

LaRouche Posed U.S./Mexico Task of Blooming the Desert in Visit Last Year

Interviewed by Hipatia magazine of the Autonomous University of Coahuila, during a visit to Mexico in November 2002, Lyndon LaRouche discussed the idea of V.I. Vernadsky's "Noösphere," acting through the Biosphere to transform the Earth, and said that real national economies should be measured "like planetary orbits." LaRouche was interviewed on Nov. 5, 2002 by Dr. Rafael Argüello Astorga, coordinator of Graduate Studies and Research at the University, which invited LaRouche to Coahuila.

Hipatia: First, I would like to know what you think the role of science is in the development of the economy?

LaRouche: We're going to have to change the definition of economy, because the actual progress of economy can be best understood from a Riemannian standpoint. If you have a discovery which qualifies, mathematically and physically, as a Riemannian principle, you change the physical characteristic of the system, which can only be measured experimentally, but it is a change in the space-time curvature of the system.

The problem is in accounting, for example: Accountants don't understand economy, because they're looking to connect the dots. They're not looking for a principle. In a real economy, the real economy has to be measured like planetary orbits. They're long-term processes, and the science of economy is to look at a short interval of a long-term process, and to determine what your trajectory is of the *whole* process. The accountant assumes that you can add up the parts.

The best example of this is Gauss's determination of the asteroid belt, based on only three observations. Here [in economy], as in astronomy, you have to normalize your observations and then determine your total process, based upon the understanding of what you've normalized. In an economy, therefore, it is the consideration of principles: not merely their discovery, but their effective application.

For example, if we increase the so-called energy-flux density of energy technology, like going from combustion technologies to nuclear technologies, you increase the energy-flux density by orders of magnitude. That enables you to change the kinds of processes you can use in society, to a higher level. Therefore, if you don't change anything else, you will increase the productivity of the whole society, by changing some part of the whole. Infrastructure—improved transportation, improves the productivity of the whole society; and so forth. These are general examples that the accountant doesn't take into account.

Now, in principle, therefore, it is the ability to generate discoveries, to integrate them into the process, which is the only real source of physical profit in a society. Leibniz described it as *power*—not *energy*, but *power*. And power is the mathematical-geometric concept, which is why I emphasize the complex domain—Gauss's complex domain, that concept. Therefore, what we have to do in economic practice is emphasize knowledge of these kinds of principles, to understand what we're talking about in an economy. It is not a balance sheet.

For example, if we put more emphasis on research in the machine-tool sector, the effort in that area will give us a greater benefit for the whole economy than a mere increase in production. It is an allocation problem, of how do you assign available productive resources, and to what categories, to have a greater benefit on the whole economy.

We're now in a period of great crisis. We have to find ways, with limited resources, of accelerating the productivity of labor worldwide, and rapidly. So we cannot count on accounting. We have to go to a general engineering approach. But then we also have to have a science-driver conception, like with the space program. A science-driver concept, and projects which are science-driver projects, long-range ones. Because then you develop a cadre of people for the science-driver projects. Then you'll have an incalculably unlimited potential for development.

So there has to be some concept of this. And the important thing is to get the students the grounding in the conceptions, which ought to be part of engineering training. They ought to know how an economy works—not in the accounting way, but in terms of thinking how to increase the power of the mind, how you make inventions, how you discover principles. What is the discovery of a universal principle? What *is* a principle? Most people don't know. They look it up in a textbook. And you need experimental methods. Students actually have to know how to discover a universal physical principle.

This is what I would put the emphasis on, in this kind of change.

Hipatia: In our universities, the majority of our students want to study administration or accounting and things like that, because it is apparently easier, instead of engineering or medicine or things of that sort. In your opinion, how can we change this, since for every one engineer, right now we have seven or ten administrators?



U.S. Presidential candidate Lyndon LaRouche met the press of northern Mexico in Saltillo, capital of Coahila state, last Nov. 5, when this interview was conducted at the University of Coahila, leading to the study of joint U.S.-Mexico economic infrastructure development published above.

LaRouche: That's a waste! We were discussing this today with an older fellow. He mentioned the problem that Mexico has many needed projects, which are engineering projects: water management, power, these kinds of things. Because you have tremendous water in the South of Mexico, and the question is, how to move it north. Well, we could move it north by canal. This hydrological development is a very complicated process, although the conception is simple. This requires engineering. Mexico had a great deal of research, over a couple of centuries, on these kinds of projects. So the files of the government are full of studies of these various kinds of projects. What you need is an engineering task force on a large scale, special government programs, to implement these projects.

