

EIR Feature

V.I. Vernadsky and The Transformation Of the Biosphere

In this issue, we continue our report on Lyndon H. LaRouche's June 28-29 diplomatic initiatives in Moscow. He participated in a webcast press conference on "The Economy of Russia Under Conditions of Destabilization of the World Financial System" on June 28 (EIR, July 6), and then addressed hearings of the Russian State Duma's Economics Committee on "Ensuring the Development of the Russian Economy Under Conditions of a Destabilized World Financial System," on June 29 (EIR, July 20). He also delivered the lecture printed below, to the Lebedev Institute of Physics of the Russian Academy of Sciences (FIAN), on June 28.

Two regular social sciences seminars exist under the auspices of the FIAN. Prof. L.A. Shelepin chairs the FIAN methodological seminar, which has existed for over 50 years, and continuously (after a five-year hiatus) since 1993. The second standing seminar, devoted to economic modelling, was initiated in 1995 by Profs. G.G. Pirogov and D.S. Chernavsky. The late Prof. Taras Muranivsky, Moscow president of the Schiller Institute for Science and Culture, addressed the FIAN seminars on several occasions, with in-depth reports on the principles of physical economy and the forecasts and proposals of Lyndon LaRouche. After the death of Professor Muranivsky on July 17, 2000, the FIAN seminars devoted two special sessions to his memory, the second of which was held jointly with the international Schiller Institute, in December 2000, with the title "Russia's Historical Mission in Light of the World Economic Crisis."

Professors Shelepin and Chernavsky presided at a joint session of the FIAN seminars on June 28, 2001, where LaRouche was the guest speaker. His lecture, and the discussion that followed, are presented in the following pages.

Professor L. Shelepin: Our seminar, this evening, is meeting with the well-known major economist and political figure Lyndon LaRouche. The name of Lyndon LaRouche is very well known to you all. In our country and all over the world, we have a great confusion of various ideas, and people clashing with each other, and LaRouche is playing a great integrating role.



Lyndon H. LaRouche, Jr. speaks to scientists at the Institute of Physics of the Russian Academy of Sciences in Moscow, June 28, 2001. Above: Vladimir I. Vernadsky (1863-1945), the founder of the science of biogeochemistry.

Lyndon LaRouche puts out a journal, *EIR, Executive Intelligence Review*, which is distinguished by the quality of its information and analysis, and other qualities. Lyndon LaRouche is connected with the Schiller Institute, which conducts a great deal of work in the United States, in Western Europe, and in the whole world. At the end of last December, we held a joint conference of our seminar with the Schiller Institute, which had a great public resonance.

I would like to say the following in addition: Lyndon LaRouche applies the method of the exact sciences, economics. The concept he puts forward, is based on bringing the exact sciences into the social sciences. That is the very same task, as our seminar has. Our seminar deals with economic modelling, and precisely with bringing the exact sciences into economics, sociology, and other social sciences. Those who have attended the seminars know that. Therefore, there are many points of tangency between Lyndon LaRouche and the activity of our seminar. Therefore, LaRouche's coming here is, without any exaggeration, a real event for us. I would like now to turn the floor over to Lyndon LaRouche.

Speech by Lyndon H. LaRouche, Jr.

There are many items of business I would have to transact in Moscow now and with you, but today I shall pick one. I will say what I wish I could say in the presence of our dear departed friend, Taras Muranivsky, Professor Muranivsky, who was a dear friend. This is the first time I've been in

Moscow when he was not here to greet me. He would appreciate what I'm going to do.

I'm going to talk partly about Vernadsky, and his importance for today, for economics as well as for other matters. Vernadsky was unique, actually, in economic science, though he was not an economist, because his emphasis upon what he called the noösphere was one of the most fundamental conceptions in all sound economic science. It becomes important in two ways. One, strategically; the other way, because of its relevance to the specific issues before us today, particularly issues faced by Russia.

Now, there are certain things that Vernadsky did not do in respect to economics; that is, specifically, he did not get at the relationship, the *social* relationship, between the individual discovery of principle and how that works in a society. He recognized that, just as life transforms non-life, so the human mind is unique among all living processes, in the way it transforms the biosphere. There are several aspects he didn't attack, which have to be attacked in order to apply the importance of his work to economics. Even though he referred to the work of Riemann in his papers, he did not actually seem to understand the significance of Riemann's work as such. And the work of Riemann is essential, for understanding the fuller implications of the discoveries which Vernadsky actually made.

