of this, and the growth in the population of China is significant, because you can see that as modern European technology and civilization touched China, China's population expanded, particularly the underclass people had more opportunity, or more of them, to participate in growth. And there was a great growth in population, because the material conditions of life were improved, to allow for this growth.

So, the question is: where does this growth come from? All through the existence of mankind, the human population has grown. No animal can do that. Why? Because human beings change the way they behave toward nature. It takes a smaller area to sustain an average person, because of increases in technology. The standard of living of each person working, increases, because each person, even with a smaller land area, is more productive.

Where does this come from? This comes from discoveries, which are typical of scientific discoveries, but there are other discoveries, like artistic discoveries, which have a similar effect.

Education and Creativity

So therefore, by fostering the education of children, of more children, increasing the quality and quantity of education provided to children, increasing the period of education, so that people did not go to work when they were still children, but could continue to study, we increased the amount of knowledge of principles of nature and principles of art and statecraft in the population. So, instead of people being like pigs, or cows, living, acting like their grandparents, or parents before them, or ancient ancestors, people were able to progress from one generation to the next, through knowledge, and through acquiring knowledge, and through developing new knowledge.

The larger the percentile of the total population which is so educated, the greater the knowledge of the whole population, and therefore, the greater the rate of development. *And this relationship, of the mind of the individual to man as a whole, and to man's behavior toward nature as a whole, is the science of physical economy.* That's what it means, and that's what it's meant, since the time of Leibniz.

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By fostering the education of more children, increasing its quality and quantity, we increase the amount of knowledge of the principles of nature, art, and statecraft in the population. Here, youth at the LaRouche Academy in Bogota, Colombia, are engrossed in a study of geometry, September 26, 2011.

Now, Leibniz's study of work, from the beginning, from the first two important papers he wrote in 1671, already addressed this question. For example, in one paper dealing with the question of wages, he emphasized that the income of the worker must not be a mere minimum, a minimal subsistence. But the income of

the family will bear upon the cultural development of the family, and therefore will shape the potential productivity of the members of that family. The higher the standard of living, the higher the level of culture, the more potential productivity these people represent. Therefore, wages, in a sense, have to *increase,* in order to permit families to improve their life, improve their productivity. And therefore, in increasing wages, we must know the difference between those increases in wages which will be beneficial to mankind, and those increases in wages which will be useless. More money for prostitutes does not improve the life of society, even though some people in society today seem to think so.

So, our great challenge, therefore, is to understand exactly what it is about the mind of the person, and this relationship of the mind of the person to the society and to the land, to the physical—which defines the potential for human progress. Obviously, the problem exists in China today. How can we, given a limited land area, with a large concentration of population in certain parts of the area, and low concentration of population in other underdeveloped areas of China, how can we allow the population of China to increase, by increasing man's power over the total land area of China? Typical problem.


UNESCO/C. Bablin, 1958


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Bertrand Russell (left) provided the conceptual guidance for Norbert Wiener (center) and John von Neumann (right) to develop and deploy the tools of Cybernetics and Systems Analysis to destroy the idea of a society that exists for the benefit of the people.

This is the problem which all societies face, in one form or the other. How can we increase the standard of living, how can we improve the life expectancy, how can we change the composition of cultural activity in the family, to make a higher quality of human being? How can we eliminate drudgery, emphasize the use of the mind, not just physical labor, to improve the future of mankind? And how can we find happiness in our time, by doing that? This is what Leibniz emphasized: the principle of happiness. Not pleasure, but happiness. To know one is a useful person linking the past to the good future, is to be a happy person, because you know your life is necessary. And a person whose life is necessary, and who knows it's necessary, then others can agree that person is a happy person. A normal human being.

