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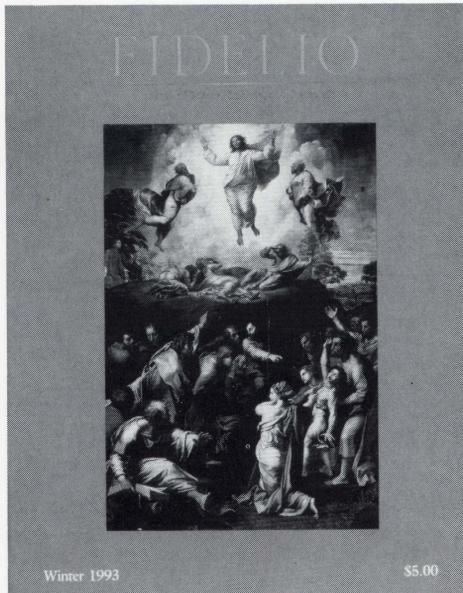
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Spring 1994

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FIDELIO

"It is through beauty that one proceeds to freedom."

—Friedrich Schiller

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Fidelio is dedicated to the
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concept of *agapē* or charity, as
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of artistic beauty, the scientific
mastery of the laws of the
physical universe, and the
practice of republican statecraft
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On the Cover
Raphael Sanzio, "The Angel
and the Apostle," detail, *The
Liberation of St. Peter* (1512-
14). SEE inside back cover for
analysis. (Photo Vatican
Museums)

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Demand Exoneration Of LaRouche And Associates!

On January 26, after five years of imprisonment, Lyndon H. LaRouche, Jr. was released on parole. While this is cause for great joy, it is a joy tempered by the fact that LaRouche and many of his associates, including several who are currently impris-

EDITORIAL

oned in the Commonwealth of Virginia with sentences ranging from 10 to 77 years, are innocent of any wrongdoing—as evidence shows the government prosecutors to have known all along—but have yet to be exonerated of

The Cranes of Ibycus

Unto the songs and chariot fighting,
Which all the strains of Greece are joining,
On Corinth's isthmus festive gay,
Made Ibycus, gods' friend, his way.
The gift of song Apollo offer'd,
To him the sweeten'd voice of song;
Thus on a light staff forth he wander'd,
From Rhegium, with god along.

Now beckons high on mountain ridges
High Corinth to the wand'rer's glances,
And then doth he, with pious dread,
Into Poseidon's spruce grove tread.
Naught stirs about him, just a swarming
Of cranes which join him on his way,
Which towards the distant southern warming
Are flying forth in squadrons grey.

"Receive my greetings, squads befriended,
Which o'er the sea have me escorted!
I take you as a goodly sign,
Your lot, it doth resemble mine:
From distant lands we are arriving
And pray for a warm dwelling place.
Be the hospitable good willing,
Who wards the stranger from disgrace!"

And merrily he strides on further
And finds himself i'th' forest's center—
Abruptly, on the narrow way,
Two murderers upon him prey.
He must himself for battle ready,
Yet soon his wearied hand sinks low,
It had the lyre's strings drawn so gently,
Yet ne'er the power of the bow.

He calls on men, and on the godly,
No savior answers his entreaty,
However wide his voice he sends,
No living thing him here attends.
"So must I here foresaken perish,
On foreign soil, unwept-for be,
Through evil scoundrels' hands thus vanish,
Where no avenger do I see!"

And gravely struck he sinketh under,
The feathers of the cranes then thunder,
He hears, though he can see no more,
Their nearing voices dreadful roar.
"From you, ye cranes that are up yonder,
If not another voice doth rise,
Be rais'd indictments for my murder!"
He calls it out, and then he dies.

The naked body is discover'd,
And soon, though 'tis from wounds disfigur'd,
The host in Corinth doth discern
Those traits, which are his dear concern.
"And must I thee so rediscover
And I had hop'd with wreath of pine
To crown the temples of the singer,
Which from his glow of fame do shine!"

And all the guests hear it lamenting,
While at Poseidon's fest assembling,
The whole of Greece with pain doth toss,
Each heart doth suffer from his loss;
The people crowd to the Prytanis
Astorm, his rage they supplicate
To vengeance of the slain man's tresses,
With murd'ers' blood to expiate.

Yet where's the clue, that from the crowding,
Of people streaming forth and thronging,
Enchanted by the pomp of sport,
The blacken'd culprit doth report?
Is't robbers, who him slew unbravely?
Was't envy of a secret foe?
That Helios can answer only,
Who on each earthly thing doth glow.

Perhaps with bold steps doth he saunter
Just now across the Grecian center,
While vengeance trails him in pursuit,
He savors his transgression's fruit;
Upon their very temple's op'ning
He spites perhaps the gods, and blends
Thus boldly in each human swelling,
Which towards the theater ascends.

For crowded bench to bench they're sitting,
The stage's pillars are near breaking,
Assembl'd from afar and near,
The folk of Greece are waiting here;
Just like the ocean waves' dull roaring,
With humans teeming, swells the place
In arched curves forever wid'ning
Unto the heaven's bluish space.

Who names the names, who counts the people
Who gather'd here together cordial?
From Theseus' town, from Aulis' strand
From Phocis, from the Spartan's land,
And from the distant Asian region,
From every island did they hie
And from the stage they pay attention
To th' *chorus'* dread melody,

the false charges leveled against them.

To emphasize this joy, Raphael's painting of the "Liberation of St. Peter" was selected as the cover of this issue of *Fidelio*. And to underscore the necessity of reversing the unjust persecution of LaRouche and his friends with their complete exoneration, we publish below a translation of Friedrich Schiller's *The Cranes of Ibycus*, a poem which expresses the inevitable execution of justice in accordance with natural law.

The irony of LaRouche's election to the Moscow-based International Ecological Academy on Oct. 14, 1993, while he remained incarcerated in the U.S., begs comparison to the Biblical adage, "A prophet is not without honor, save in his own country, and in his own house."

To contribute to LaRouche's exoneration and "honor in his own country," we devote this issue of *Fidelio* to sharing with our readers a true appreciation of LaRouche, as reflected in interviews conducted with him in prison by representatives of the intelligentsia of Russia, concluding with "On LaRouche's Discovery," a new essay drafted by him initially for circulation in Russia, which explicitly identifies the thought process by which he arrived at his unique scientific breakthrough.

And, at this historic moment of great promise and great danger, we present Schiller Institute founder Helga Zepp-LaRouche's recent remarks on the urgency of ecumenical dialogue—and joint action for economic development—among the great monotheistic religions.

Which, stern and grave, i'th' custom aged,
With footsteps lingering and gauged
Comes forward from the hinterground,
The theater thus strolling round.
Thus strideth forth no earthly woman,
They are no mortal progeny!
The giant size of each one's person
Transcends by far what's humanly.

Their loins a mantle black is striking,
Within their fleshless hands they're swinging
The torch's gloomy reddish glow,
Within their cheeks no blood doth flow;
And where the locks do lovely flutter,
And friendly wave o'er human brow,
There sees one snakes and here the adder
Whose bellies swell with poison now.

And in the circle ghastly twisted
The melody o'th' hymn they sounded,
Which through the heart so rending drives,
The fetters round the villain ties.
Reflection robbing, heart deluding
The song of Erinyes doth sound,
It sounds, the hearer's marrow eating,
And suffers not the lyre to sound.

"He's blest, who free from guilt and failing
The child's pure spirit is preserving!
We may not near him vengingly,
He wanders on life's pathway free.
Yet woeful, woeful him, who hidden
Hath done the deed of murder base!
Upon his very soles we fasten,
The black of night's most dreadful race.

And hopes he to escape by fleeing,
On wings we're there, our nets ensnaring
Around his flying feet we throw,
That he is to the ground brought low.
So tiring never, him we follow,
Repentance ne'er can us appease,
Him on and on unto the Shadow
And give him even there no ease."

So singing are they roundly dancing,
And silence like the hush of dying
Lies o'er the whole house heavily,
As if had near'd the deity.
And solemnly, i'th' custom aged,
The theater thus strolling round,
With footsteps lingering and gauged
They vanish in the hinterground.

And 'twixt deceit and truth still hovers
Each hesitating breast, and quivers
And homage pays to that dread might,
That judging watches hid from sight,
Inscrutably, and fathomlessly,
The darksome coil of fate entwines,
Proclaims what's in the heart so deeply,
Yet runs from where the sunlight shines.

Then hears one from the highest footing
A voice which suddenly is crying:
"See there! See there, Timotheus,
Behold the cranes of Ibycus!"—
And suddenly the sky is dark'ning,
And o'er the theater away,
One sees, within a blackish swarming,
A host of cranes pass on its way.

"Of Ibycus!"—That name beloved
Each breast with new grief hath affected,
As waves on waves in oceans rise,
From mouth to mouth it quickly flies:
"Of Ibycus, whom we are mourning,
Whom by a murd'rer's hand was slain!
What is't with him? What is his meaning?
And what is't with this flock of crane?"

And louder still the question's growing,
With lightning strikes it flies foreboding
Through every heart: "'Tis clear as light,
'Tis the Eumenides' great might!
The poet's vengeance is now granted,
The murderer hath self-confess'd!
Be him, who spoke the word, arrested,
And him, to whom it was address'd!"

But scarce the word had him departed,
Fain had he in his breast it guarded;
In vain! The mouth with horror white
Brings consciousness of guilt to light.
And 'fore the judge they're apprehended,
The scene becomes the justice hall,
And guilty have the villains pleaded,
Struck by the vengeance beam they fall.

—Friedrich Schiller

Toward a Dialogue Among the Great Monotheistic Religions

by Helga Zepp-LaRouche

There is no doubt that the great monotheistic religions—especially Islam, and Europe’s oldest institution, the Vatican—are a thorn in the side of the forces of neo-Malthusianism and oligarchism. Our problem is therefore not simply the secularization of society and estrangement from religion as a so-called sociological phenomenon; rather, we are dealing here with outright cultural warfare, whose aim is to expunge these religions—by means of subversion and penetration, in the case of the Vatican and the Catholic Church, and in the case of Islam, through methods which have just had a test run in Bosnia.

No one has more clearly articulated the motives for this warfare, than Britain’s Prince Philip. A few years ago, at a conference on “Religion and Ecology” in Washington, he raised the call for a return to the pre-Christian, pagan cults, because these offer completely different prospects for population control than does Christianity.

How monstrous, what he proposes! What troubles him so much about Christianity, is its unconditional defense of the sacredness of every human life—a principle not present in the pre-Christian cults. The same Prince Philip publicly stated that when he is reincarnated (!), he wants to return as an AIDS-causing virus, so that he could most efficiently counteract population growth!

Although this neo-Malthusian aspect of the cultural warfare against monotheistic religions has been operative for a long time, it has assumed new dimensions follow-

ing the opening of Europe’s borders in 1989. The forces which have effectively dominated the world during the entire twentieth century—first through the Versailles system, and then through its updated version, the Yalta agreement—immediately went about making it clear that they intend to replace the East-West conflict with a North-South conflict.

But how could people in Europe, for example, be persuaded that the real enemy is now the poor countries of the South—especially when European leftists, at least in their better days, have felt a certain sympathy for the problems of the developing countries?

Islam was an attractive candidate to become a new enemy image, especially as there was already a growing awareness within the Islamic world that what remained of so-called Western values—namely, the rock-sex-drug counterculture and the questionable benefits of Free Market economics—represented a threat to the Islamic nations.

What is often described in the West as Islamic fundamentalism, was, among other things, an attempt to avoid becoming corrupted by these questionable values, and to seek out their own cultural roots. But of course, that which isn’t corrupt is also not controllable; and so, Islam was seen by the proponents of Free Trade as a palpable threat to their system.

The satanic way the genocide against the Muslim population in Bosnia was planned, executed, and then presented to the whole world, had the disgusting side-effect of convincing the Islamic world that they were in fact being treated by the West as the *new enemy*. And if you stop and talk with many people among the Bosnians, you will quickly find out that the architects of this genocide have also succeeded in their aim.

Helga Zepp-LaRouche, founder of the Schiller Institute, delivered these remarks in introducing a discussion panel on Ecumenical Dialogue, at the Institute conference held in Kiedrich, Germany, on Dec. 10-12, 1993.

‘The satanic way the genocide against the Muslim population in Bosnia was presented to the whole world, had the disgusting side-effect of convincing the Islamic World that they were in fact being treated by the West as the new enemy.