What is happening is that somebody, out of fantasy, is bringing in foreign engineers to do work that Mexicans could do better. Maybe you bring in one or two specialists to advise them, but, in a sense, you build a Mexican team, using existing skills. The problem is that Mexico is not using enough of its own engineering potential for urgent work.

Look, the problem is a cultural one, an international cultural one: the idea of post-industrial society. Everybody wants to be a white-collar manager, and nobody wants to produce.

I think what the secret is, is to fight to *build*. Because management is a failure, the philosophy of management that was elaborated in the post-war period, 1950s to 1960s—systems analysis and so forth. This is a terrible failure, a disaster. And this is what these people believe. And therefore, they're being trained this way; they're learning techniques which are in themselves a disaster.

So therefore, I think the thing is to put incentives on mak-

ing the goals be science, engineering, production, agronomy—all of the things which are essential to society. And count on one thing: Today, the failure of the economy declares the bankruptcy of these methods of administration. They have failed. Therefore, that means there has to be a cultural change back to an earlier period—back to the early part of the 1950s and '60s—when the emphasis was on science, engineering, and on production. So therefore, rather than saying, "What do we do to change it?" we can count on the fact that the very nature of the situation will shift the priorities back to education and training in these categories of technologies and related ideas.

So, the idea is to design the programs so they can be expanded to meet these real needs, because there will be no jobs for these managers and administrators, there will be no employment for them. Now, Fox may think so. Mexico's President Fox, with his background, came into the Presidency thinking that management is everything. He was elected because many of the population believed that that was the way things were going. But it's going the other way, and fast. So, I would say that we should concentrate on building the capabilities, even on a limited scale, to then prepare to expand, because there should be a shift from management into production. Anybody who is a good engineer can be a good manager.

Hipatia: There is a general belief that technology replaces people. In a conference, the governor said technology is terrible, because it produces unemployment.

LaRouche: That's an old myth. No, no, rather, government produces unemployment, because of bad policies. The point is that, to take advantage of technology, which cheapens the

cost of production, requires less labor to produce more. It means you have to raise the standard of living, you have to increase the number of years of study, for example, from 12 years to 25 years. It also means you have to utilize technological advances, you have to build the infrastructure. Therefore, you shift employment to higher categories.

You see, people have to understand that the object of people is not to satisfy an economy; rather, the object of the economy is to satisfy the needs of the people. The needs of the people are to produce a higher standard of living and a higher intellectual life, for successive generations. If you're not doing that, then you're failing as a society. Don't blame technology for this. What happens is, there are people who want to steal most of the production. Or they think it's better if they make the labor cheaper, that is reduce the wages, reduce the support, cut costs, which destroys the population.

That's what's happening with the *maquiladoras*. The income paid the worker to support the whole community, the whole family, is inadequate. It's inadequate in terms of health care, and so forth. That's why I place this emphasis: The measure of economic performance is measured in generations of improvement of the total condition of the population. The economy has to serve these purposes. The function of the entrepreneur is not to be a manager; the function of the entrepreneur is to be a creative force which organizes production at higher levels of efficiency.

The good farmer is an example of this. An entrepreneur, a farmer, a poor Mexican farmer who knows how to improve a crop, and who does it year after year, is an entrepreneur. In industrial management, same thing. A machine-tool operator, the same thing.

So you have to put a premium on certain human values that help the economy advance. Human values, like: What are you going to do for your grandchildren? What kind of a world are you going to leave for all the grandchildren? How are you going to develop the present generation, their children and grandchildren? How are you going to develop the territory so you can do that? How are you going to increase energy resources? How are you going to improve the land area?

There's a big problem which everyone in Mexico knows: You have the two Sierra Madres. If you go from there to the north, through the United States, you have the Great American Desert. The problem is a shortage of water, a grievous shortage of water. But Mexico has too much water in the South. There's a great shortage of energy, generation and distribution of energy. And there is a great shortage of modern transportation. If we bring these three ingredients together—if we bring the water up from the South, from the Pacific side and the Gulf side, we move the water up to the higher plateau, you now have transformed the plateau from a semi-desert into a region for the expansion of new cities.

You move the population out of inefficient cities like Mexico City, into development areas where it's cheaper to maintain people than it is in Mexico City—because it's an

inefficient city, it's too big.