Let me just, as carefully as I can, explain what the issue is involving Riemann and Vernadsky. And those of you who are physicists, or biologists, will appreciate this, because they have the same quarrel with many mathematicians. The formal



Prof. L.A. Shelepin of the Institute (standing) chairs the seminar. To LaRouche's left is Sergei Cherkasov, scientific coordinator of the Vernadsky Geological Museum, Russian Academy of Sciences, who translated for the event.

mathematician tries to explain everything at the blackboard, including physics. The physicist, the discoverer, deals with the matters that the mathematician would never discover. And this is the way to look at Vernadsky, from my standpoint.

What we call modern physical science, is based on taking what people believe is the organization of the universe, and proving it's wrong. The classic example of that, in modern science, is the discovery of gravitation by Kepler in his 1605 *New Astronomy*.

That is, you take an existing mathematical physics, for example. Remember that Kepler dealt with a very primitive kind of mathematics of Copernicus and Brahe. Before Kepler, the attempt was made, ever since the Romans, to explain the planetary orbits in terms of a statistical projection from a series of observations. And Kepler's more precise calculations, on the measurements made by Brahe, showed that Brahe was wrong, and that Copernicus and Brahe were both wrong, about the nature of planetary orbits and planetary systems. By using existing statistical methods, you could not predetermine, by calculation, what the position, or velocity, of a planet would be.

This discovery by Kepler established in a new way, the concept of a universal physical principle: that physical behavior is not determined statistically. It is determined, in the case of these kinds of aberrations, or these kinds of contradictions, by the discovery of a physical principle, which has the effect of being an *intention* of the system.

Now the same thing was done, in a simpler direct way, by the great Fermat, the great French philosopher. That is,

working from a Cartesian, or Euclidean, system, and trying to compare the experimental results of reflection, and refraction, he found a difference. So, therefore, what Fermat posed, was that the pathway of light was not the pathway of the shortest distance in Euclidean space-time, but the pathway of the quickest time. Then later, through the collaboration on these questions, by Christiaan Huyghens, and Leibniz, especially together, the question of relativistic time and relativistic physical space-time began to be opened up to European science.

Actually, the Leibniz calculus, and also Leibniz's *Monadology*, are key to understanding what came out of these kinds of discoveries by Leonardo da Vinci, then by Kepler, and then by Fermat. The problem came as this: You had a problem with Leonhard Euler, who was a formalist, and you had a problem with a protégé of LaPlace, Augustin Cauchy. The Newton calculus was discredited, so Cauchy tried to save Newton by revising the differential in the Leibniz calculus. The result is, that legions of people after Cauchy, because of the influence of that school, and particularly the British school, have been fraudulently teaching, and practicing the calculus for almost two centuries. Because the differential value, in the Leibniz differential calculus, is not a linear interval. There is no linear connection.

This leads directly into the question of what Vernadsky actually did. And it's the same method; Vernadsky's method, as he describes it, is the same method that was used by these predecessors, including Leonardo da Vinci, including Kepler, including Fermat, including Huyghens, including Leibniz,

all the great discoverers, including, before him, Gauss and Riemann. And it's a great school that he studied in. It was a school of crystallography, which actually was started in European science by Kepler, with his work on periodicity in crystal formations. It's the school of Mendeleev, who was part of the same tradition in scientific work, and whose defining of the periodic table is a benefit of the same method.

So, the important thing is, that in coming in contact with the school of Pasteur, and Curie, Vernadsky made a leap, along the lines they were working, to use certain anomalies, statistical anomalies, to show that living processes obeyed a principle, which does not exist among non-living processes. Now, on that basis, he defined the biosphere from a geological standpoint very precisely. Then, at a later point, he recognized that human behavior affected the biosphere, in the way that life affected the non-living processes. And his limitation was, not breaking fully with the so-called formal geometry, and formal mathematics.

The key thing that Kepler started, is the demonstration that the universe does not conform to a sense of infinite linear extension, in three directions of space, and one direction of time, one sense of time. But a follower of Leibniz, of the Eighteenth Century, a great mathematician and physicist, Abraham Kästner, of Germany, who was the teacher of Gauss, established what was called anti-Euclidean geometry. Not *non-Euclidean*, but *anti-Euclidean*. And this was the basis for Gauss's training. He did this in mathematics, in formal mathematics; he did it in geometry. It is to show that there are anomalies, like the anomaly that Kepler pointed out in terms of the orbital system, the Solar System; anomalies like that which are identified in the case of the work of Fermat on light. It came to Riemann to say, finally, that *there are no formal, a priori principles of space, matter, and time*. But there are only universal physical principles, which we do not detect *a priori*, or with our senses, but principles which we prove in the laboratory by principles of universal experimentation.