‘The very survival of human society could very well hinge on whether we can establish a dialogue among the great monotheistic religions, focussed on that which these religions hold in common, and on the need to join forces and fight to lay the basis for the continued existence of all people?’



Schiller Institute founder Helga Zepp-LaRouche.

Historically, what has happened in Bosnia will in all likelihood turn out to be an even more important watershed than the capitulation to Hitler in Munich. But not only that: Because of the great probability now that it will expand into a Balkans-wide war, and because of the consequences for the region of the former Soviet Union, and the long-term effects on the Islamic world, this also signifies yet another paradigm-shift for Europe—that is, unless, as I have said, the rudder is swung entirely around.

The message being delivered is: Evil has become socially acceptable; now you can sit down at the same table with murderers.

The fact that there is even already a theory to back up this monstrous process, was just recently flaunted by the formerly British-licensed magazine and chief organ of cultural warfare, *Der Spiegel*. An interview with the Berlin sociologist Alexander Schuller celebrates the “return of evil.” His conclusion: The Good has been abolished; the impulse to be good doesn’t exist anymore. People have to learn to accept the evil we all carry within us; we must learn to live with it, and yes, even to love it, he says. Love is only complete when it reserves ample space for evil; and people have to discover that evil is really a lot of fun. You have to control your horror of it, however, and for this, people need rituals and gruesome ceremonies. And after all, Schuller says, human beings are “real vermin” anyway.

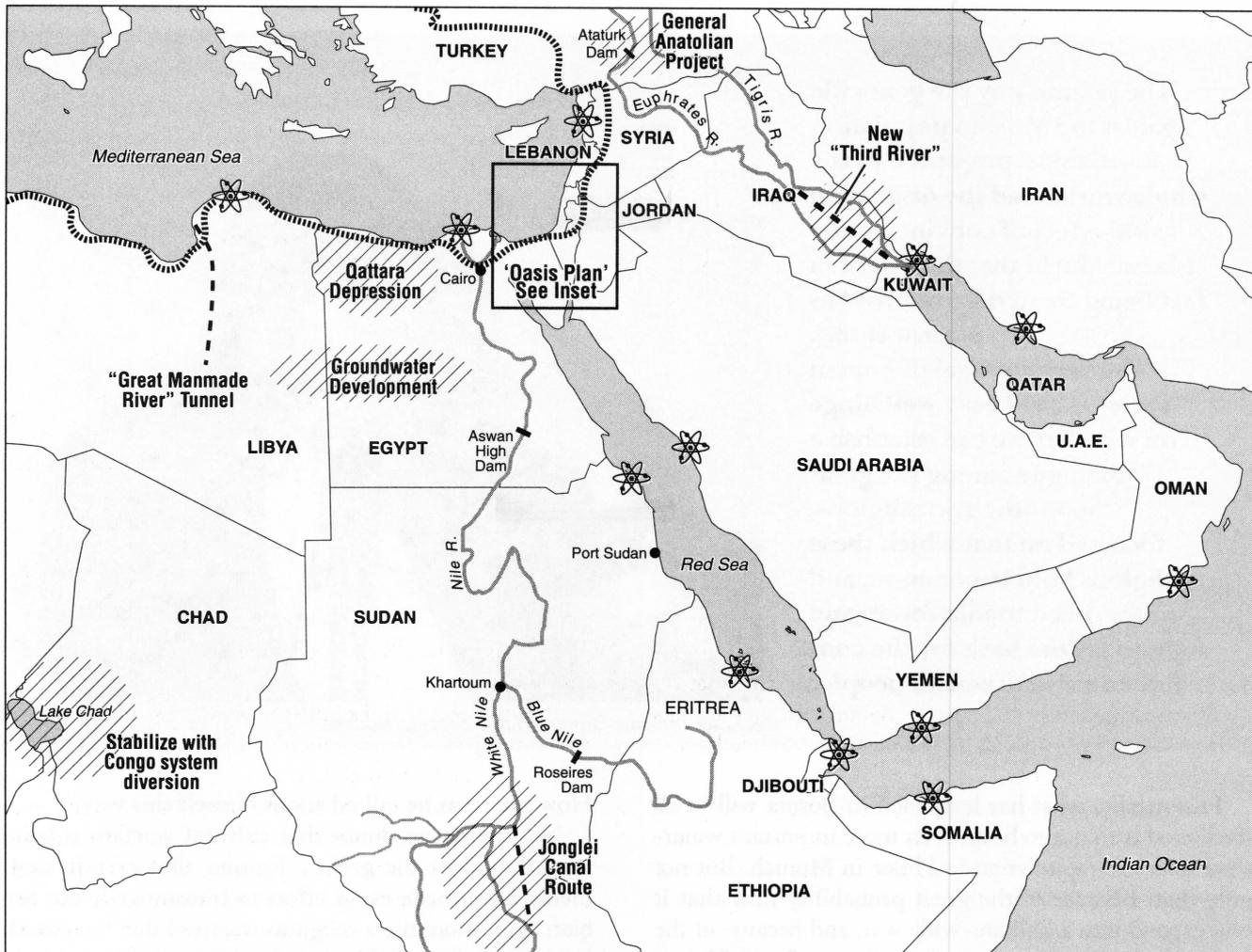
How nice that he talked about himself this way!

No, there’s no doubt that cultural warfare is being waged against the great religions; that certain news media have made every effort to transmogrify the Serbian aggression into a religious war; and that the general intention is for religious warfare to serve as a continuation of the policy of “divide and rule.”

The Peace of Faith

In view of the acute threat to the lives of hundreds of millions of people and more, and in view of the monstrous assaults on people’s morality, the very survival of human society could very well hinge on whether we can quickly and effectively establish a dialogue among the great monotheistic religions. I also think that in the course of this dialogue, in view of the attacks from the forces of evil, it is not all that wise to emphasize the settling of theological differences; rather, the main question, in the spirit of Nicolaus of Cusa, is *to focus on that which these religions hold in common, and on the need to join forces and fight to lay the basis for the continued existence of all people living today.*

The atrocities committed by followers of the various religions during the fall of Constantinople were still fresh in Nicolaus of Cusa’s mind when he drew up his grand proposal for an ecumenical dialogue. In his work *De Pace Fidei (The Peace of Faith)*, he lets the wisest rep-



Selected Infrastructure Projects—Greater Middle East

-  "Nuplexes" – nuclear-powered development sites
-  Trans-Arabian High Speed Rail Route

'The comprehensive plan Lyndon LaRouche has been proposing since 1975, must be immediately put into effect. Ports and canals must be built; infrastructure, energy for desalination and irrigation must be created; construction must get under way; and most important, the dirt must start being moved immediately and concrete projects begun, so that the Palestinian population in Gaza can develop some confidence that an actual improvement in their living conditions is on the way.'

Left: Selected infrastructure projects for the greater Middle East.

representatives of the various religions enter into a discussion with God and ask Him for advice, since after all, they are all fighting against each other for His sake.

In the course of the dialogue, it emerges that the source of all their difficulties lies in the fact that man, whom God has endowed with free will, is only kept in ignorance by the princes of darkness, when man cleaves not to the "inner man," but rather to the "external man."

The task, however, is to locate, behind all the religious differences, the single right faith, and to acknowledge the sole "henceforth inviolable religion."

And just as there are not many wisdoms, but only one absolute wisdom; and just as it isn't possible to have many eternities, since before all multiplicity there is unity; so there is also one God. God is the Absolute, the origin and source of everything.

Nicolaus then presents a magnificent explanation of why the one and three-fold God does not, as is often mistakenly claimed, consist of three gods, but that the Trinity denotes God's fecundity and creative power. And through the mediation of a world soul or world spirit, every creature has a place in this order, as a part of the whole.

Man is distinguished by his capacity to participate in the divine creative principle—what Nicolaus calls *capax Dei*.

Philo Judaeus, in his commentary on the Book of Genesis, was the first to use Platonic philosophy to explain that when it says that God made man in His own image, it is not a physiognomic image that is being talked about, but rather man's creative reason.

Creative reason—man's likeness to God—represents man's capacity to continually make new, valid hypotheses concerning the laws of the universe. These hypotheses permit man to extend his power over nature, first as a fundamental discovery, and then as the discovery is applied as scientific and technological progress. This in turn makes possible the continued existence of the human species.

As Lyndon LaRouche has demonstrated in many of

his writings, increasing relative potential population-density is the indispensable prerequisite for the survival of human society. The source of all social wealth is not the possession of raw materials, or the right to collect usurious interest; rather, it is nothing else than the creativity of the individual, and his ability to increase the productivity of the labor process through his invention of technological innovations.

It is therefore in the most vital interest of every well-functioning state, to develop the creative faculties of all its citizens in the best possible way.

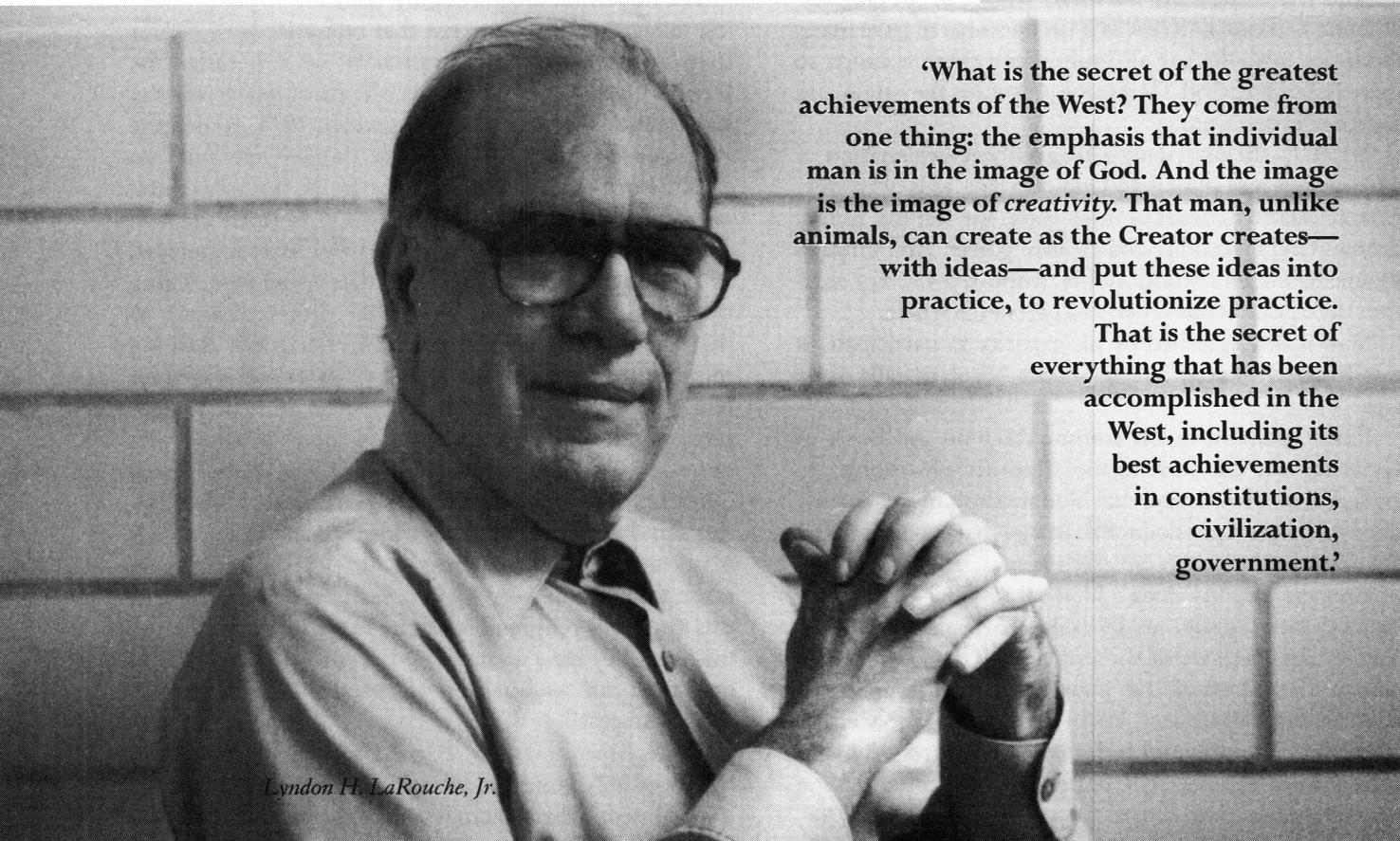
All these matters are highly relevant to policy-making today. And nowhere has that relevance been clearer than in the Mideast peace process, what is called the Jericho-Gaza agreement. True, the comprehensive plan LaRouche has been proposing since 1975, under the rubric of the Oasis Plan, must be immediately put into effect. Ports and canals must be built; infrastructure, energy for desalination and irrigation must be created; construction must get under way; and most important, as LaRouche emphasizes, the dirt must start being moved immediately, and concrete projects begun, so that the Palestinian population in Gaza can develop some confidence that an actual improvement in their living conditions is on the way. But I think the peace process will only have a chance of succeeding, if at the same time Jews, Christians, and Muslims relate to each other on the level of ecumenical dialogue. Only from this standpoint will religious Israelis come to see why it is in their own vital interest to develop the Palestinian labor force to the very highest skill levels. And only in this way will religious Muslims learn to overcome the mistrust they have accumulated over the centuries. And only then can the question of Jerusalem's status be settled satisfactorily.