So this is a mission. To do this we must take as an objective, looking ahead, three generations ahead. We need vast hydrological projects; there are tremendous masses of water in the South. We can move a lot of it. Then we move the water through canals that run along the coast; we pump it up, as necessary, into the central plateau. We develop microweather systems in the central area, so that you have a self-regenerating water culture. You put together integrated systems of generation and distribution of energy, and efficient transportation.

You transform Mexico. In three generations, by the third generation, you've changed all of Mexico, something which the people only dream about now. And therefore, that's how you have to work with new technologies. You have social human goals; man is not a monkey. You must have goals which match the nature of the human being. And the economy must be a tool of man, not man a tool of economy.

Hipatia: This brings us necessarily to the question of ecology and the ecology movement, the environmentalist movement. By transforming the north of Mexico, for example, or the desert area: How do we address that problem? Obviously, some problems might be created by this development. But I understand that, if we have the technology to bring the water, we also have to have the ability to resolve problems inherent in that.

LaRouche: Absolutely. What you have to do is bring order to this subject of discussion. The ecology movement is a creation of calculated insanity and immorality. Now, we have a science of ecology; a good one, not a bad one. The best example is the work of Vladimir Vernadsky and his concept of the Noösphere.

First of all, this will already scare away most ecologists, because it involves a concept of man which is contrary to their ideology. In nature, in the universe—and I describe this from a Riemannian standpoint, although Vernadsky didn't understand this, because Vernadsky did not understand Riemannian geometry, so-called anti-Euclidian geometry. Nonetheless, Vernadsky, working from the standpoint of the development of biogeochemistry—as a product of geology—was a follower of Mendeleyev. He had the same concepts as Mendeleyev on crystallography—these crystal refraction experiments. And how the geometry of the crystals reveals the geometry of the molecules.

In any case, what Vernadsky did—on the subject of geology, and working with Pasteur, Curie, and so forth—was to concretize the systemic difference between the living and so-called non-living processes. Hypothetically, non-living processes are mathematically entropic. The universe is not entropic, but the so-called non-living aspect apparently is, from the standpoint of optical characteristics, as in crystallography.

Living processes are not characteristically of the same physical principles as the non-living, and Vernadsky demon-

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strated this, through geology: that the so-called fossils of living processes—which include the atmosphere, sea-water, and so forth—all are products of life. So you have two phase-spaces. Experimental phase-space number one, which comes from the chemistry of non-living processes; it's not the whole universe, but it's a phase-space. Living processes are another phase-space. So, the principle of the living universe is different from the principle of the non-living phase-space. But the living phase-space dominates the non-living. The living phase-space is anti-entropic, and the anti-entropic processes, the long processes, dominate the entropic processes.

Then you have a third phase-space. The human mind, by making fundamental discoveries of physical principle, produces effects, as fossils, which no other living process can produce.

So, you have three phase-spaces. First, is the non-living, which is one phase-space in the universe. Second, the Biosphere, and the action of a living process on the non-living. Third, the human mind and its effect in physically changing both of the other two phase-spaces. This reduces the universe to a very interesting science, which can only be represented in a Riemannian way. You have a Riemannian universe of three phase-spaces, which are integrated in a Riemannian way, which measures the effects of change by the physical change in the curvature of the process, using the same concept as in Gauss's general principles of curvature.

Except this is a developing universe, in which the important transformations are through the action of anti-entropic living processes on the non-living processes, and the anti-entropic human mind processes on both other phase-spaces—in which the human mind is constantly making discoveries of new physical principles in the universe. A true, perfect Riemannian system.

Now, therefore, we look at problems, say, in Russia. In Russia, in Kazakhstan—one of the greatest concentrations of mineral resources on this planet is located in central and northern Asia, including the tundra. Now, inherently, these areas can only be developed with infrastructure. This means advanced change in the characteristics of the Biosphere. These are problems which are manageable. Some of our Russian scientist friends in the area of geology have been working on this. So, what we need is a science of the Noösphere, introduced as the basis of saying: Yes, you have to manage prob-

lems of the Noösphere, you have to manage the Biosphere. Now let's study the *science* of how to manage the Biosphere. Let us not take some idiot's personal impressions!

There are people who say, "I love the desert! I love horned toads." Do you want them in your kitchen? It would be a big stink!