And that, of course, is the significance of Riemann's habilitation paper of 1854. Riemannian geometry is not a non-Euclidean geometry; it's an anti-Euclidean geometry. Non-Euclidean geometries are created in the way Lobachevsky did, by challenging postulates within Euclidean geometry. The work of Bolyai and Lobachevsky are comparable in that sense, that they both challenge axiomatic assumptions, but their postulates are of Euclidean geometry. They do not overthrow the geometry.

That is also the significance of the discoveries of Vernadsky: by using experimental evidence, natural phenomena, to demonstrate that the existing physical explanations do not account for the phenomena, and thus to demonstrate that a universal principle is operating, rather than the kind of system we assumed was operating.

Now, the problem was, in the work of Vernadsky, that he never was able to unify, or never came to unify, the implications of Riemann's work, with his own work.

The Hoax of 'Information Theory'

The way I discovered Vernadsky, is back in the 1940s, when I was doing work in refuting what's now called systems analysis, what's called "information theory." Now, from there, I'll go to the point of what is the significance of this for economy, in Russia, in particular, today.

Wiener and von Neumann were both protégés, religious protégés, of Bertrand Russell, who had introduced the attempt to reduce to simple arithmetic, linear methods everything in the universe. He tried to explain everything in terms of what he called "information theory," like Wiener did, which was the same thing that Russell had argued, and was the same thing which von Neumann argued. That is, he tried to explain it statistically, by the statistics of people like Mach, the statistics of people like Boltzmann, and so forth. And this is like liberal economics, which says that if you get enough people doing evil, and rubbing their bellies together, you'll get a good economy. You don't need any science, you don't need any principle, just rub enough free traders' bellies together, and they'll come out with a good result.

And this was obviously absurd to me, just from the standpoint of technology, and from my experience in production. And you all know it, who do physical science, who've done experimental work—you all know this. You try to prove a principle. You have an anomaly which arises experimentally. You try to make a hypothesis of what principle explains this anomaly. Then you must construct—if you think you're right, you must now design and construct an apparatus, which tests for that: Is that principle true? Number one. And second, is it universal? You create something which has never been seen before, a new principle.

Now, you look at the apparatus which succeeded in proving the principle. You look at the apparatus, and you say, "Ah! We now have new technologies." Now, if you have a good arrangement in education, you have a university with your academies, and so forth, who are doing discoveries which lead to experiments, which result in discoveries of principles, and new technologies. If the testing laboratories, through engineering, design engineering, are connected to production, now you make new kinds of products, and new kinds of productive processes, using these technologies. If you do it properly, you change man's relationship to the universe. Man's power in the universe is increased, per capita, and per square kilometer. It is not necessary to rub together the bellies of idiots together to get progress. If you do that, it's called liberal rubbing, liberal economics.

But what is demonstrated, is the human mind, with a human cognitive capability, which Vernadsky called "noetic" capability. It's the same term that's used in the Greek, it comes from the Greek, and it's used interchangeably with the origin of poetry, and "noetic" is the same concept.

So, what has happened is, the human mind has created something you can't see, you can't smell, you can't taste, but it enables you to increase man's power in the universe. How

can you increase the actual productivity of mankind? How can you increase man's power in the universe? How can you make human life better? How can you bring nations together peacefully around common objectives? By organizing society around the discovery and use of valid universal principles.

So, the significance of Vernadsky lies there, in his understanding that life was a principle, distinct from molecular biology.

So, what I'd done earlier, was to recognize that Riemann had made a fundamental discovery which applied to economics: It's how is society organized, to increase the productive powers of labor. A principle which Bertrand Russell, von Neumann, Norbert Wiener, and others denied existed, like Kant before them—Kant's famous attack on Leibniz in his *Critiques*: He said that the noetic, the cognitive process, does not exist.

The Classical Principle in Education

Let me, before completing this, just take one aside, and say one thing about education.

A human being, newborn, as Vernadsky defined it, *every newborn human being* has the potential capability of making fundamental discoveries, including moral ones, which can be of benefit to all humanity. Every individual human being, when born. But if we're successful, it takes almost 25 years to bring the newborn baby to maturity. Not simply biological maturity, but cognitive maturity. By cognitive maturity, you mean the best scientific minds, discoverers, you mean the greatest creative artists, and performers. These are the gems of society.

So, the first thing in society, if we understand what Vernadsky has said, is to have an educational and maturational and family situation, which takes these newborn babies, and develops them to their cognitive potential. What must be learned, is not to learn formulas from a textbook. We would hope that the child, in each phase of education, would relive the experience of great discoveries of principle made by people before them. They should not be educated the way you train an animal—a dog, a cat, a horse. Rather we want the child to relive history, the history of the great discoveries. We want the child to *be there*.