Much depends on this. For, if a true peace process can be successfully gotten under way on the basis of economic development, why shouldn't similar methods also succeed in other parts of the world, wherever the need exists?

LaRouche In Dialogue With the Intelligentsia Of Russia

As Russia fell deeper into a chasm of political disorder and poverty during 1993, interest increased rapidly in the proposals of the American economist and statesman Lyndon H. LaRouche, Jr.

In January, the first Russian translation of a book by LaRouche came off the press—a 10,000-run edition of his *So, You Wish to Learn All About Economics?*, published by the Schiller Institute and the Ukrainian University in Moscow. On Oct. 1, at the height of the political crisis in Moscow, when Boris Yeltsin crushed the parliament of the Russian Federation by force, the widely read daily *Nezavisimaya Gazeta* printed a full-page article on how LaRouche had achieved his status as an *American* political prisoner: by his authorship of the Strategic Defense Initiative (S.D.I.) policy, and by organizing worldwide opposition to the Interna-



‘What is the secret of the greatest achievements of the West? They come from one thing: the emphasis that individual man is in the image of God. And the image is the image of *creativity*. That man, unlike animals, can create as the Creator creates—with ideas—and put these ideas into practice, to revolutionize practice.

That is the secret of everything that has been accomplished in the West, including its best achievements in constitutions, civilization, government.’

Lyndon H. LaRouche, Jr.



EIFRS/Stuart Lewis

Prof. Taras V. Muranivsky

tional Monetary Fund. More than a dozen Russian elected officials and other political activists signed appeals for LaRouche to be freed from prison.

On Oct. 14, LaRouche was elected a corresponding member of the Moscow-based International Ecological Academy, or "Academy of the 100"—the first non-governmental scholarly society to be founded in the former U.S.S.R. LaRouche was proposed for membership by Professor Taras V. Muranivsky of the Russian State University for the Humanities and the Ukrainian

University in Moscow, and strongly supported by Professor Bencion Fleischmann, a professor of mathematics in Moscow, who characterized LaRouche's *So You Wish To Learn All About Economics?* as "the work of a real genius, full of original ideas. . . . LaRouche can be thought of as the father of a new direction in the natural sciences."

During 1993, two prominent Russian intellectuals were able to visit LaRouche at the Federal Medical Center in Rochester, Minn., where he was incarcerated, to interview him for Russian periodicals. Professor Muranivsky, who visited on May 10, is an editorial board member of the journal *Profsoyuzy i Ekonomika* (Trade Unions and Economics), which circulates among the intelligentsia, workers, and professional economists. Mr. Viktor A. Kuzin, who met with LaRouche on Nov. 1, was a founding member of Democratic Union, the first organization to declare itself a political party in opposition to the ruling Communist Party of the Soviet Union, in 1988. He was elected to the Moscow City Council in 1990 and headed its sub-committee on the Defense of Civil Rights, until the Council was dissolved by Boris Yeltsin in October 1993. He is a spe-

cial correspondent of *Svobodnoye Slovo* (Free Word), the newspaper of Democratic Union.

Prompted by these discussions, and in response to the honor of his election to the Academy of the 100, LaRouche authored the essay "On LaRouche's Discovery" for circulation among the widening circles of interest in his ideas within the intelligentsia of Russia. We present this essay, therefore, as LaRouche's continuation of the dialogue begun in the interviews with Prof. Muranivsky and Mr. Kuzin, which we excerpt below with their kind permission.



EIFRS/Stuart Lewis

Viktor Kuzin

Muranivsky: First, I would like to convey to you, Mr. LaRouche, warm greetings and sincere respect from a large group of Russian, Ukrainian, and other scientists and specialists from the new independent states (former U.S.S.R.), who know and value highly your views, especially your scientific and economic concepts. Your books, the *Executive Intelligence Review* journal, *New Federalist* newspaper, and other publications of the Schiller Institute in English and German, are known to us and are getting wider and wider distribution.

The translation into Russian of your textbook, *So, You Wish to Learn All About Economics?*, and of several other publications, was a major, important event. Your book has been included on the textbook list for students of the

Russian State University of the Humanities, where I am a professor.

I am, of course, most of all concerned with the problems of Russia, Ukraine, and the other newly independent states. But I also understand quite well, that these can only be solved in the context of solving world economic problems, above all, those connected with the world economic crisis.

How do you assess the present situation in the world economy, and what are the chances for establishing a new world economic order?

I will try to make this question somewhat more concrete. In the introduction to the Russian edition of your book, written Oct. 18, 1992, you wrote that "the greatest

financial bubble in history is collapsing upon us.” I would express the following doubt: I do not deny the fact that such a financial bubble exists. But what are your grounds for saying that the bubble is collapsing? And that “a new form of national economy must be constructed.” What kind?

LaRouche: The answer to this is a bit long, because it’s technical; it requires a technical foundation.

First of all, we are dealing in a system with various kinds of accounting which are all absurd, relative to this kind of problem. When economies are moving on more or less one level, without any qualitative change, you can use linear approximations. You can make linear approximations of profit, you can make linear approximations of costs. But when an economy is undergoing profound structural changes—and by structural changes I emphasize changes in the structure of the division of labor, including unemployment—these linear measures are no longer applicable.

They are also not applicable in two other conditions. One is a rapid rise of science and technology, in which the coefficients change; it is non-linear. Secondly, if you have a rapid deterioration of the economy, the coefficients are not linear. You cannot use these, because the structure of the economy is changing in a non-linear way, at a rapid rate. Therefore, statements which are made on the basis of standard accounting, tend to be absurd under those conditions. So people use accounting for years and then suddenly come into a crisis, and then the accounting no longer tells you anything. It will always lead you to the wrong answers. That is the problem today.

In the long term, in the non-linear measure, we must measure profitability of a society physically, in terms of the effects of increase of the productive power of labor. As labor is more productive, as long as we can meet the constraints of increasing the standard of living, in terms of market basket—real physical market basket—we can also produce a surplus from the labor, which is far in excess of that formally *per capita*. Then the economy is going to grow, if this is correlated with technology.

Today we are having a reverse process: not a technological curve non-linear up, but non-linear down. But in the final analysis nonetheless, all of these financial instruments and profits which have created all this paper, some day, have to be paid; and they can only be paid from the productive base, ultimately. And the productive base is being collapsed by the growth of paper. Therefore, you have a non-linear process of a false or fictitious growth which is depressing the real means of payment, in order to sustain that fictitious growth.

So we are now in a non-linear period, not a constant rate of decline, but in an accelerated decline, which will come into a process which is very much like what Bern-

hard Riemann described in physics, in his 1859 paper on shock waves. What happens is that you have, let’s say, a simple sine-wave form at a very low speed; as you accelerate, the characteristic of the wave gets more and more like an ocean wave, higher on the front. Then finally it becomes very steep on the front, at the speed of sound.

So this defines a shock wave. We are in a process which is accelerating—as you see it in Russia—which is going to lead to a shock. The shock is when breakdown occurs.

Change the Technology of the World

Muranivsky: There is a lot of talk in Russia right now, about the concept of conversion, how to use the accumulated capabilities of the military sector.

LaRouche: What I hear is talk about going from high-technology military to low-technology civilian; it will not work.

Muranivsky: You are right.

LaRouche: That is why I was so happy with this little story from *Izvestia*, on April 2.¹

Muranivsky: About the “Trust” proposal.

LaRouche: Because I studied this technology. I knew that the Soviet capability in strategic defense was largely in this area because of the work of Peter Kapitsa and others on ball lightning. You could see from the sky this big installation in Russia [Krasnoyarsk], and people said, “it’s a phased-array radar.” I said, it’s not a phased-array radar. It’s a phased-array microwave system. Because in order to make ball lightning in the atmosphere, you have to use phased-array microwave installations on the ground.

If I want to create a tidal wave in Gibraltar, I must put a series of bombs at the bottom of the Mediterranean. And then I must set off these explosions in phased array. If I use the same thing all at once, it doesn’t function. This is the same as the Riemann principle, of the Riemann acceleration of the shock wave.

Now, the problem is that when you do this business with this phased array, you create a microwave mess—a plasmoid—in space. Ball lightning. You need a very powerful laser to create a path in the atmosphere, through which this plasmoid will follow.

We knew this, because I knew the importance of Kapitsa’s work; I knew the work on microwaves disappeared from the Russian literature at a certain point; and also I knew the work on the high-powered lasers. And also how Yevgeni Velikhov worked on these one-power pulse systems, these short-time pulse systems, like electromagnetic pulse.

Then we have, in Russia, certain other signs of what the high-technological potentials are. We have the indica-

'How do you build private industry? You have to start with something—with infrastructure. Look at Russia. The first thing you get, is the rail system. You cannot build a road system. Why? The population density of all the inhabited areas of Russia is very low.

'So what does it cost, in time and labor, to move goods from one factory to another in Russia, as opposed to Belgium? In Belgium, it's very short distances; in Russia, big distances. Therefore, you need economical high-speed rail.'



The Granger Collection

Building the Trans-Siberian railway, latter nineteenth century.

tions of the work of certain scientists or groups of scientists. They have technological capability.

So we look at the world situation. We say, "What technologies does the world need? What are our opportunities to change the technology of the world? We must use these industries to produce articles—especially machine tools."

Muranivsky: There is a person named Maley in the government, who deals with the military-industrial complex. He has talked about how the process of conversion must be carried out not by destroying the existing technology, but rather to immediately put it to work for producing other types of objects for the civilian economy.

LaRouche: Take the particular case of high-powered lasers. This involves scientific technology and engineering technology, which has many applications and opens new areas of applications. The plasmoid technology is

also not only a weapon; it is an industrial technology.

People have to think about this. Sure, Russia must export, yes. It must export high technology, because only high technology will have a value. What they don't understand, is infrastructure. And the privatization question has been complete insanity.

Muranivsky: I read your interview, where you give the example of Margaret Thatcher's privatization of the water system. You are quite right.

LaRouche: Well, how do you build a private industry? You have to start with something. How did we do it in the West? We did it with infrastructure. How did Colbert in France do it? With infrastructure. How did Charlemagne do it? He made a census of all material production, what every farm in the whole realm produced. How much *per* year. He then calculated water systems, canals, roads, fairs, trading centers, and so forth. Louis XI in France did the same thing.

Now, we look at Russia and Eastern Europe, Russia in particular. The first thing you get, is the rail system. You cannot build a road system. Why? Take the population density of all the inhabited and productive areas of Russia. The population density is very low. So what does it cost in Russia, in time and labor, to move goods from one factory to another as opposed to Belgium? In Belgium, it's very short distances; in Russia, big distances. Therefore, you need economical high-speed rail.

Then you get the privatization by two things. You have two categories of major privatization. Forget the small businesses as such, they will come automatically if you solve the major problems. What the state has to concern itself with in the privatization, is not the small businesses, because that comes later, that comes from the business itself.

One kind of small business is very important, and that is the repair shop and the high-technology machine-tool shop. That is where the inventions are made, that is where the technological ingenuity is employed, where you have a few engineers or scientists and so forth, who have a machine-tool industry. They have a relationship to laboratories and they make machine tools for laboratories and for industries. Then you have the big industries, which cannot be as efficient scientifically, because they are too complex to make sudden changes. The changes come from the small firms which go into the big firms. The smaller firms make the machine tools, the big firms use the machine tools; so you have to have two contracts.