Now, in Mexico, we have precisely this. We have an area which has tremendous resources. The problem is how you develop them. How do you turn bad land into good land? A desert is bad land. This is not a natural condition. Just ask the environmentalists: "Do you know about ice ages? Do you know what the levels of the seas were? Do you know what the levels of rainfall were 200,000 years ago, or 100,000 years ago, or 17,000 or 10,000 years ago? Do you know what the Gulf of Mexico looked like 10,000 or 20,000 years ago? It's changed. Do you want to bring back the ice age? We're going back to that in 2,000 or 3,000 years."

We have two pulsations that determine this. The biggest one, the most important in the short term, is the Sun. The Sun is a big machine; the short-term fluctuations—10 years, 20 years, or something like that—in radiation, in the temperature on Earth, comes primarily from the Sun. The Sun is now very hot, a lot of radiation. But in the long run, there are these long cycles, shifts in the orbital characteristics of the solar system.

Johannes Kepler had studied 200,000-year-long cycles that determine the long-term potential of an ice age. And this has occurred for 2 million years, since the migration of the land masses which created the Antarctic. In the Northern Hemisphere there were ice ages.

So the climate is going to change. If the climate changes in a certain way, the majority of the human race will disappear. Entire nations will disappear. Do you think man has the right to prevent this, or do you think the universe isn't constructed that way? Or, rather, isn't it the case that there is nothing "natural," nothing permanently "natural" about the existence of a desert? There's nothing sacred about the desert. Spend a little time in a desert, and see if you like it. See if you don't get very hot! I've worked in the desert; it's not a nice place to be.

So, in any case, we do have the moral responsibility to maintain the planet for our needs, and to maintain the species that are needed to keep the planet healthy, and to maintain the atmosphere, the water, to improve things. We have a moral



Irrigated, productive farmland in Sonora stands out in the great plateau which runs from Central Mexico all the way up into the U.S. Western Plains states, the very unusual geology first discerned by Alexander von Humboldt's exploration 200 years ago.

responsibility not to be fixed, but to improve. And therefore we should study the science of how to do this: not British ecology, but the actual principle of the Noösphere. And, as a matter of fact, if you want to study physical chemistry, if you want to study geology, or any part of earth science, you have to study this.

We're going through a cultural change. This ecology movement is like the Luddite movement. This was raised in the early 19th Century to try to stop scientific progress and go back to feudalism, go back to the guild system, back to the Byzantine system of Diocletian. Diocletian promulgated a law, where every person had to follow his father's profession, in exactly that quantity. There could be no increase in population. This is what destroyed the Byzantine Empire, this philosophy. This was the characteristic of feudalism, this was the characteristic of the bestialization of man. This is what transformed the majority of the human race into human cattle.

Modern society has freed man, where every man has the right to be truly human. If we succeed in this, we will have freed humanity from feudalism and from slavery.

There were a lot of fights in Mexico in order to achieve this, to get out of slavery, out of this terrible poverty, and out of this brutality that has continued even into the 20th Century.

To get to the point so that every man, every individual, is treated as human, as equally human, with equal human rights. And these other fellows come along with their Nietzschean cultural pessimism, and they're brainwashed—especially since 1964—and they say: "You don't need to eat. You need marijuana, LSD, crazy mushrooms."

It's crazy. This is a self-destructive culture that is actually

insane, which goes together with a consumer society that is not productive. The people want social status; they no longer desire to be useful. It's a cultural problem. It's all going to end, because there's been a change over the past 35 years, to a so-called consumer ideology, a post-industrial ideology. It is the cause of the current crisis of civilization. The human race is going into a New Dark Age, if we don't stop it. We have to stop it. So, in a sense, we have to convert these crazy monkeys back into humans. Things are with us: They'll be just fine. We have to provide them with an opportunity. We have to say to them, "Look, here's how to survive. Here's how society can survive."

And when people are young—between 18 and 25—they are still capable of learning. When they get older, they don't want to change. But between 18 and 25 years, college-age, their minds are still open. They don't want nonsense. The typical person of that generation, around the world, knows that they are living in a no-future society. They know they don't have a future; not in this way, they don't want it. They want a future. They don't know what it is, but they want a future. They know that what their grandfather had, their father had, as a *right*, doesn't exist for them. Therefore, for those who wish to survive, they have to be willing to change. And they'll even like it!

And this is what I'm doing with our youth movement, with these youth between the ages of 18 and 25. You have to treat them in the right way. You have to recognize what they are: They are young people. You cannot tell them, "Do this, do that!" They themselves have to learn. It's the same thing you do with a Classical humanist education. As a matter of

fact, you use the method of dialogue, of motivation, of discussion in groups of 15, 20 or 25 people. There has to be discussion, orientation, practical orientation, but about the most profound questions.