Increasing Mankind's Power

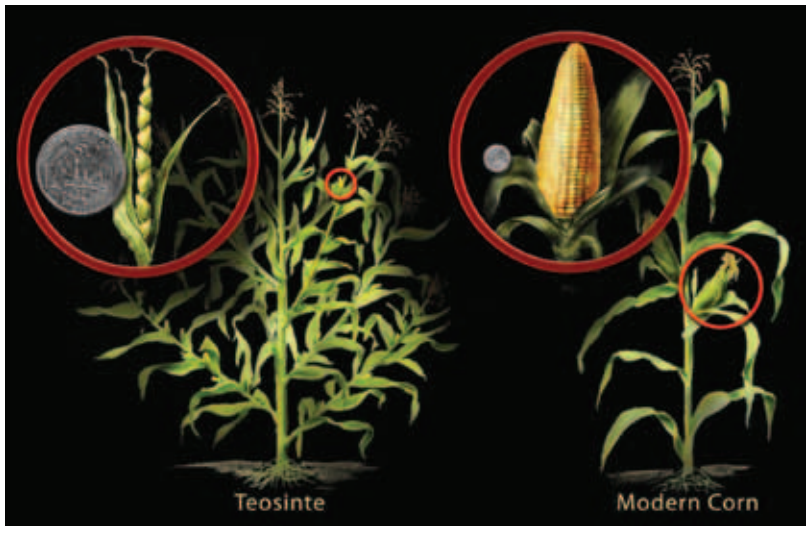
Now, I got into this, into the economics as such, after World War II, after I came back from military service. And, at that time, in 1948, a book was circulating, a book which my previous education assured me was a hoax, incompetent. The book was called *Cybernetics.* It was written by a fraud, a hoaxster from the Massachusetts Institute of Technology. His name was Norbert Wiener, and he is today the world-famous father of a fraud called "information society," which is a fraud. It does not work. It's not true. So, I recognized the fraud. I saw this fraud as a danger, because it's a false conception of man, a false conception of man's relation to nature. So I dedicated much of my time to preparing a refutation of this book.

So I came then to a second book, which is also a fraud. The second fraud was *Systems Analysis,* which was written chiefly by a fellow called John von Neumann. Systems analysis was initially, mainly, developed around the ideas of economics, political economy. And this was the same fraud as Norbert Wiener's fraud, exactly the same hoax. This is not accidental, because both Wiener and von Neumann were trained by the same person, Bertrand Russell of England.

Now, Russell, if you read his writings, you would understand Russell. Russell is a perfect example of an oligarch. And his writings—he hates modern society. He's dead now, of course. He worked hard to earn his

death. And his view was that modern society is bad, because it makes life unpleasant for British aristocrats. These people were against scientific progress. Russell especially hated the United States. He said, "How can I, who was born in Victorian England, when England was a great empire, where my family was among the ruling families of the British Empire, how can I stand to live today in the middle of the Twentieth Century, when the Americans are dominating the world?"

The essential thing, which has always been the problem for us in the world, and the United States, is that these people wish to maintain a two-tier society, in which a small group of the population, less than five percent, rules the world, or work as bureaucrats, administering the cattle from the top. And these people were always determined to destroy the idea of a society which existed only for the benefit of the people. They were opposed, especially, to educational policies which train people to think scientifically, or to think in terms of Classical culture, Classical artistic culture.



NSF/Nicolle Rager Fuller

"We took wild plants, cultivated the ones we liked to eat, and made them better to eat." Shown on the left is wild teosinte, a Mexican grass plant, considered to be one of the parent plants of modern corn, shown on the right.

They wish to keep the majority of mankind as a farmer wishes to keep his cattle: fat, edible, and stupid. You see an animal breeding: how did we get animals on farms? We started with wild animals. We picked the kind of wild animals we liked to eat, as we did with plants. We took wild plants, and we cultivated them, the plants we liked to eat, and made them better, better to eat. We took the cows, who were wild and nasty. You see wild cattle today, on certain parts of the planet. They're very wild, they're very difficult to deal with, very unpleasant. They're not very obedient. So, when we bred cows, we bred them to make them stupid, obedient, to give a lot of milk and a lot of meat. And we bred them so they would give the most amount of meat for the amount of grain they ate.

Power and Happiness

And the oligarchical system did the same with people. They would encourage people to breed, to make strong people, like cattle, people who were not too intelligent, who were not educated, who were taught to be obedient, so that they could work, like good cattle, for the masters.