If I want to build a rail system in Russia, I will copy some western European technology, but I will also look and see: Maybe we can do something better? Maybe we have a military industry which can do something better? For example, ceramics. Maybe we should make a new type of system? We also know that we have the problem of magnetohydrodynamics. What do we have in Russia in magnetohydrodynamics? What is our most advanced thinking in magnetohydrodynamics and materials for a rail system or anything else, for magnetic levitation? On the rail system, because of the extreme differences in temperature, hot and cold, we have a special problem. What about the design of the rail roadbed, the underbed?

Now, you have to have a rail system which is interchangeable with local truck delivery, so that you take the unit off the rail, as we have in the West. The unit comes off the rail, goes on a truck, in a container system.

You have to have warehousing facilities at each point, because you are not simply moving things, you are moving them *from* one place *to* the other. You have to have efficient classification, because your objective is to get

cheapness and efficiency in time between the point from which you shipped and the point at which you received. That is the economy. This is big.

Now you take these military industries, and you say, "Can some of you people create something for us for this project? We'll give you a contract. You form a company with this part of the industry. You can use the old state company, but you form another company, which contracts with the state company to do its own business." You take a group of engineers and scientists and production people, and they say, "Okay, we will form a company, we will buy the production from this state industry."

Muranivsky: You would have these people in a private firm which is carrying out state tasks. But couldn't state institutions fulfill the same role?

LaRouche: What you want, is the freedom of private initiatives *in the mind*. So what you do, with, say, the state military-industrial companies, is that they form, they encourage certain of their associates or others to form, a private company.

Muranivsky: So these companies would be set up, and the state would then use them as needed?

LaRouche: Instead of having the military-industrial complex send its best people to the West, you say, "All right, we don't have enough work in the military now. Why don't you, instead of being unemployed—you're good people—form a company around some idea you have, to help service a state contract in infrastructure? A private company. We will work with you, to help make you successful. You will come to us when you need to, and we will give you production."

Culture and the Modern Nation-State

LaRouche: Let me shift to something, before coming back to your questions, and put this in a larger perspective of what I am working on now.

You think, and the West will think, that the cultural problems inside Russia, in particular, are the greatest problems imaginable in the world because of this kind of difficulty. Let us look at a worse problem. Let us look at China. What is happening in China? Just think about it.

The regime is a Chinese Legalist regime; it is a Legalist tradition, like Mao Zedong. I call him Dao Zedong, because he is a Daoist. These are Legalist successors of the Daoist dynasty. Li Peng and so forth.

What are they doing? They too have adapted to the West, to the free enterprise zones. They have adapted to Lord Palmerston's idea, from the inside. They say the coastal areas are the free enterprise zones. That is what Lord Palmerston said to the Chinese Emperors.

So what is happening? The Chinese regime is taking the countryside and depopulating it. They are moving these hundreds of millions of Chinese from the countryside toward the free zones. This is called Auschwitz, without railroads. They say: We have too many Chinese. So we will sell the Chinese at half price. We will pay them half what it costs to produce a Chinese. They will die. We will eliminate the excess population and we will get money for it. And we will build up the rest of China. This is your shock therapy model, in Russia.

Now, what do we say about people? We say we have peoples in the former Soviet Union. We have the Belarusians, and especially Ukrainians and Russians, who are the key to the whole business. Ukrainians and Russians and Belarusians, are the key to the whole thing, to what happens to the rest, because of the nature of the beast.

Do the Russian people say: "We will do this to ourselves"? A few years ago, Moscow would have blown up the whole world, if half such a threat were made. But since Chernobyl, it's a little different.

But doesn't a people have the ability to save itself from this?

You see similar things inside the United States, inside Western Europe: destruction, self-destruction.

So, our problem is not the economic problem. Yes, that is the practical problem we must address, but the problem is: how do we get the ability to make the decisions which we know will work, if we have the right cultural impetus? The problem is a cultural problem.

That is why, in 1989, I raised the question of Sergei Witte [1849-1915] and Dmitri Mendeleev [1834-1907], in the case of Russia. One had to look in Russian history, to find something which the Russian people would recognize historically, which would serve as a benchmark to adopt a new policy. You say, "Ah! Okay. Bolshevism is a big mistake. We can cry about this forever. But let us now look at what we must do."

There are two things we should have learned from the past six hundred years, especially work in developing the modern nation-state.

First of all, as Dante Alighieri emphasized, if a people is to become sovereign, it must have a literate form of its own language. Because the participation of the people in the society, is through the medium of the use of language. It is not *in* the language, but the language is essential to that.

Therefore, for that reason, we require a world which is based not on some kind of global soup, but on the basis of a community of sovereign nation-states, each based on a literate cultural form of language.

So we have to look at the Russian problem as part of the problem of a community of peoples, each of which must address this problem. And we must together make

sure this solution works for all nations. And we look into China, we see a real horrible problem!

But we see a solution, but the solution is very distant. The Russian solution is *much easier*.

Leibniz and Peter the Great

Now, what do we have in Russian history? Well, we have Kievan Rus² and so forth, but that was a long time ago. And though that is important historically to understand, we start with this past six hundred years.

We have the emergence of Rus from the Mongol yoke.³ What came out was a disaster. Because what came out, were Byzantine ideas of a Roman Empire, a Russian Roman Empire. Muscovite.

Muranivsky: The Third Rome. "There will be no Fourth Rome."

LaRouche: Yes. "There will never be another Rome." Crazy idea.

But then you had the rise of the Romanovs.⁴ Preceding Czar Peter the Great [1672-1725], there is a development which begins to occur, which is influenced by the Renaissance developments in Western Europe, coming in in a second wave.

Now you have this Peter. Peter is a very mixed person. He is a Western Roman *Pontifex Maximus*. He thinks of himself as a Western Roman Emperor. He is the chief of the church and the chief of the state, and he will not allow the monasteries to run the churches without his permission.

But Peter wanted to go into Western Europe. He did not want to be an Asian nation, blocked by the Black Sea. He wanted to go West. So he got the idea of the new city on the Baltic, and he made a war with the Swedes to get a new city on the Baltic. And he made the capital St. Petersburg, in order to make this change in the orientation of Russia, to get out of Moscow, to get into the West.

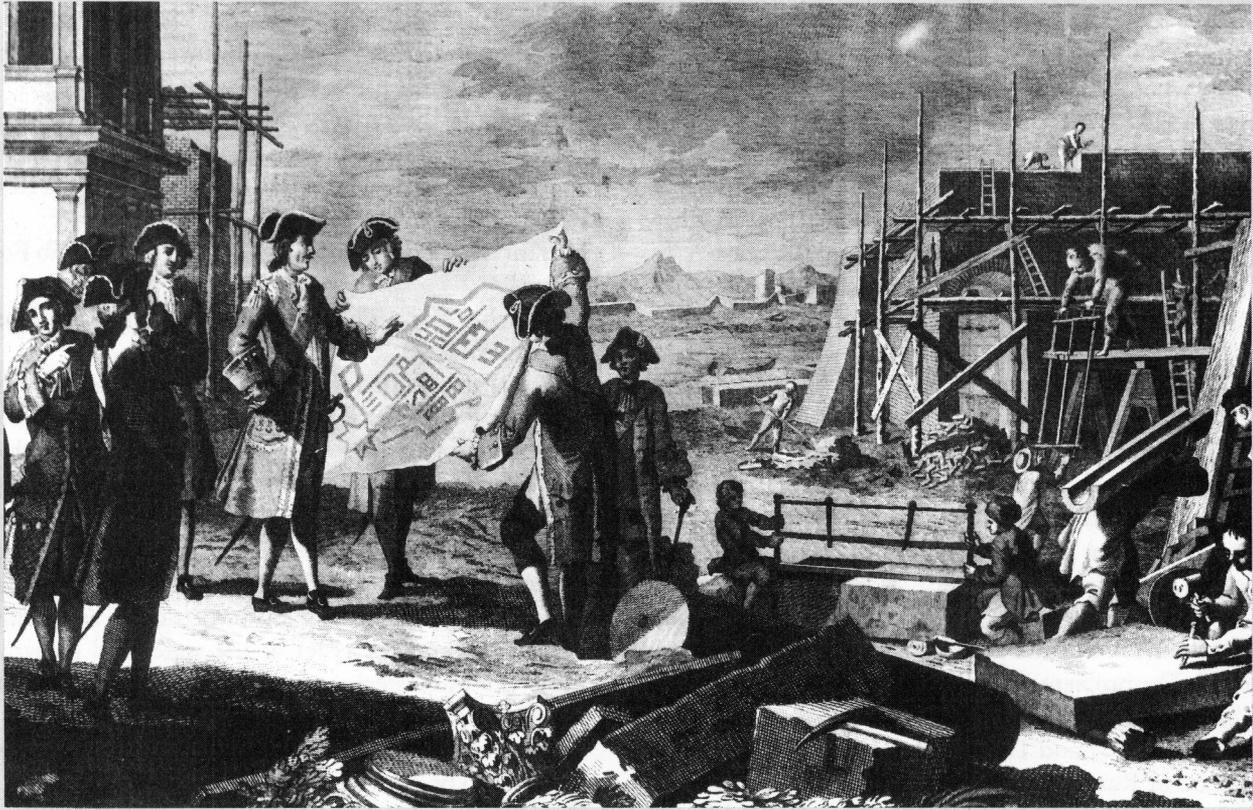
So he did something. He is a very sly fellow. He did something with the advice of people like Gottfried Leibniz, who understood exactly what he was doing. And Peter adopted the program of Leibniz, not the way Leibniz intended—and I think Leibniz understood that—but for the purpose of Russian Third Rome, Western style.

But nonetheless, look at the history. The history was, that what Peter did, by taking Leibniz's program, was that he elevated Russia. The production of manufactured goods in Russia, during Peter's reign and immediately after him, to the middle of the century, was greater than the production of industrial goods in England.

Well, let's go look back at Peter and let's look at this nineteenth-century development, the abolition of serfdom. The introduction of modern industry again, after a

‘Leibniz successfully convinced Czar Peter the Great to create the Academy of Sciences, and to create the idea of a national economic interest, to develop agriculture as a progressive area, which meant to free the serfs. Because unless you engaged the peasant’s mind in changing agriculture, you could have no agriculture.’

‘By taking Leibniz’s program, Peter elevated Russia. The production of manufactured goods during Peter’s reign was greater than the production of industrial goods in England.’



Peter the Great supervising the building of St. Petersburg.

dark age in the early part of the century. It worked, didn't it? Despite these crazy religious nuts, the *raskolniki*.⁵

Translator: It is difficult to discuss this, for example, in Ukraine.

LaRouche: This is because of the Roman Imperial attitude of Petersburg.

This is the same thing in Ukraine. It takes a different form in Ukraine, in the terms of history. In Ukraine it takes the form of the cultural-historical development of science and so forth in the language. You have the modern development, the Ukrainian scientist in Russia, which is important in the history of Russia, and in the Soviet system. Mainly they were dissidents, but there were great scientists. Vladimir Vernadsky [1863-1945] is extremely important. For the Ukrainian, Vernadsky and Aleksandr Gurvich [1874-1954], and so forth—these are extremely important people. They had global concep-

tions, they were an integral part of world science, as Vernadsky was with Louis Pasteur. And if you look at Mendeleev, and then you look at Vernadsky, you see a continuation of the same mentality from Mendeleev and the Periodic Table to geochemistry and to the idea of the organization of life and to the work of Vernadsky.

Muranivsky: The noösphere.

Solving the ‘Peasant Problem’

LaRouche: So this is very important material. But the question is: Culturally, how do you get what the Bolsheviks used to call the “peasant problem” solved? For example, the Soviet budget, the economic failures. They’re going to replace the bricks in the old factory with bricks like the old bricks. They’re going to replace the machine tool in the factory with a machine tool like

the old machine tool—it's a machine tool *design* they don't want. The factory tractor, which is maybe not the best in the world, but it's a tractor, that is left in the field.

So this kind of problem comes back, and the question in Russia is how in Russian history do you solve *this problem*, of the brutalization of so much of the population in general. They were treated like cattle, and this does not come out of their minds, yet.