I often use the case of Archimedes, who was killed by the Romans in 212 B.C. There are famous discoveries by Archimedes. Why shouldn't the child go back 2,200 years in history, and relive a moment in the mind of Archimedes, a moment of discovery, and shriek "Eureka!"—"I saw it!"

When you have this kind of education, in which the child—it's called a Classical humanist education—has that kind of education, they have a sense of their humanity, meaning their relationship, their immediate personal relationship, to discoverers, who may have died hundreds or thousands of years before they were born. And then you say, well, what is the characteristic of all great leaders of society, in science, in politics, in art—the great performers in art, for example?

LaRouche on Vernadsky

Lyndon LaRouche has long emphasized the importance of the work of V.I. Vernadsky, beginning with a March 1973 advisory (unpublished), which led to the subsequent formation of the Fusion Energy Foundation. Here is a short bibliography.

Lyndon H. LaRouche, Jr., *The Case of Walter Lippmann: A Presidential Strategy* (New York: Campaigner Publications, Inc.: 1977), pp. 56-57.

—, "Soviet Pseudo-Science Could Cause World War III," *EIR*, Jan. 27, 1989.

—, "Russia's Relation to Universal History," *EIR*, Nov. 29, 1996.

—, "A Philosophy for Victory: Can We Change the Universe?" *EIR*, March 2, 2001.

—, "A Lawless U.S.A. Today: Faith, Hope, and *Agapē!*" *EIR*, June 1, 2001.

—, "How to Define A Physical-Economic Collapse: Marat, De Sade and 'Greenspin,'" *EIR*, June 29, 2001.

Vladimir I. Vernadsky, "On the Fundamental Material-Energetic Difference Between Living and Non-Living Natural Bodies in the Biosphere" (1938), Jonathan Tennenbaum and Rachel Douglas, trans., *21st Century Science & Technology*, Winter 2000-2001.

"Bring Science Back to Life—Vernadsky's Method," *21st Century Science & Technology*, Summer 2001. A panel discussion at a May 2001 Schiller Institute conference in Bad Schwalbach, Germany.

What is their characteristic, that distinguishes them from the greedy little people?

Just as they think of their relationship to the great men, who made them possible, they look forward to the future generations, for accountability for what they do. It's the denial of that quality of education, and social standard, which deprives society of leaders of all the qualities that we need, to ensure that society does not get into the kind of mess the world is in today.

Vernadsky spoke about the role of the individual, and the individual's contribution to society, the cognitive contribution, the noetic contribution. That we must think instead, of an anti-Euclidean, Riemannian form of geometry of principle, only *proven* principles—proven in the way that Vernadsky himself demonstrated the universality of a principle of life in geology. Or the way he demonstrated the same thing for society in terms of the impact of individual discoverers in trans-

forming man's relationship to the universe.

So, therefore, we require an orientation to the fact that there are also principles involved in social relations of cognition, principles which are typified by two things: that, first of all, the mind is not based on an individual discovery, one at a time. The mind of a discoverer, as any of you know, from your own experience. . . . In an educational and related process, there are many minds living inside your mind. Think of the challenge of a great actor of Classical drama, who must go on stage, and convince the audience, that he or she is the character they're playing in the drama. And the director of the play, who must have an interaction among the actors, which presents to the audience, the actual conflict in the drama.

We relive the past, in our own minds. We relive it when we re-enact a discovery, a physical discovery. We re-enact it in great art, when we re-enact the intent of the composer of great art. Their mind lives again inside us, a moment from their mind. That population in our mind, of all the people we've known from thousands of years before, in this way — as my dear friend Taras would have said, "in the best way" — we know this when we do something, we think of their minds looking at what we're thinking. These are our conscience. We may differ with them. We may disagree with them, but we will never do anything dishonorable in their eyes.

So, we need an educational system, but first of all, we need an educational policy, as a policy of society, first. We have to do for the noosphere, what Vernadsky did for the biosphere. Vernadsky took the geological history of the planet to demonstrate the biosphere. History, as I've just described it summarily, is the same thing, the application of the same method, to the noosphere.

A Vernadskyian Mission

Now, to the practical application.

As I've emphasized a great number of times, in Central and North Asia, we have the greatest frontier for conquest of all humanity to date. This is an area poorly developed, or an area which is unusable presently, within which lie rich potential resources, that are not rich unless we develop them. I once called this the conquest of inner space, comparable to the development of outer space, and we must conquer inner space, as we must conquer outer space. Because we have in Eurasia, in this time of great world crisis, the greatest concentration of world population, and also the greatest cleavage in culture throughout all humanity.