So that's the struggle, that's the conflict. And that conflict is key to understanding physical economy as an idea. Once you say that all people are capable of scientific thinking, by virtue of their birth, all people are capable of discovering space and exploring space, they must be educated, because of what they are. They must do work which fits what they are. And since they are all going to die, each, we must allow them to do something good for the people who come after them, and we must protect what they do that is good, for the benefit of future people. Once you accept that, you say, "That must be wrong. We must form society to obey that law"; which means you have declared war against the continued existence of oligarchical society, and you've started a war between those who want this kind of society, and those who prefer the other kind of society.

Now, if you belong to the first group, who believes that all people are equal in this sense, then your concern is, "How should society be run?" It must be run according to the nature of the individual person, which is this mental capacity for discovering the laws of the universe; to mastering the discoveries of previous generations before them, to become a person whose mind has all history in it, in the sense of these ideas, as in a great scholar or a great scientist.

Therefore, we are interested in finding out what the laws are, which enable human beings in society to increase their power over nature. The other side says,

"yes, we want the knowledge, the technology, but we don't want too many people to understand it."

So therefore, it was natural that once you had states emerging in Europe, in which a few thinkers had much support, that you began to form national economies, national economies which were committed to the educational development and new kinds of employment, that this concern would come to the surface. And you find the eruption of what is called modern experimental physical science in Europe, and the emergence of new ideas of administration of economy, new policies of education. And the ideas of physical economy began to emerge naturally under these conditions.

Look at the impact of European civilization on the world, since the Fifteenth and Sixteenth centuries. For example, in the Fifteenth Century, the level of development of technology in China and that in Europe, were about the same, as the great maritime explorers and astronomy in China show. But then, the revolution in Europe meant that the development of science and technology in Europe leapt ahead. And suddenly, European civilization, which had merely been one part of the world, now became an increasingly dominant part of the world.

So the history since then, of the relationship of Europe to the world, is a history on the one side of the benefits of the spread of this culture, including its assimilation with Chinese characteristics, which is the way it happens among most people. They assimilate a culture into their culture, adopt it, use it, for their benefit.

Europe and China

But then you have the other side, typified by the imperial systems of the Eighteenth and Nineteenth centuries, which is a reflection of the conflict in Europe itself between national economy and financial oligarchy. And, for various reasons which I won't go into right now, we have come to the end of that. We have come to a special historical condition, where no longer can these two forms of society live on the same planet. And the great financial crisis which has erupted in Asia [in 1997], is the beginning of the end of that system, of the two types of economy.

From that standpoint, therefore, we can understand and trace physical economy. There are two things that have to be considered in physical economy, two kinds of ideas, but really they are the same, or they're two branches of the same.

On the one side, there are ideas that pertain to the relationship of the society, per person, to the physical universe. That is, how many square kilometers are required to sustain an average person? What is the standard of living of this average person, physically? What is the productivity, physically, of this person, on the average?

The second area, is the area of Classical art. The term "Classical" in this case means a Greek standard for the term "Classical." It means Classical in the sense of Plato, in which you say that art is governed by a principle of reason. It is not an irrational inspiration, but there is a knowable principle involved in art. And we can find traces of art, as far as we know them, of Classical art, or roots of Classical art, back into 6,000 years ago. So these are the two branches.

The first branch is simple, in one sense. It's simple to understand. It's called experimental physical science, in modern terms. It covers everything: biology, mechanistic systems, astrophysics, everything of that sort. Mankind makes a discovery of a law of nature, of a principle. We prove this discovery is true, by something like an experiment, what is called a crucial experiment.

Now, when you construct an apparatus to test a scientific principle, the apparatus you construct, can then be used to guide you to make new kinds of things, products and processes, production processes. Now, you bring that new principle into changing the way you do things, the way you practice, the way you work, and the way you design products. And you find that for the same amount of effort, you now can do more, that your products are better, that the power of man per capita over the universe has increased.

But society is not a mere collection of individuals practicing science. For example, take the very concrete point, to understand this: Can a person using their senses, see the mind of another person working? Can you see the mind working to produce a valid discovery? You can not. This involves an area called *ideas*: things which are true, but which you can not see, touch, feel, with the senses.

The Science of Paradoxes

How do you study science, for example? The student in the school is given a problem. The problem is a difficult problem, which the student must work out. Among the many problems the student is given, are re-

ports that a certain person made a discovery, a discovery of a law of nature. The students, at a certain point in their education, are asked to repeat for themselves the act of discovery made by this famous person. So when the students re-enact a great discovery, they have thought as the great discoverer did centuries or more before. They then have re-lived the act of thinking of that person, that discovery.