For example, take the southern Black population in the United States. Four hundred years of Black chattel slavery. No family. The man is just a breeding bull. He is not a husband. They're separated. The wives, the children. Then you get the reaction: the Ku Klux Klan, that reaction in the United States. You get the conditions of poverty in the ghettos. You get a whole Black population which is *brutalized*. These are human beings. They have a mind from birth; they are perfectly capable of anything, as any human being is. But because of these environmental-social conditions, a tradition, a heritage of brutalization affects them and makes them less than they are. And we see this in every part of the world, what was called in the Soviet literature "the peasant problem," the effect of brutalization on the population, which led the Russian leaders to use the brutality in Russian society, as the way of solving a problem.

Muranivsky: It's profitable for them to do this because the stupider the people are, the easier it is to control them.

LaRouche: Manipulation. Our problem is, we wish to get the Russian people—or some of them—to be inspired and to have confidence, and the others to follow that model. And the problem is to get enough people who represent a leading stratum, who understand that, and who will see that that is what really has to happen. It also has to happen in China. It's easy in Russia, compared to China.

Muranivsky: In Russia today, you can't even talk about the standard of living because ninety percent of the population is below the poverty level. In terms of finding a core of people who can play a leading role, this leads me back to the question of cooperation.

LaRouche: This is where the trade union question comes in. Always, in society, you have certain older people who represent a resource of leadership. But most older people are not willing to change very much.

For example, in 1793-1794, the French Jacobins had butchered most of the scientific leadership of France, such as Antoine Lavoisier. But then take a great genius, Lazare Carnot, and his teacher and friend, Gaspard Monge. How did they approach this problem, which was a very useful solution until 1815, when the counter-revolution and foreign powers shut down the Ecole Polytech-

nique under Monge and put it under others?

Monge set up brigades, as he called them, in the Ecole Polytechnique. He took bright students from all over the country, and they brought them to the Ecole. And then taught them in brigades and they made them teach others. And as a result, they produced a generation of French scientists, which continued the hegemony of French science in world science.

So in the world today, we have a similar problem. That is, people under twenty-five years of age who think of themselves as students, who think of themselves as wishing to learn. You see academics when they get to a certain age, they say, "I don't learn any more. I'm now a professional." And it's very hard to do anything with these people. Because they say, "But I *learned* this."—"Can't you learn anything any more?"

So, we have the energy, the dedication, of young people around a nucleus of older people who are capable of educating them or guiding them in their education. And then some opportunities for them to do what they should do, to set examples. That is the long-term solution.

The Principle of a Constitution

In the meantime, you have a Russian government which is an institution by default. So you have a decaying—actually eroding, collapsing, disintegrating—institution of the Yeltsin regime. There is not yet a *Russian government*. There are some people who want to come back with who-knows-what, and so forth, from the Dark Ages, or from the fourteenth century, or from the thirteenth century. But a center of leadership does not exist.

If I were just a poor Russian person, I'd look up and say this is terrible, I have to rush for even a little to eat; I'd look up: "We were a powerful country. What happened to us? Who is leading us? I see nothing." So that is an admitted problem.

I can define solutions, but I can't make them. I can tell you the solution is to have the right program. The solution is to understand what the problem is sociologically, psychologically, culturally, historically. The solution is to build groups of people and to strengthen them, who do understand, who are trying to understand.

Translator: We were discussing the question of a Russian constitution. In Moscow, people say repeatedly, "Your program is good. But we can't do anything until we know in what kind of country we are living." And there's a big debate about the constitution. Yeltsin has a draft of the constitution, somebody else has another draft; in none of these constitutions is there even a reference to economic science, technological development, and so on.

Muranivsky: Not only is there no glimmer, but these are actually seen as two opposing processes. This constitutional struggle is counterposed to getting out of the crisis.

LaRouche: But this is the influence of Lockean ideas. You can see it very clearly there. The idea that some kind of constitutional democracy is going to solve everything. It is not.

This is the “Matushka Rus” problem. The problem is, that people don’t understand that a constitution, among other things, defines the protection of the rights of the individual against the majority.

For example, do they understand the difference between the U.S. Federal Constitution, its Preamble, and the Confederate Constitution of the traitors? That difference is what is crucial. Why is that so important? They have to understand that today, the United States is under the control of the Confederates, in terms of legal ideas. Look at the Supreme Court decisions and so forth. This is the Confederacy in this century. Teddy Roosevelt is a Confederate; Woodrow Wilson is a Confederate. When you talk about constitutions, they don’t know these questions.

For example, in Europe, people today are told through the United Nations and other idiotic institutions, that a constitution is a “Basic Law.” That is, a group of laws—a list: 1, 2, 3, 4, 5, 6. Laws. It’s like a trade union contract negotiation. It’s not a constitution; it’s a trade union contract.

So they don’t think about a *principle* of government. The U.S. government was designed—there were compromises, and so forth—but it was designed to establish a balance of institutions in order to effect the strengthening of a principle. And you have to know: What is the principle?

The principle is the Russian cultural problem. In the West we say “*imago Dei*” and “*capax Dei*,” which were rejected by the Muscovites. The greatness of Western culture is based on these two ideas, which is a big cultural problem, which is also a religious problem, for the Russians. It is an unresolved problem.

Muranivsky: What do you mean, the Muscovites rejected it?

LaRouche: The religious basis. What is the secret of the greatest achievements of the West? Forget about the crimes. I know about the crimes. That’s easy. Because the crimes are the same all over the world.

We have to see where the achievements come from. Obviously, they don’t come from these crimes. The achievements come from one thing, which the Renaissance typifies and Charlemagne in his own way typifies, from the emphasis that individual man is in the image of God. And the image, as Philo Judaeus says, is the image of creativity. To the extent that man, unlike animals, can

create as the Creator creates—with ideas—and put these ideas into practice, to revolutionize practice, creativity.

When a person sees himself as an individual, how does he see himself? Is it as a physical body? No, an animal has a physical body; that is not very human. What makes a person an individual? Mind. Creative potential of the mind. Without the recognition of the creative potential of the mind, without saying that the person has rights not because they have a body (an animal has a body), they’re meat, like an animal. They have *rights*, because they are *human*. And they are human, because they have creative potential.

That is the secret of everything that is accomplished in the West, including its best achievements in constitutions, civilization, government—everything *good*—came from that idea. And the idea also, that man must participate in God. That man, through his creativity, must contribute to his society, past, present, and future. And the individual must draw his happiness—

Muranivsky: I have read about these things in your “On the Subject of Metaphor.”

LaRouche: The problem here, is dealing with the Russian people. The constitutional discussion is important. It is not to be ignored. It is a useful discussion. It must occur, even in crisis; but in crisis, people should discuss everything. But how do you get across to them, how do you inject into this, the idea of principle?

What is the state going to do? A constitution—what is that? That’s a constitution of a *state*. It is not a social contract. It is a constitution of a state. And what is the *purpose* of the state? The purpose is to protect the family and the person. For what purpose? For the development of this potential, and for the opportunity of the individual to use that potential, and to protect, for the rest of society, the benefits which each individual’s contribution can make to society. That is the purpose of the state, and that is what the Preamble of the U.S. Federal Constitution should be seen to mean. These ideas were there. That is what is important. *Then* they set up three branches of government, to balance.

Muranivsky: When we were discussing these questions, the question we posed, was how to splice together constitutional and economic questions.

LaRouche: First of all, anyone who worked, as I worked in a factory (and I worked in a factory as a very young boy), can tell you that work is monotonous. Why does it have to be so monotonous? How do you improve it? If you were working in a monotonous job, you would think about how to improve the job. You would count, you would begin to analyze the job. You would begin to think, How could a machine do this job? How could I

get a machine to do this? If you had a machine, how to make the machine better?

Muranivsky: And maybe the worker himself thinks through how to improve his own work function and makes a proposal to the manager.

LaRouche: That can help. But the most fundamental thing is that, suddenly, he changes himself. He no longer thinks like a worker, he thinks now like a productive engineer. He thinks, "Hey, I must think about this. This is important. Look, I have so many years to live. Am I going to live my life doing this, this, this, and this? Am I going to be a horse? A bull? An ox? Or am I human?"

The humanization of work, which is needed for humanity. For example, pride in the product. The worker says, "I don't want to be ashamed of working in this place because the product stinks. I want a good product. I take pride. This is my life."

These qualities are the connection. Does he want a better family? Does he want more education for himself and his children? A better home? Does he have problems of diet? Does food spoil?

All these problems affect everybody every day, and they affect—what?

Well, all the problems have beauty. The beauty is, that the problems force us to solve them, to use our mind. And if you have a people who is self-conscious of this, saying: "Ah, we have problems. Yes, but the problems force us to use our mind to find solutions. And to think like people. We are not oxen, we are people who *create*. We do what we have to do, but we always try to do it better, because we shouldn't do it the same way, that would be like an animal." And that's the great problem we have with the oppressed people of the world, is that the majority of the oppressed are trained to think in what they call traditional ways: "What my father and grandfather did." They think they honor their father and grandfather by doing the same thing. They *dishonor* them, because it becomes as if their lives were for nothing.

Muranivsky: Perhaps even in the course of the life of one person, everything can be changed.

LaRouche: To me, to educate in politics, economics, you cannot simply stick to politics and economics. It cannot be done. Because, in order to educate a people—like this problem, the problem of the monotony of labor, and not just the monotony of labor, but the *solution* to it. Well, this is the subject for a great dramatic tragedy, in order to get people to think about these concepts and to recognize these things in themselves, and to make people better people.

It is the function of great Classical poetry, of all Classical art, to inspire people by these ideas of beauty, of what is beautiful in life, and to be moved to do good things because they are also beautiful.

Information Theory

Muranivsky: I want to ask you about Norbert Wiener and Claude Shannon. In "On the Subject of Metaphor" you have some very interesting reflections on the theme of information also. Very convincing. And I can be a little bit proud, that I actually criticized Von Neumann ten years ago. I was in disagreement with the primitivism of his approach to his game theories.

LaRouche: For instance, you mean in the book by John Von Neumann and Oscar Morgenstern, *The Theory of Games and Economic Behavior*? The so-called "Robinson Crusoe model"?

Muranivsky: The people who defended Von Neumann, explained the primitivism of Von Neumann's game theory, saying that the level of development of the computing technology at that time—methods, machinery for counting—prevented the development of a higher and more complex conception. Therefore, there could be an apology for his use at the given phase of development of information theory of a less-developed theory, as long as it were recognized that this were not perfected, in order to move forward a little bit; but as one moved forward, naturally, more perfected, better methods would be developed.

This year, 1993, as a matter of fact, a Wiener/Von Neumann prize has been instituted in Russia, to be awarded to those who have the greatest achievements in the area of computerization and so forth.

My question is the following. How should I understand your critique of Wiener/Shannon, Von Neumann? Are these theories harmful *in general*, and if so, why? Or is it the case that perhaps they would have a certain application at certain phases and in certain cases?

And if they're not, what should one have put forward at that phase in opposition to it?

Let's set aside for your answer the question of entropy versus negentropy, because this is clear. Sergei Podolsky [1850-1891] and others cast doubts on the Second Law of Thermodynamics, already at the end of the nineteenth century. Vernadsky also spoke against entropy. So therefore, we shouldn't touch on entropy and negentropy, but information theory *as such*.

LaRouche: First of all, this information theory is so simplistically absurd, that it's amazing that anyone who considers himself a scientist would ever be taken in by it.

Muranivsky: What do you mean by information theory?

LaRouche: That's what I'm getting to. That's the incredible part. It can only be explained by a kind of mafia principle that works in managing the ideology of institutionalized science.

In the English-speaking world, this particular theory starts actually at about 1518, with the appearance in Eng-

'You have two Russian economies. A scientific-military-industrial section, which functions, and another Russia which is back in the serfdom of the early nineteenth century.

'We see in every part of the world, what Soviet literature called *the peasant problem*—the effect of brutalization on the population. The intelligentsia has a twofold problem: in the long term, to convince the Russian peasant he has a soul, to treasure the labor of his mind; and in the meantime, to elevate the activity, the creative powers, of his mind.'



The Bettmann Archive

Russian peasants, c.1900.

land of a Venetian sex adviser to the lecherous King Henry VIII, by the name of Francesco Zorzi, who wrote a book attacking Nicolaus of Cusa, called *Harmonice Mundi*. This book is the basis for empiricism.