What you have is a situation in which, on the one side, you have European culture, which includes Russia's culture, the culture of Western Europe, the culture of the Americas, which is predominantly European culture, modern European culture. Then you have on the other side, the culture of China, Japan, Southeast Asia, South Asia, with a traditional Islamic culture; it's not difficult to work, as we see in the history of the Abassids, for example, in the Great Caliphate of Baghdad.

There's a similarity of culture, which we know how to work with.

And you have different cultures in India. You have cultures which are similar to those of Europe, and cultures which have a different conception of man than you have in European culture. And, also in China, you have different cultures. You have the tradition of Confucius, and Mencius, which is very easily understood by us, and very sympathetic to us. While Japan is modern, in the sense of modern European culture, it has a different cultural root. So, Southeast Asia.

Central and North Asia, particularly Central Asia, is the meeting place, the great cultural meeting place, between Asian culture, as such, and European culture. And Russia has the peculiarity of being the world's Eurasian nation.

Now, we're in a world economic crisis: not only a financial crisis, not only a monetary crisis, but an actual physical breakdown of the planet's ability to sustain its existing level of population. If you attempted to extend the presently world-hegemonic, liberal economic system of free trade and globalization, for another ten years, you would set into motion a collapse of the world population level, rapidly, to levels below 1 billion persons. The greatest genocide this planet has ever known.

Now, the development of this Eurasian development, requires the greatest infrastructure-building project ever conceived, especially affecting Central and North Asia, going into the tundra areas. It's a project that will change the character of the planet, for the better. It's a project that will work only among sovereign nation-states, not some globalized empire. But to do this means we have to have a sane scientific conception of physical economy, as the basis for collaboration among nations. We're going to change the environment of the planet as never before, because what will be done in Central Asia, will transform the entire planet's practices. It *must* be done, because you can not save China, with its present population, without an injection of technology beyond what China is capable of producing internally at present. India and Southeast Asia depend upon the same thing.

Therefore, think! We're proposing to change the biosphere on the largest scale ever conceived. We must introduce a change in the conception of the way economy is organized, starting with education. And the relationship between the university, and the educational system, the scientific laboratories, the production of technology, manufacturing and design of products, must be a continuous, well-organized process.

But I know we can do it. I've given many decades of thought to this: We can do it. Even some of us who are older can do it. But to do it, we have to take the full implications, not only of Vernadsky's work, but the implications of what he left unfinished. Revive it, and put it to work. As in the way Professor Shnoll has been doing with his group, to preserve this kind of nonlinear exploration. We need it. We need to do the job. But, above all, we must adopt the idea as a *mission*. We must make the idea a mission, an infectious idea, which

not only infects people, but inspires them to do things they think they can't do, but they could.

Thank you.

Dialogue with LaRouche

During the discussion period, many of the scientists in the 150-person audience had questions for Mr. LaRouche. In an effort to communicate with as many people as possible, in the time available, he made his answers particularly short and pithy.

Professor Shelepin: Here we have a coherent body of knowledge, which Lyndon LaRouche has developed. Now, questions—but, please be very concise.

Q: Tell me please, what place or role you assign, within physical economy, to the improvement of social and economic forms of development?

LaRouche: Essentially, what I've said, in terms of education. An economist must not be trained as they're trained now. That's important. An economist must do what all of us have done, who are serious about studying science. You must not merely study the textbook to learn the formula, or look up the table in the tables at the back of the book, or the indexes. You *must re-experience* the great discoveries of principle of mankind as if you were discovering them afresh yourself.

Imagine all these crazy spy-people who think that you can steal secrets. You can't steal secrets; you have to earn them. That is, important secrets. If you start to steal, you'll probably get rubbish that somebody left in the ashcan in the back of their house. You may know cases like this, but I know of cases like this, where people, spy agencies, went to great lengths to steal secret documents, but they didn't know what they meant! When you put things down on paper, discoveries on paper, you don't have to tell yourself how you connected them. These are merely notes. It's like somebody trying to steal the ideas of Beethoven by reading a piano score.

If people understand physical economy, it is not to be taught as people think about teaching economics. The basis for physical economy is studying world history in the way I've described it. If you become educated in the way I've described, with a cognitive education, reliving the ideas, or discoveries, of people before, and you're sharing discoveries with people with whom you're working, or trying to share a discovery—for example: If you're a scientist, you're running a laboratory, you make a discovery. You have a design-engineering team work and help develop the apparatus. You prove the apparatus. Now what do you do? You go and try to explain, make this clear to people who have to use the apparatus to understand what it is. What you do, is you make a team of your people. The scientists and the people they work with become a cooperative team. They work together and they

think together. That's the way physical economy has to be practiced.

Q: What is it that could lead to the reduction of the Earth's population to 1 billion, and what is your forecast of the chances of this happening?