For example, if you have a system of education, in which you don't ask students to do that, you tell them merely to learn the result of the experiment, these people will pass the examinations, but they won't understand anything. This is true at all levels of work, and everything else. If you put a person to work, how well is that person going to work? You say "Well, he will do what he has learned."

Now, some of you have been involved in administration, or observing the administration of projects. And you know from painful experience that doesn't function. On every level, you require some degree of creativity from the people working in the project, beyond just learning. For example, every poor peasant was born with the same mental capacity as a person who is educated. You take a poor person from a farm, from a poor farm, you put them in an industrial project. How is the project going to succeed? You require more than the person understanding what to do. The result will depend upon to what degree that person has developed the ability to solve problems, to make things work. Ingenuity.

Why does a person solve problems like that? I can tell you my studies, and my own experience, and the experience of others in U.S. industry. People solve problems because they enjoy solving problems. A person who is angry, who kicks the machine, who breaks the tool, is not going to solve the problem. He will fail you. He will become extremely angry, break things, curse at people.

The person who is a supervisor of workers, when they frustrate him, he becomes angry with them, and says stupid things to them. A good manager is one who enjoys helping people to learn to think creatively. He'll say, "We must do this job." He will be harsh in demanding the result, but he will be loving in assisting them to find the way to solve the problem.

So therefore, the important thing in society, is this developing the individual to love to do what it is they do well as human beings, to make discoveries. For example, when you bring a toy home, you have a young child. And you bring a new toy, or you bring a new game for that child to play. The child at first is frustrated. They don't know what to do with this new toy, or how to use it, or how to play this new game. But then, when the child, particularly a young child, discovers how to solve that problem, a play problem, the child is very happy. And the people around him, usually the parents, are also happy to see the child solving the problem.

EIRNS/Stuart Lewis

"A good education system produces creative, innovative people who solve problems, who are not simply angry at things that don't work, but who find ways to make them work." Shown here is Lyndon LaRouche (left) in 1994 with Norbert Brainin, first violinist of the Amadeus Quartet. Helga Zepp-LaRouche is visible beyond them.

What Makes Us Human

So, this *happiness principle,* of using the mind to solve a problem, is the thing that makes for good work, and makes for creativity. You can not buy creativity; you must inspire it. So a good education is not an education which beats people into learning how to obey. A good education is one which forces the child to meet the challenge of solving the problem we know that child can solve. And the victory is joy.

I'm sure all of you have had the experience of work-

ing at a job which is very monotonous: the same thing day after day. It becomes very boring, very frustrating, to repeat the same action over and over again. And people in these work situations like variety, to break the monotony. They will sometimes do things differently, just to break the boredom.

So, the normal condition of the human being is to be happy, in the sense of true happiness, which is the happiness of an old man who dies with a smile on his face, who says, "my life was necessary. I came here, I did something good. It would not have happened if I weren't there to do it. Therefore, my life was necessary." The old man dies and says, "I have good children. I was necessary to make these good children." Happiness. Happiness in life is to do something each moment, which contributes good.

So, if you look at every baby, every child, and say, "that is a good person, a good child," and you educate that child, with the idea not merely of getting a certain technical result, but using that task to make that child happy, because that child will experience the sense that they are something special, because they have this power in their own mind; if you want a good education system, that's what it must do. To produce creative people, innovative people, who solve problems, who are not simply angry at things that don't work, but find ways to make them work. This is also a reflection of art inside science.

In fact, in no case have I known personally a great scientist, who was not also involved in Classical art. Because the spiritual aspect of art is necessary for the spirit of scientific work. And let me briefly explain what I mean by that.

The most famous forms of art we have, are divided into what we call plastic arts, such as sculpture, architecture, painting, and the arts such as music and poetry, or the great literary works, the dramatic works that come from that. For example, poets and poetry are very old, the oldest thing we know, essentially, really, in terms of art, is Classical poetry. Every Classical poem, like every work of art, has in it a problem. And every great poem is enjoyed, because it is a reliving of the act of solving the problem which that poem presents.