All modern science started essentially around Nicolaus of Cusa and his *De Docta Ignorantia* of 1440, on the Socratic principle of what was called *docta ignorantia*, or *learned ignorance*. This was based on the Platonic principle that man does not know reality through his senses, that is, not through sense certainty, but rather man knows reality by recognizing the role of creativity in changing the conditioned behavior of mankind, and in observing the effects of these changes in conditions of behavior and then showing a correlation between the method we use in our head to generate our ideas, and the effect of these ideas in response by nature in general, as measured in terms of effects on human beings. All of this is Cusa's method. This is the method of Leonardo da Vinci, this is the method of Johannes Kepler, this is the method of all the great French scientists of the eighteenth century, Leibniz, the Bernoullis, and so forth.

This was attacked, in a very primitive way. The attack was little known in modern times. Zorzi was the ideologue behind the movement that later became Francis

Bacon and Thomas Hobbes and John Locke and so forth, and British Freemasonry, the so-called Rosicrucian cult that came to England. It was out of the Rosicrucians in England, that empiricism developed. It was out of empiricism, that information theory came directly. It developed over many centuries, but essentially it was there all along, in a theory of communications and of the mind, a theory of knowledge, based on these neo-Aristotelian ideas by Zorzi, as we have it from Bacon, from Thomas Hobbes, from Locke, from Robert Fludd's attack on Kepler, from Isaac Newton, and so forth.

The idea is that only sense certainty gives us knowledge; and that all that man can do, is rationalize the relations among the phenomena of sense-certainty. That is what information theory is.

Obviously, this is pure nominalism. Why? Admittedly, Baconian or Lockean empiricism is not based entirely on words. It is not radical nominalism. But the theory of sense-certainty is a little more sophisticated than pure, simple dictionary nominalism. It's based not on a word, but on an *idea* of a sense-experience. It is a sense-idea, we might call it, in the head, but then you put a word on the sense-idea. But the empiricist does not base himself on the word; the radical positivist may, but the classical

empiricist does not use the word. The classical empiricist uses the *sense-experience*, the particular datum, point data.

What he says, then, however, becomes pure Aristotle, because he derives the relationship, when he attempts to rationalize sense-certainties, from the Aristotelian syllogism. Therefore all you have is sense-certainties, which are names for objects, they are not real objects. They are the names for a sense-experience. So you put a name to the sense-experience.

But the important thing is the syllogism. Everything shows the contrary. Plato had already showed the contrary, in his work. But let's take Cusa. I use Cusa's "De Circuli Quadratura" ("On the Quadrature of the Circle") [SEE p. 56, this issue], as an example. The circular action is a higher species of existence, ontologically, than the polygonal processes which it circumscribes.

That is, the circle is not the asymptote of the polygon process, but is outside it. Augustin Cauchy, who made a vulgarized version of the calculus, vulgarizing Leibniz, replacing him with Newton, is wrong. Cauchy's calculus is absurd. Cauchy invented the theory of the asymptote, and that is key to this whole process, what is called asymptotic freedom, as it became known after the 1920's. And it's out of asymptotic freedom that you get information theory.

Leonhard Euler attacked Leibniz on the question of divisibility. Euler insisted that space was infinitely divisible, whereas Leibniz had said it was not, in his *Monadology*, as Georg Cantor later said the same thing. Space is not infinitely divisible, in a simple *analysis situs*. It cannot be done. So the facts show, that the universe was not ordered by the linear relations which can be attributed to the syllogism.

The development of the principle of least action, from Cusa, where it started, through the work of Bernoulli and Leibniz at the end of the seventeenth century, had completely overturned any mathematics—even Newton had admitted this, in a sense. Newton had admitted that his sense of the world, implied in his mathematics, did not correspond to reality, but that he was compelled to leave that impression because that impression was imposed on his evidence by his choice of mathematics. So it was recognized that this kind of mathematics, derived from the syllogism, based on sense-certainty, had this failure, that it misrepresented reality.

Now this is all because of the same Platonic argument, which says that sense-certainty is *not* actuality. It is a reflection, a shadow, of actuality, not the actuality itself. And we must get behind the sense-certainty, to find out what is the cause of the sense impression. We cannot interpret the sense impression, to find its own cause.

Least action says (as Kepler had said) that the universe

is organized on the basis of a principle of least action, not a principle of action at a distance.

It is obvious, that you have to get to negentropy at this point. But when you look at the behavior of the human species, you cannot use the term "negentropy" simply—because many people will think that negentropy means Ludwig Boltzmann's conception of negentropy, and there is where the problem lies. Boltzmann said you could have a negative of entropy, living processes, by simply negating entropy, reversing entropy. You cannot. Entropy essentially belongs to this algebraic manifold; it exists only in an algebraic manifold. Negentropy does not exist in the algebraic manifold. It is not derivable. It is not ontologically the same species as entropy, but rather is *self-similar development*. What we call negentropy is only *self-similar development*. Human discovery.

Obviously, when we're talking about society, my starting point was, we are talking about what happens in the human mind, and what happens *between* minds in the effective transmission of ideas from one person to another, which is *correlate* with this self-similar development. A statistical theory, such as Boltzmann's, cannot, for ontological reasons, contain what he might call the information represented by this self-similar result of behavior.

Shannon is saying that information is a probability of distribution of a Boltzmann type, and that if you have a series of probabilities, the series must change in a certain statistical distribution, plus or minus. That does not account for the self-similar process that we are dealing with, of an energy system which has a rising temperature of the energy of the system. But the total temperature is increasing more rapidly than the energy of the system. There is no such statistical gas-theory system; it does not exist.

But it does exist in the form of the development of the Periodic Table, in the form of evolution of species, the biosphere, and in the form of the development of human society. And since we are talking about information, we are talking about the *change* in man's relationship to Nature, especially through production, which is accomplished by the development of ideas.

I use an example of this, which I always use. It's very simple. Any college graduate in science or engineering, should know the example. How do we increase the productive powers of labor, essentially? We increase it with technology. What does that mean? It means we start with a scientific experiment. We have a hypothesis we develop. Now we construct an experimental apparatus, which is appropriate to the hypothesis. We have a successful result. We prove the hypothesis, we demonstrate the hypothesis. We then make a refined experimental apparatus, to refine our study of this phenome-

non, this hypothetical phenomenon.

I take the scientific apparatus, and I go to a machine tool business, and I make a machine tool which now utilizes that discovery as a principle in machine-tool design. I then take that machine tool design to a factory, and I teach the operators the hypothesis which goes with the machine tool. They now increase the productive powers of labor, through the education and use of a better tool.

That is typical of the transmission of the kind of information, upon which the existence of the human race depends.

The Potential in Russia

Muranivsky: Thank you very much. Maybe you have some questions about Russia.

LaRouche: *I have so many questions about Russia.* I sit here, every day trying to know what's going on in the world, especially the important things.

The Russian crisis must be solved, in its present form. But that is only the means for solving many other crises which are beginning to face us. The problem is the incompetence of leadership shown in so many countries. If you had two or three countries where you had capable, strong leaders, who could respond to the sense of reality of a crisis, and give leadership to other countries, and say, "Look, we have to do this," then this crisis could be solved. It would have been solved.

We have such miserably, disgustingly weak and stupid governments, it's unbelievable.

Muranivsky: Because of this, the problems are complex all over the world, not only in Russia.

LaRouche: I can understand the problem in Russia, because the former regime destroyed many potentials, because of the environment in which people lived.

But also in Russia, there are certain potentials in science and so forth, among a layer of people of that sort, which can be used to help make up for the lack of potential in other areas. We can use technological and scientific progress as a way of awakening the people to a new kind of morality, a new kind of way of behaving. Because they will say, "This works, we'll do this, this is a *good*." And a new sense of self and education. That will solve the problem. If I could have one year, two years, of massive infrastructure development programs, you would change the mentality of the Russian people. Now, because it is a crisis, they're looking for solutions. If they see something for one or two years that works, that makes things better, they are going to say, "Ah! This works." Not because all of them will see it, but because leading people, the more sensitive minds, will see it, and they will persuade the others, with leadership.

But the problem is, you have people all through Russia, I'm sure, who are potential leaders—all kinds of people. But when they look at the center, and they look at the world around them, they don't see any leadership that they can follow. They just see confusion, chaos, dishonesty. Things become worse; nearly everything becomes worse.

I'm sure you can find people in Russia who have all kinds of talent and a certain moral commitment to using their talent, their ability.

* * *

The Historical Concept of the SDI

Kuzin: In the Soviet Union, the idea of the Strategic Defense Initiative (S.D.I.) was always presented in such a horrible fashion, as a sneaky plan by reactionary imperialist forces of the West for annihilating the U.S.S.R. and all the countries of the East Bloc. There were the attacks in the Soviet press of that time against the idea itself and against you personally as its initiator. Briefly, what was the full content of the S.D.I. conception, and what motivated the distortion of this idea by the Soviet side, and the attempts to exploit it in the political confrontation of the two blocs?

LaRouche: The problem is, that from both sides, on the part of the ordinary, sincere Soviet politician or the sincere U.S. politician or the military in Western Europe or the United States, or even from the standpoint of people like Marshal Nikolai Ogarkov, there was a complete misunderstanding of the nature of the so-called Cold War. Even people who at a high level participated in it, didn't understand it. It's like the actor on stage who doesn't know what the intention of the playwright is.

We had approaches from a Soviet, obviously intelligence, person in 1981 at the United Nations. We read him as probably GRU or KGB.⁶ We didn't know which. He was nasty, but sincere. Professional, in short. He approached one of our people at the United Nations, and said, in effect: We don't understand the Reagan administration. We think that our usual U.S.-Soviet channels are not giving us the right information.

I heard about this, so I caused a report to be made to various people I knew in the U.S. government, a report of the discussion and my comment. My recommendation was that the Reagan administration treat this seriously as a request for a new channel. Our source suggested they explore opening a new channel.

Now, I also suggested that the question of strategic ballistic missile defense be considered. My particular point of emphasis, which I did in my oral report, was that I knew that on the Russian side, there was an understanding of

the stupidity of Mutual Assured Destruction, and very few people on the U.S. side had the same understanding. And I knew, from what we knew of Soviet work on strategic ballistic missile defense, that there was great concern about the danger of this so-called peace or *détente*. Most of the official back channels were loaded with people who were promoters of this *détente*. But from the standpoint of any traditional military thinker, the thermonuclear deterrence, is only a preparation for war.

But also, and I must explain my motivation which colored the subsequent events, I had a private reason for this. I understood the true nature of the relationship between the Soviet government and the Anglo-Americans.

Kuzin: It would be good to hear this in a little bit more detail.

LaRouche: None of the Soviet press that I ever heard of, ever reflected any understanding, that the entire relationship between the Soviet government and the Versailles powers for the entire almost seventy years, was a complete fraud.

The reason the Soviet Union came into existence, had many accidental features to it. One is the persistent contradiction and paradox of the Czarist regime with the oligarchical character of old Russia, which crushed every attempt at genuine reform, most notably the case of Peter the Great, who was a reformer, Czar Alexander II [1818-1881] or Count Witte [1849-1915].

A certain section of the Russian intelligentsia was always looking for reform, which used to center around the St. Petersburg Academy. The positive part of the Russian intelligentsia and political establishment was very close, on one side, to Germany (St. Petersburg especially), especially in the Leibniz tradition of science. This was the part that was very pro-American at various times, against the British. Then you had the Moscow group, which had a different tradition.

When the American Civil War happened and Russia the second time demanded neutrality of Europe against the Americas, British intelligence, the Palmerston faction, were terrified of a continuing alliance among Russia, the United States, and Germany, because if this kind of economic development occurred in Eurasia, then Eurasia would go out of control of the British Empire.

So actually, the Bolsheviks were always very embarrassed about the fact that they were in large part a creation of British intelligence.

Kuzin: We've had widespread acceptance of the version, which was spread about especially since the early years of *perestroika*, that the Bolsheviks were really able to come to power, thanks to financial and other backing from German secret services. Is this some special disinformation?

LaRouche: It's also true, but it's not complete information.

Kuzin: So, what is the whole picture? This is very important for us, in order to understand the reasons for what happened.

LaRouche: Exactly. It's key to understanding why I did what I did. My approach is based on this historical understanding.