LaRouche: Well, as I said, in ten years of this continuing process, we would get into a process which would, within a generation or two, lead to that kind of collapse of population levels. The percentile of people who actually produce, and the effectiveness of their production, is less, on a planetary basis, than it's been in the past 30 years.

Q: Do you believe that there can be one single model of an optimized economy, for all the countries in the world? Or, is it rather the case that, depending on the geographical variation among nations, each country has its own optimal economic model?

LaRouche: I think that problem doesn't exist. A different problem exists. What you need, is you need the sovereign nation-state, which I've explained in a great number of writings—why you can not do without the sovereign nation-state. What you get, because of the geographic conditions, you get a division of labor among nations. For example, today, say between Russia and China: China has some high technology. It doesn't have enough. Through the mediation of Western Europe and Russia, China can get the additional technology it needs for its development. That is a case of different geographic areas, different problems. The two groups of nations can cooperate to mutual advantage.

Q: First of all, I would like to welcome Mr. and Mrs. LaRouche to Russia, and secondly, to wish this Democratic Party candidate for the Year 2004 Presidential election, success. I hope that the United States will refute the Russian proverb which says, "If you have strength, you don't need any brains."

I would like to ask a question, taking advantage of Mr. LaRouche's tremendous erudition. The tendency for a reduction of the anthropogenic load [on the planet], in connection with population reduction, is chiefly taking place because the United States of America wills it to take place, in order to ensure its own ecological security. Wouldn't it be better to try find alternative ways to solve the energy problems, which have broken out in California and elsewhere in the United States, for example? How can this be solved? [*Translator restates the question:* In other words, isn't the U.S. trying to solve its economic problems by wiping out other populations?]

LaRouche: No, it isn't. The United States is not. You've got an Anglo-American group which is trying to reduce the world's population, in order to have the kind of world they want. It's deliberate. If you stop *them*, we can reverse the whole problem.

Q: Everybody knows there are two parts of humanity — the producing part, and those who consume. And we are aware, that the consuming part exerts control, over the producing part. Do you have indications that inside the creative, producing part, there is some organized force that could mobilize the efforts of that part?

LaRouche: Yes. Absolutely. We're organizing it, because it exists potentially. The problem is a lack of leadership to bring —. You see, many people would play that role. But, if they don't have the quality of leadership, they won't do it. A fuller answer to that would take at least two hours.

Q: In this book [*So, You Wish to Learn All About Economics?*], which you inscribed to me on April 27, 1994, there was not one word about the teachings of Vernadsky. From this, I have concluded that a certain progress has been achieved. In this connection, I have a question. In Vernadsky's teachings on the biosphere, and also at the basis of physical economy, there is the concept that the three elements of the biosphere — the abiotic, the biotic, and the social — are closely interconnected, and differ in how they function, in their energetic function, first and foremost. What do you think is the fundamental characteristic of the energy function in the social element, at the present time?

LaRouche: No, the point is that the attempt to come up with "energy," is something which Vernadsky himself was very suspicious of. What he pointed to, is that apparently weak forces actually can dominate what seem to be strong forces. And so, therefore, you're dealing with a question of *organization* in the universe, not energy as such. Energy is a result; it is an effect, it is not a cause.

Q (follow-up): May I make this more precise? The characteristic of the social element is to be found in labor activity, the energetic effect of which, is that energy is accumulated with an efficiency of greater than 100%.

LaRouche: No, it doesn't work that way. It has the *effect* of that, but it is not a form of energy. It has the *effect* of energy. But, try to measure the mass of a thought.

Q: The main burden on the Earth's resources is created by the Golden Billion, not the rest of the population. Maybe the thing to do would be to reduce the population size of this Golden Billion. [Laughter, applause.]

LaRouche: Put them to useful work! [Even more applause.]

Q: What is your attitude toward the expansion of the "anti-globalist" movement in the world, if you could please characterize it? And, are you working with some anti-globalist organizations?

LaRouche: No. The "anti-globalist" movement, worldwide, is headed by Teddy Goldsmith, who's a very evil fellow. He's using it, to disrupt the very cause he pretends to defend, as in the case of Brazil. He organized a conference, which

was an attempt to globalize Brazil, in the name of anti-globalization.

I think that Vladimir Putin is a great anti-globalizer, because he's actually taking concrete steps to bring cooperation among sovereign nation-states.

Q: Many of those present became acquainted with you from your book, which was published in Russian translation in 1992-93. In this book, the economist Friedrich List, whom you assess positively, has a great role. Has your attitude to this economist changed, during the past ten years?