Rembrandt van Rijn

"No one can see, or smell, or touch, or feel, the thinking process by which another person develops an idea." Here, Rembrandt portrays the empiricist Aristotle, who knows nothing of the creative mind of the blind poet Homer, whose bust he contemplates.

Great Art and Greatness

We talk about principles of social behavior, for example. Generally, these can be represented by great dramas, or great poems. The same thing is true in music, the same is true in plastic art. What we are studying, is this most important of all problems, that we are a society, not a collection of just individual human beings. Yes, we use a language, which, in each society, tends to be a common language for that people. But language is not what makes a society work by itself.

The most important thing is what I said before: that no one can see, or smell, or touch, or feel, the thinking process by which another person develops an idea. In physical economy, the most important things are ideas like scientific discoveries. The most important thing is: if one person makes a valid, scientific discovery, how can we cause that act of discovery to occur in the mind of another person? You can not use information theory to do that. Information theory is a fraud. *You must*

enable the other person to repeat the discovery you've made.

You see that in any classroom experience. You see people are studying a principle of science, in the same class. In a good science class, 15-17 students is good, because the interactions are there. And you see, one by one, the faces of the children in that class, begin to realize that they have understood the principle. And they can then demonstrate to each other, that they've all had the same experience. They've all shared. Those who made the discovery, all now share it. Because they know what happened in the mind of the other.

So the most important thing in society, is, how can we enable one another to understand what we think? This is essential for science and technology, it's essential for everything. How can we have law? Shall law be something which is made simply because some people agreed on certain words? Or must law be a principle, like a scientific principle?

If a person goes before a legal court—suppose a person is accused of some crime. And they are called before a court, to be tried on this accusation. So the person who is being tried, knows they are not guilty, they are falsely accused. What is the problem with the person who is accused? The person says "I am innocent. I know I am not guilty. How can I convince the judges that I'm not guilty? How can they come to a true"—not "how can I persuade them," not "how can I bribe them," not "how can I deceive them?" But "how can they discover the truth, as I know the truth?"

On the other side, look at the mind of the judge. The judge has a person before him, as an accused. How can the judge know whether the person is innocent or not? What must he evoke from the accused person, or from witnesses, to determine whether that person is innocent or not, or guilty?

Not by the Senses

So, in both cases, the problem involves minds, a mind whose functioning can not be seen by the senses. And the same principle we use for discovery of scientific principle, as in classrooms, or we teach scientific principles, apply in every aspect of society. What's the most important thing in running a state, not just in law, or not at the trial. The most important thing is: how do we develop ideas which are true, and then how do we convince the people that these ideas are true? Not by deceiving them, but by causing their minds to recognize the truth.

And therefore, art—and if you look back at the history of all great Classical art of all great cultures—I'm sure you can do this in China's culture—you find, embodied in the culture, many things in Classical art, which help to communicate what otherwise can not be communicated in words. It's called *metaphor* in English: the art of contradiction. Where two meanings contradict, what is the truth that lies between the two meanings that contradict, when both meanings seem to be supported by evidence? That's scientific method. That is also the method of Classical art.

And thus, that is the essence of physical economy. The object of physical economy, is to perpetuate and develop a form of society, which meets the requirements of human beings. Not just the physical requirements today, but the requirements which flow from the fact that each of us will die.

If each of us will die, what, then, is the meaning of our life? The meaning of our life is what we are doing while we live, that is going to benefit humanity in the future, and do honor to people who came before us, to whom we are indebted.

How can we make such a society? And therefore, how can we understand how the mind works, how minds can work with each other, and discover principles which we can then cooperate to use, to make the condition of mankind not only better by these standards, but also to deal with the universe?

Someone will say, they go to astrophysics. And they say, "You think you are doing well." And they will say, "Well, maybe three billion years from now, the Sun will blow up. Then what happens to humanity? What was all this about? There could be other catastrophes. You may have some object come and strike the Earth and destroy life on Earth." So that obviously, whatever these problems are, the destiny of man is to provide the conditions under which mankind can continue to exist.

We must, therefore, develop. And we must, therefore, not only develop, but we must provide people happiness in the process of contributing to development. That's what physical economy is, which has many technical implications, but I've tried to concentrate, for this period, on the principles, the historically determined principles involved.