The Russian radical developments were part of the Palmerston-directed radical movement of the 1830's and 1840's.

For example, the example of this in the British mind, is the case of the absurdity which occurs in France, which is a good way of comparing absurdities which occurred in the Soviet Russia.

On July 14, 1789, the Duc d'Orléans, the cousin of the King, hired a street mob which he equipped with weapons. They marched on the Bastille, which was almost empty, except for four lunatics, who were awaiting transfer to mental institutions. But all the political prisoners were already out. The guards surrendered. So the mob chopped off the heads of the guards. They put the heads of the guards on pikes. They put the lunatics on their shoulders. They carried the bust of Jacques Necker before them; and this was an election rally by the Duc d'Orléans to force the King to make Necker—who had just bankrupted France as Finance Minister—Prime Minister of France. And I will often ask French friends: "Why do you celebrate Bastille Day? This is not a demonstration of freedom." But the British did that to France, destroying France as a competitor.

Similarly, the British were out to destroy the Czarist system, not because the Czarist system was the system of freedom, but because it had a recurring tendency to go opposite to Britain. And the history of Europe to this day, as Thatcher shows in this century, is the history of efforts by Britain to prevent France, Germany, and Russia from becoming a center of global economic development, particularly in Eurasia.

Kuzin: What are the global goals of the British elite, or the Anglo-American elite?

LaRouche: To keep France, Germany, and Russia at each other's throat, with the aid of the Balkans, in order to prevent this.

The British, in the 1930's, put Hitler into power in Germany, because they knew that von Schleicher, with his economic reform, was going to move again for German economic cooperation with Russia. With the German system of credit, and Russia at that time starved for capital, the natural tendency would be for Germany, as it was tending to do with the Black Reichswehr, to move



Prints and Photographs Division, Library of Congress

Churchill, Roosevelt, and Stalin (seated, left to right), at the Yalta conference.

'The history of Europe, is the history of efforts by Britain to prevent France, Germany, and Russia from becoming a center of global economic development.

'The British put Hitler into power in the 1930's, because they knew that von Schleicher was going to move for German economic cooperation with Russia. Then look at Yalta: Stalin did not want to partition Germany, he wanted German production for Russia. But British policy was to use nuclear weapons to force an agreement upon Russia; and Bertrand Russell said, if they do not make an agreement, we'll bomb them!'

into cooperation with Russia secretly, particularly at a time when the Anglo-American powers were in collapse financially. The British and the Americans put Hitler into power, to ensure a future war with Germany and Russia.

Kuzin: Was this a divide-and-conquer policy, *divide et impera*?

LaRouche: Exactly. The so-called *détente* was the same thing. Take the characteristics of this from the end of the First World War. Then look at Yalta. Now Stalin, probably as the files will begin to show sometime, was a fanatical Russian nationalist in his own way. A Bolshevik Ivan Grozny [the "Terrible," 1530-1584]. He became that.

Stalin knew, in his own paranoid, shrewd way, what he had signed. You see Stalin: "They cheat me today, I cheat them tomorrow."

Kuzin: One gets the sense that the entire history of Europe, at least in the twentieth century, is a history of mutual deceptions. This was completely immoral politics.

LaRouche: So the point was, that Stalin signed the agreement, out of weakness. The key thing about Stalin, is that Stalin did not want the partition of Germany. Stalin wanted German production for Russia. Churchill had a lot of problems with Stalin. But you see, the British policy was, we must use nuclear weapons, number one, to force

an agreement upon Russia; and Bertrand Russell said, if they do not make the agreement, we'll bomb them. This is all public. It's not a secret.

When Stalin died, now the Soviets had nuclear weapons. And because Vernadsky, they also had thermonuclear weapons, because Vernadsky's atom project produced them, because Vernadsky started that back in the middle of the 1920's.

So at that point, Stalin is dead. It took less than two years. As soon as Nikita Khrushchev had consolidated power, Khrushchev sent messages to London, to Russell's meeting,⁷ and out of that came the Pugwash agreements. The policy was: The Anglo-Americans had an agreement with Moscow, and a subsidiary agreement with China. So they say: "Now we create a system of an exclusive nuclear club, and nobody must develop defensive weapons. We must use the balance of terror to control the club." The key thing becomes clear, when you see the developing sector, and you see the U.S. and the Soviet government on the issues of the developing sector. It's a partnership to control the world.

Kuzin: In what way was your conception of the S.D.I. an alternative to this?

LaRouche: First of all, we both agreed—that is, the sci-

entists on both sides, who are objective, have to agree that the system with the increasing of targeting, with thermonuclear pulse, with the precision and forward basing, that the system of deterrence is a system *for* war, not to stop one. We're living in insanity, where you have what are called utopians, ideologues, fanatics, such as Robert McNamara, Henry Kissinger, Bertrand Russell on the Western side, and then those like Khrushchev, who said, we're going to make an agreement with the West on this basis. These ideologues say: "We must have the balance of terror, the utopian system."

But the reality was, that I knew (because of the things that I read) that you could see that in the Soviet scientific and military community, there was a completely correct understanding of what this problem was. The point is, if you see this from the correct military standpoint, then you understand what the real political, global, historical standpoint is. Because we had discussions of this from a military standpoint, with Americans but also German and other European experts. And the insanity of the military doctrine makes clear what's wrong with the whole policy.

Just very simply, the military principle: There is no such thing as a deterrent in history. This is true in terms of the world of atomic weapons, as well as any other type. There are only two things: either an effective defense or a preemptive conquest.

You had signs on both the European side, the Western side, and on the Soviet side, of tendencies in both directions. And I could see around Nikolai Ogarkov, things like this. I got almost to the point, that I could almost read his mind from a distance—because his thinking was dangerous, but it was militarily correct. It's a sane, rational adversary. A very dangerous adversary, because he is sane.

In the 1970's, we had the emergence of a condition where a nation believes it's about to be destroyed, or is at the point of losing the future ability to defend itself. The Soviet system could not continue economically to work indefinitely in the form it was in. And under the policies which the Anglo-Americans adopted for the West in 1964-67, the West could not last either. You had a race to collapse, of two powers. The question was, which one would collapse first? And the one that thought it was going to collapse first, is likely to start a war. And there were both tendencies, on both sides.

The only solution, to me, was, first of all, to bring the truth out, and say we have idiots, insane people on both sides—

Kuzin: One gets the sense, that some very influential political figures in the U.S. and some very influential political figures in the Soviet Union, your political elite and ours, so to speak, had certain common interests and acted jointly. These two groupings, yours and ours,

opposed the very concept of S.D.I. and coordinated that.

LaRouche: More than that. I knew what I was doing. I was using the fear of the patriots in the military and other institutions of two superpowers, to say: "What we're doing is insane. We are going to destroy each other unless we make a change. And the change is, end this terror, use a new technology, which requires us to go to an international science-driver economic policy." To attempt to play the patriotism on both sides, in NATO and in the Soviet Bloc, as a force against an oligarchy.

The Nature of the Oligarchy

What had developed over the period, is a not-invisible oligarchy behind the security services in the Soviet Union—on a higher level, but behind the security services—and behind the owners of Henry Kissinger in England. Kissinger's importance is much exaggerated in the press. He's only a tool. Chatham House, the Royal Institute for International Affairs, which is the old Wheeler-Bennett geopolitical group—in this group, the geopolitical tradition is centered.

There is a force centered around wealthy foundations, wealthy families, family names.

Kuzin: Who, personally, is this oligarchy? This is very important for people to understand in Russia.

LaRouche: This is an oligarchy which had its root in Venice, from the old times, which began to move, in the sixteenth century, to take over the Netherlands and England, which has been the center of every major war in Europe for hundreds of years. This group is organized in a form which is called in Italian *fondi*. These are foundations.

For example, it used to exist in Russia, in the form of landed estates, vastly powerful families, which owned the equivalent of whole countries, in territory. You had these institutions called *fondi*. They were foundations. They were a trust, that is, an organization which would take the wealth of a family. These are what some people would call finance capital, which is not capital. It does not come from industry. It is essentially usury. It takes rent from everything. These families, even when they biologically no longer exist, exist in the form of a fund, like a corporate form which has directors who are self-perpetuating.

You have many kinds of these things which are spun out of this. For example, you have the old feudal oligarchy which is organized in the form of funds like this. The family does not really own the fund. The fund owns the family, like the Thurn und Taxis family in Europe, for example. It's a fund, and the prince is nothing but an heir of the fund. The British royal family is a collection of funds. You see it all over the world: Corporations, wealthy families, create funds.

For example, the Rockefeller family: they don't have much money. They have millions, but not billions. The billions are in the funds. So you have a non-human collection of dead souls.

Kuzin: What, then, is the objective role of these funds? What do they want, say, for America, for Russia, or for the world?

LaRouche: The fund, first of all, is based on usury. That's pure rent. The fund is nothing but a financial corporation, which usually has some tax exemption, for charity or whatever. The personality of the fund is given to it by its self-perpetuating directors, its trustees.

It's like human beings supplying their intelligence to a non-existent alien thing. The funds all operate under what are called covenants, or agreements, which the people will serve. The essential general purpose of the fund, is to perpetuate itself by means of usury.

European and American society are dominated by these kinds of funds. Most of the property titles, the created financial property titles, are held by these funds. Now the funds derive their money by rent of various kinds. They invest in financial paper. They invest in corporations, in trade—profit on trade, like the international food cartels, grain cartels. The funds take a minimum amount of risk. They will loan their money to people who are entrepreneurs, who take the risk.

They will be the financial power *behind* banks, *behind* insurance companies, and so forth. As a result of this, they control most of the people in economic life. Now, they're also charitable. They give money away. So they control education by donations. They control scientific research, they control the culture, the arts.

Kuzin: And probably also politics, not least of all, right?

LaRouche: Yes, they control the press, the major press.

Thus you have a society, in which people say: "The *government* does this, the *government* does that—" No! Who makes the government do what it does? You have this form of parasite. These are like cancer, because in a rational society, we would say: "Why do we allow ourselves to be destroyed by this?"

In Eastern Europe, this function was dominated, to a large degree, by the monasteries. You could see this, for example, in the Mongol occupation of Russia. The princes were marginal figures. The monasteries were the real power under the Mongol satrapy, which had a great deal to do with the history of Russia.

In Serbia, the Serbian Church, like the Russian Church, was a *monastic church*, not a lay church. Mount Athos, the holy mountain in Greece, controlled Serbia entirely through the monastery. The monastery is a *fondo*. The monks, particularly the officials of the monastery, are the people who control the *fondo*. And in

poor countries, the monastery controls the economic life of the countryside.

In the West, the way it happened, is that we had the Benedictine Order. The Benedictines came in the West, first of all, out of the formation of religious orders as deposits of funds of families. Then the Benedictine Order was created from Constantinople in about A.D. 500. The Benedictine monastery was a government. It was an autonomous government. In the case of Venice, the primary *fondo* was the Church of St. Mark. The Church of St. Mark acts like a central bank, into which all the other family banks would deposit their money.

What happened was the conversion of the American wealthy families into *fondi*, around the beginning of this century. And under Presidents Theodore Roosevelt and Woodrow Wilson this institution was consolidated early in this century. So, you have an Anglo-American collection of *fondi*, which is tied together around the idea of British Freemasonry. But the Freemasonry is the lower part of this. It's just like an influence, a process of influence. So you have therefore, from outside of government, a hierarchy of personalities who are associated with these kinds of institutions. And if you are familiar with them, then you know that certain professors, certain law firms and so forth, these figures are an American *nomenklatura*, or an Anglo-American *nomenklatura*.

You have, therefore, a twofold character of governments. You have the actual constitutional government, which sees its interest as the nation, which sees the individual, but it sees essentially the perpetuation of the population as a whole, and its development. That's government.

The other power, is this other thing, this *fondo*, this group of *fondi*. The two conflict. In principle, they conflict. But then the *fondi* try to control the government.

This was my point with the S.D.I., to appeal to the patriotism within the government. I say, in the patriotic interests of our countries: "Now, if we had had in Russia, not Andropov, but any Russian leader who had the intelligence to recognize this problem, to recognize that this kind of agreement would destroy the power of Yalta—"

Kuzin: But wouldn't any such person, by doing so, bring down on his head the wrath of the oligarchy, and encounter powerful opposition from it?

LaRouche: Look at Russia today. You see a very clear warning of something, and you see how this works.