LaRouche: Yes, List is extremely important. He's not the most important figure, but he played a very significant historic role in Europe, especially in Germany, and also in Russia, in the history of Russia.

Q: The ideas on education, which you discussed here today, that is, teaching the technological history of mankind, rather than just the history of wars and coups — the teaching of that which is fundamental, cognitive, and scientific. Have they been organized? That is, are there any works on this, which would deserve to be translated into Russian?

LaRouche: Not much, currently. You have a long history of this in the United States. It started in the Massachusetts Bay Colony, in the Seventeenth Century, and it continued, but it was always limited. The best exposition of this method, is the writings of Friedrich Schiller and of Wilhelm von Humboldt, on the question of Classical humanist method. What I said, is no different; it's expanded over what they did, but it's the same thing. . . .

Q: In your other written material, you include Marx as a monetarist. Why?

LaRouche: Because Marx adopted, with some changes, the British school of Bentham, which is Adam Smith, etc., as the founders of modern scientific political economy — which is not true. Modern scientific political economy was founded by Leibniz, long before Adam Smith was born, between the years of 1671 and 1716. The founding of physical economy by Leibniz, was the first theory of modern economy. And Marx made a number of mistakes, which have been passed on to the socialist movement, as a result of this misunderstanding of the history of political economy. To understand Marx, you have to look at him as working within the intellectual tradition he adopted, and working against the British economy, *but within that system*.

Q: My question concerns what critical ideas in physical economy, are connected with Riemann's habilitation dissertation of 1854. I read your book carefully, and I read Riemann's paper, but I don't understand what idea from that paper, applies in physical economy.

LaRouche: The idea is that there are no principles in geometry, except those which are derived from experiment. No *a priori* principles, no sense of the absoluteness of space,

time, and matter. It's called a pure synthetic geometry, by Riemann himself.

Q: Thank you for discussing physical economy in the Institute of Physics. I have two questions, about Reason. . . . Is it possible that in the future, Science and Reason will become a single, universal ideology, a single, universal methodology? My second question, is about the possibility of establishing a world association of scientists for the enlightenment of mankind, in order to create on the planet the reign of Reason.

LaRouche: [Answering the first question.] Yes, in a sense. The key question, which has to be faced, is what is the conception of man? If you take the work of Vernadsky, what leaps out from the pages on his conception of the noosphere, is: What is the conception of man? Man, the actor who produces this effect. Individual man. And therefore, the question of man, and of man's relation to man, is a fundamental question of Reason. I would say that all these questions on Reason are answered by saying: What is the nature of man? What is the relationship of man to man? Physics, and everything else, comes from that.

[To the second question.] The only thing you can do in that direction, is you must have a scientific quality of education of people, and then they will automatically deal with one another on that basis. Kill superstition!

Q: You mentioned Mendeleev. Are you aware that Mendeleev was no less a partisan of protectionism, than List, and that he was one of the most active organizers and practical economists in Russia?

LaRouche: Yes, that's true.

Q: Does physical economy recognize markets, and money, as an instrument of economy?

LaRouche: It's a bad child that has to be controlled.

Q: Do you think it is possible to create a physical model of society, without the religious element?

LaRouche: Not exactly. You have to define your terms, when you ask *me* that question. The term has to be defined precisely. For me, the question of whether man is made in the image of God, as a matter of human knowledge, comes from one's definition of man.

Now, I believe man is made in the image of God. But, how do we know what God is? It's the same noetic principle, which is referred to by Vernadsky. This great power of the universe, *which we share*. So, religion for me is recognizing that one is a child of God—and behaving accordingly.

Q: I've heard you speak before, about corridors of development. What corridors do you see, now, from the West to the East?

LaRouche: We have what we've laid out in this book on the Land-Bridge. It's all in there. The details are there, so I



Economist Dr. Tatyana Koryagina, representative of the Schiller Institute in Russia, briefs the audience on LaRouche's political role. Seated is Prof. G.G. Pirogov.

hope that someone would get you a copy of that Land-Bridge report, because it's all in there. I'd only add one thing: I think this is what President Putin is helping to pave the way to do.

Q: Were the principles of physical economy implemented, anywhere, at any time, in the governance of an economy? Can it be said that in the Stalin period, when the industrialization of our country was carried out, the principles of physical economy were used in directing those processes?

LaRouche: Yes, and no. If you look at the process of production, there are certain principles of the process of production. There were several times when the Soviet Union engaged in a science-driver program. I do not believe, however, in a certain kind of science in concentration camps.

Q (follow-up): This institute, FIAN, was founded in 1936.

LaRouche: Yes. But, the point is that if you're going to implement a science-driver program, you have to follow the principles of physical economy—whatever else that a society is doing. All good physical economy programs, are science-driver programs. It's otherwise called *progress*.