Which is why I always insist on Gauss's 1799 Fundamental Theorem of Algebra. What does that mean? If they can understand why Gauss attacked D'Alembert, Euler, and Lagrange, and why he was right, then you have the beginning of the principle of understanding physical science. You start with that, and it causes great discussion. The youth love it, because they're not being taught to *learn* something or memorize something, but to *discover* it.

What does Plato mean by *power*, the Greek concept of *dynamis*; not *energy*, but *dynamis*? What did he mean by it? What does Leibniz mean by the word *Kraft*, or Gauss when he talks about *power* in his definition of the complex domain? What are the implications of that?

So, when young people really grasp this, discover this, they engage in communicating this concept to others. You have the ideal university class of between 15 and 25 students. You plant the seeds and you let *them* do most of the work of educating themselves, by setting them the problem and being there to help them, and to give them the next assignment. They'll often find the next assignment themselves.

When I have a class with these youth, I seldom escape in less than three to five hours, because they ask me *everything*. Fortunately, I know most of the answers, or where to get them, but they ask about everything. And it's necessary, because instead of having a specialized education as an ideal, one needs to work from the whole concept of the person. This is what a university education is supposed to be: a total conception, the totality of the universe, of trying to understand the universe. You want a total view. What is a Classical Greek statue? What is the conception of perspective of Leonardo da Vinci? What is the difference between the two? What is the Bach system of music? What is the principle of poetry? How does Classical drama work? What happened in this or that period of history? This is what they want, and this is what a good university gives them.

Hipatia: In our university, authorities are elected by vote. In this system, you put in the hands of very bad people or very good people, the opportunity to hold power in the university. This university is one of the very few that has this system. What do you think about this?

LaRouche: It's problematic. It depends upon the kind of leadership you have. Democracy doesn't work; otherwise, the monkeys will take over. What does work is leadership. You have the authoritarian approach, as opposed to real leadership. Most students at a university level, who really wish to learn something, are open. They will give you a chance, a chance to establish your authority by teaching. But you have to meet this challenge. The danger comes when you have a sloppy, doctrinaire, non-cognitive kind of education.

True teaching is based on the Platonic dialogue, the Socratic dialogue. This works, as you know. To teach, the first thing that you have to do is get their attention. And you have to get their attention by relaxing things, and then pose a question. Once you know everybody, you pose a question, a shock, a Socratic question that they can understand. And then you get a discussion, and they ask Socratic questions, and you have to respond to that. But you have to be careful not to be trapped into just that. You have to throw the question back to the whole group. You must have them in mental turmoil over unresolved questions, but where answers are sought. And if they come out to study and discuss these questions, then you've won.

So the problem is leadership. The problem is a sense of mission. In that case, then you will have a very well self-managed process. It may appear chaotic from the outside; but I know, from long experience, that what seems a very sloppy process from the outside, is actually a necessary process. When leading a class, teaching a class, you must know where you wish to go, but you have to prove to the class, or rather, get them to prove it to themselves, that the area that you're discussing is the correct one. So they will test you by going into areas which are not the correct ones. And you have to show them how to get back to the correct one, not with tricks, but with reason. And it's all Socratic.

All these systems can be bad or good, depending on the quality of leadership that the faculty provides, and especially the university professor can orient the process to lead to a coherent conclusion. The key thing is mission orientation, because the question of anyone between 18 and 25 is: "Where am I going? Where am I going with my life?" And if they think they are just learning this, learning that, they say: "What do I need this for?" If they say this, you have to answer, "You've got to find out where you're going. You can decide. But you'd better explore these areas, to make sure that you make the right decision."

It's just a question of leadership. I love this. It sometimes tires me out, after five hours—because they go at me, they try to test me. They ask the most absurd, extreme questions to try to take control of the situation. You have to bring them back. And never get so ego-occupied that you don't get back. You have to go back to them with: "What do you mean by that?" Because you're trying to train people. It's a social process. I hate the process of multiple-choice questions, of computerized examinations, where they're asking people to feed back what you taught them in class. You have to develop their ability to solve problems. And if you don't present a new problem, how are they going to be able to solve it?

Some people are very quick; they memorize, but they don't think. If you give them an answer, they'll repeat it without knowing whether it's true or not. You have to give them a challenge, something they don't know yet, but you think that they can discover. That's the test.

I enjoy that.