Shelepin: In conclusion, we shall have two or three short speeches.

Prof. D. Chernavsky: I would like, on behalf of the staff

of the Institute of Physics of the Academy of Sciences, where you are a much-desired guest, again to thank you again for the honor, and for this seminar. Moreover, I would like to say that you are a very daring person. You decided to discuss questions of physics, in the Institute of Physics, before an audience of physicists.

Physics is not really the well-ordered, logical science it may seem to be from the outside. Those who work in physics, from the inside, know that there are many problems in physics. This becomes especially clear, when attempts are made to apply physics to biology, or vice versa; or, when there are attempts to solve, jointly, problems such as: How did life arise from non-living matter? How did cognition arise? People at FIAN are working precisely on this, and not entirely without success.

When we apply physics to economics, more problems arise. And indeed, the development of physics and synergetics with a non-linear approach is closely related to biology, sociology, and economics. And, we here are all working on this.

Therefore, your audacity is justified. You may consider that here, both here in the hall, and at the Institute, your followers are working on the creation of physical economy. And I am certain, that this will be very fruitful for science, and—which is the main thing—very important, stunningly important not only for Russia, but for the world. We thank you, once again.

Shelepin: I give the floor to Tatyana Ivanovna Koryagina, who represents the Schiller Institute, the LaRouche movement, in our country.

Tatyana Koryagina: *[For technical reasons, Dr. Koryagina's remarks are given here as a transcript of the simultaneous translation, which abridged them. She spelled out her economic and political forecast in testimony before the State Duma the next day. See EIR, July 20.]* I am very glad that Lyndon and his wife were able to attend this seminar—especially his wife, this outstanding woman. People knew about LaRouche in the Soviet Union, and now in Russia, but I would like to say just a few words about him.

Lyndon LaRouche has been a candidate for President several times, and will be again for the Democratic Party in 2004. Having met him in person, you can see more clearly why, after his previous campaigns, he landed in prison, thanks to the efforts of Henry Kissinger and certain other organizations. I think that the contrast of Lyndon LaRouche with Reagan, and now even more so, with certain other idiots, gives us a sense of the level of knowledge which LaRouche represents, also as a Presidential candidate. Imagine if he had been a candidate for the *Russian* Presidency, in comparison with Yeltsin! Now we have the younger Bush, who may even be more stupid than Yeltsin.

Tomorrow there will be parliamentary hearings on the world financial system. And here we should say that

LaRouche has carried out a revolution in the ability of masses of Americans to understand what's going on in the economy.

Just now Professor Chernavsky said that physics is not a well-ordered science. My colleague, Yegor Gaidar, thinks that economics is a well-ordered science.

You have to understand, that the destruction of the world economy, of virtually all the economies in the world, is being accomplished not by a stupid policy, but by a very clever, liberal policy. This is a policy not of creating, but of destroying. The liberal theory confirms the notion of the Golden Billion; it is designed for a small elite layer. The question is whether the public, the population of the world, can resist and defeat this small layer of the international oligarchy, as well as the domestic oligarchy. Because, in fact, all the money that has been invested in stocks, and so forth, is going to be devalued and wiped out. Even a wealthy country like the United States is faced with the collapse of health care and education.

So, the task is to pull people together into a united effort, to combat this evil policy. Otherwise, you get a complete, worldwide deluge. . . .

We are carrying out further forecasts on the process of defaults, and we anticipate big events in August-September-October. If we look at the wave, which spread from Asia in 1997, to Russia, and so forth, the next big explosion we expect in the United States. The banking system, the currency system.

Voices from the hall: Who says this?

Koryagina: There are various forecasts. I am presenting my vision of how things will develop. . . . These were the same prognoses that were correct, about what would happen with the devaluation of the ruble.

Lyndon LaRouche is now trying, and has already done a lot, to explain in the United States, and to the rest of the world, what is happening. . . . He has shown that the dollar is not actually a functioning currency, but a piece of paper backed up by nothing.

Not long ago, there was an interview with [George] Soros in a leading financial publication. He used the image, that when he talks about the inevitable crash, people say: What are you talking about, people are still buying things, aren't they? He said, "The orchestra has stopped playing, but they're still dancing."

The American population is completely uninformed about what's actually going on. LaRouche goes to the roots of the problem, which is very important. Therefore, on behalf of the Schiller Institute movement in Russia, I wish him good health, and all the best. And I wish him success in going into the Duma, at the hearings, and straightening out our parliamentarians and government.

Shelepin: Our agenda has come to an end. I would like to thank Lyndon LaRouche for his very interesting speech.