There are two ways to make a revolution. One is, any idiot can start shooting in the street. The other way to make a revolution, is to use the forces of the mind to bring about a revolution. The force of patriotism, for example. We have a *people*. If the people care for the nation, that is the most powerful motivation we have.

'Under Alexander II, there's a sudden growth to rebuild. Who are the key people? Mendeleev, who goes to Paris, becomes interested in agricultural chemistry. He's a genius, a great genius. He goes back, he builds railroads, as well as making a revolution in chemistry. And Count Sergei Witte?'



Count Sergei Witte, Russian Finance Minister (1893-1903), Prime Minister (1905-6).



Dmitri Mendeleev

'Look at the evidence on which Dmitri Mendeleev worked to develop the Periodic Table: fractional crystallization. There are very few people today, given the limitation of that evidence, who could have done what Dmitri Mendeleev did.'

The Mission of the Intelligentsia

Kuzin: I would ask you then to develop in a little more detail the concept of patriotism. This is very important for Russia today. Russia's national interests are literally being trampled on.

LaRouche: That's right. Obviously. And how are they being trampled? The most devastating part of this operation, from the reports I get, is very clear to me.

You see, what in Russia can change Russia? And you look at Russian history, particularly the history of reform since the Time of Troubles.⁸ You have the struggle of the Romanovs against the *raskolniki*. This is key to me in all the history of Russia.

Leibniz, whom I take as my predecessor, had a conception of how to approach this. He successfully convinced Peter the Great to adopt a policy, to create the Academy of Sciences, which all Russian academies come from, and to create the idea of a national economic interest, to develop agriculture as a progressive area, which

meant to free the serfs. Because unless you engaged the peasant's mind in changing agriculture, you could have no agriculture.

Of course, Peter himself was "Third Rome," in his own way. He was a more Western "Third Rome," more on the Western Caesar, less on the Eastern Caesar. Because he recognized that Western culture was superior to the Eastern. Therefore, he said: "I'm going to be a Western Czar!" So I would not wish to impute, wishfully, noble motives to Peter. Efforts of his family to improve the life of the serf, were probably pragmatic.

Then you had the retreat into darkness again, so that by the time of Alexander II, Russia is destroyed again. Then, after the British, French, and the Crimean War, there's a sudden growth again under Alexander II, to rebuild. Then you have the development of this. Who are the key people? We have Mendeleev. Mendeleev goes to Paris. He becomes interested in agricultural chemistry. He's a genius, a great genius. He goes back, he builds railroads, as well as making a revolution in chemistry.

And Sergei Witte. What you have throughout Russian history, you have a history not of the Czar as such, because the Czar is only a political figure of influence. What you see is the Russian intelligentsia, which is trying to help the Russian people. It's the Russian intelligentsia which has this patriotic motive. Not necessarily *all* of the intelligentsia; but within the function of the intelligentsia, there is this motive.

The real intelligentsia has one characteristic which is key to understanding the whole business, which is my special area: creativity. When a person deals with ideas not as a romantic, but in the fashion of a scientist and discoverer or, analogous, like Haydn, Mozart, and Beethoven. Or Leonardo da Vinci, or, specifically—Mendeleyev. Very few people, I think, appreciate the mind of Dmitri Mendeleyev. What goes on in that mind? Well, I know what goes on in that mind.

Look at what the evidence was, on which he worked to develop the Periodic Table: fractional crystallization. There are very few people today, given the limitation of that evidence, who could have done what Dmitri Mendeleyev did. You see, in the work of Vernadsky, a similar thing.

I mention these two because I'm familiar with their work, or certain parts of their work. I know these are two examples of creative thinking.

Take someone who is of the intelligentsia. What does he do? He works someplace, he teaches, or whatever. He walks in the street and he sees the Russian people. He goes in the countryside and he sees the same thing. He says, "Who am I? Who am I in relation to all these people?" Then one day he looks in the mirror, in the mind, and he sees something in himself which reminds him of Mendeleyev. He says, "I am one of these people. But I have developed something in myself. My job is to develop it in those people." What Russian can want to go in the street, and see a cousin drunk in the gutter? He says, "What is this? A beast? Is this a Brother Karamazov? Or what?" Or does he say, "This person has within him this quality which I call *imago Dei*, which is demonstrated by the creative principle." You say, "I do not wish to see my cousins beasts any more. Yes, we have to have work. We must have agriculture, we must have industry, but it must be done as human beings, not as beasts." Then the answer comes: Can I do it tomorrow? No! They'll continue to suffer in drudgery, but their grandchildren shall not. And that is the true patriotism. And that is the function of the intelligentsia, and that is the function of the Russian intelligentsia, of the Ukrainian intelligentsia.

Kuzin: This is very truly said. It is entirely right, and it is very close to my heart. And so, what you have said is not a discovery for me personally, but it will be extraordinari-

ly important for many people to know this in Russia. Because people today in Russia look at America very differently from the way they did even five years ago. And I am more than sure that for many people in Russia, it will be a revelation that there is anybody in the United States thinking the way many people in Russia think.

Corruption

Precisely insofar as Yeltsin and his group basically oriented towards making capitalists out of a narrow layer of the former communist elite, the Parliament essentially, despite all of its contradictions, did enunciate and conduct a line in favor of democratic reforms in all areas. This gets at the true underpinnings of the conflict between the executive and representative branches, which has been officially portrayed in a false light.

In reality, the national wealth of Russia remained in the hands of Yeltsin and his cronies, in the executive structures. Even the communists who remained in the Parliament ceased to be people with access to real power, that is to the allocation of the wealth of the country. They had nothing left to depend on, except the support of their voters. Therefore, even against their own will, they had to express the interests of the voters in the Parliament.

Since Yeltsin carried out the so-called economic reforms in violation of the law, there arose an acute conflict between the Parliament and Yeltsin's partisans, on these grounds. In order to be able to continue to violate the law (without which the former *nomenklatura* elite would not be able to grab all the wealth of Russia), the policy of the executive institutions is directed towards the crushing of the state as such, the state as guarantor that rights and the law will be observed.

One of the leading ideologues of building capitalism in Russia is Gavriil Popov. In the past, Gavriil Popov was a professor at Moscow State University, specializing in the socialist market economy. And it should be specified, that all of the ideologues of capitalism in the close entourage of Yeltsin are ex-communist professors. Gennadi Burbulis, for example, was a professor of scientific communism at an institute in Sverdlovsk. Yegor Gaidar was deputy editor of *Kommunist*, the Communist Party journal.

LaRouche: These types I know. I have had exposure to these people in the West and so forth, and I have an image of crocodiles. Literally, they're not human. On the surface, they sometimes seem urbane. When you scratch them, you get a crocodile. There's a certain type of personality which you find in the leadership of communist organizations in various parts of the world, but also elsewhere. You find them among academics—like Sidney Hook, for example. Most of the professors of economics

today, are of that type. The professors of Malthusian biology. A certain type of liberal who does not believe in right or wrong, or truth or falsehood.

I can imagine in Russia, that these people look like the most unpleasant characters from a Dostoevsky novel, like an academic character portrayed unpleasantly by Dostoevsky.

Kuzin: At the same time, I would say that the scope of these phenomena in Russia is absolutely unprecedented. The degree of cynicism and the openness with which people act.

LaRouche: You see this from the standpoint of the corruption of the intelligentsia. You see two aspects. When a good person becomes evil, it's sometimes the worst. What happened in Russia, obviously, I see in some of the writings, I see it in the history of the Communist Party. The key to this corruption, is the word "lie."

To be a member of the intelligentsia, really—I'm not talking about accountants or people like that, but scientists, artists, historians—when you do creative work, it's like jumping off a cliff. In that case, you'd better be a master of the laws of flying. In creative work, the laws of flying, in that circumstance, are called truth. And since you never get absolute truth directly, you have to keep sailing, you have to keep sailing on. And you must keep struggling for truth every moment. Each moment must be more truthful than the previous one, because you can never come to rest, because you never absolutely reach truth.

Look at this in Russia. Take the intelligentsia, as I looked at it, and also from a military standpoint. The Russian intelligentsia faces a big problem. He faces the *raskolnik* in the Russian farmer. The *raskolnik* is like a sick brother. If he can't save the brother, at least he'll save the grandchildren. Whatever. He's got to do something.

This was true of the scientists in the Soviet military sphere. I used to read these Soviet reports on the Russian economy, particularly reports on detailed problems: factory problems, this problem, that problem. And I came up constantly against reports of what might be called generically the "peasant problem." A factory's rebuilt, they build with old-style bricks. Or they want to replace a machine with an exact replacement of the old machine—they don't want the new machine.

So you get, on one side, the ordinary Russian economy that produces for the people—horrible oppression! Then you see the Cosmodrome, or a certain edition of the Mig-29, or whatever. What you see is a perfect example of the Russian intelligentsia at its best. The civilian economy is the base on which it rests—the whole system. They make something which militarily, from the scientific standpoint, does the job, by applying their ingenuity to the terrible product produced by this peasant problem in the economy.

So you get two Russian economies. You have a scientific-military-industrial section, which functions, which, in a sense, understands Russia. Then you get another Russia, which is back in the serfdom of the early nineteenth century.

Now, the practical problem for a Russian patriot is: "Why? Why is this so? What's wrong with the peasant?" Very simple—for me it's simple, because I know plenty of American peasants too. Especially among our contemporary artists. The problem is, the Russian peasant does not believe he has a soul. Russia has a soul, but he doesn't. He has only passions and appetites.

So the problem of the intelligentsia, is twofold. First, in the long term, to convince the Russian peasant he has a soul, to treasure the labor of his mind, and then, in the meantime, to elevate his activity of the mind, the creative powers of his mind.

Kuzin: The Russian peasant today has no time to think about his soul, because he cannot feed his body.

LaRouche: It's the same problem. How do you convince somebody to have a soul, to point out that he can do something that the animal he owns can't do?

You see this all over the world, this problem. The great problem of humanity, and it's a great irony, that we can only improve the condition of life of peoples and their productive powers of labor with technological progress. But, at the same time, even if that were not necessary, a person—because he's a person—needs to have technological progress also to make his work consistent with his need of being human.

Kuzin: I would like to go into a little more of the specifics of our problems in Russia today, so that you picture the situation more precisely. What you say about the thieving instincts and all sorts of lower instincts, fully characterizes our *nomenklatura* today and always has. It is the *nomenklatura* which has reduced the people to the state of cattle, when they are in the realm of instincts. All the best that we had was destroyed from 1917 on, by the very same people who are today claiming to be the ones to lead Russia to democracy.

Thievery and criminal thinking have become the official ideology of this elite. Gavriil Popov, for example, whom I mentioned, about a year ago publicly attempted to give a theoretical grounding to the usefulness of corruption. He proposed to draw up a special roster of services which officials would grant for bribes, and to establish the proper payment for each bribe.

LaRouche: Was \$20 million the highest one?

Kuzin: They were very high prices. Also, unlike bribe-takers in the West, Russian bribe-takers do not feel obliged to deliver. So you can imagine the scope of absolute

chaos and the opportunities for criminal enrichment of the ruling elite in Russia.

But as for the ordinary people, workers, employees, farmers—they don't even have in their genetic memory the necessary skills, which the new economy would require. How, with the help of the state, would preconditions be created, for people to act in a new way? The reform program in Russia provides for nothing of the kind.

Everybody talks about economic reforms in Russia, but nobody has ever told the population what the reform is supposed to be. This reaches the absurd. On April 25, 1993, we had a referendum, in which Yeltsin posed the question of confidence in him personally as President and in his economic policy. In the course of interviews of voters, on the eve of election, they were asked: "How do you understand the government's economic policy?" Not a single one of them could even reply, what this economic policy was.

Having complete control of the mass media, especially the most powerful such as radio and TV, Yeltsin, in the spirit of the old traditions of the old communist *nomenklatura*, assured the people: "I'm the best," and that he understood the needs of Russian democracy and interests of the people better than the others. So in fact, the elite of today is simply parasitizing on the old stereotypes of the cult of personality.

LaRouche: That's worse than Stalin. Stalin at least faked discoveries.

Kuzin: Yes. At the same time, the looting and destruction of the state continues. Huge quantities of oil, raw materials, and gold are shipped out of the country, for bribes to officials. And the greater part of the hard currency income from these exports remains in Western bank accounts. The Parliament had estimated this flight capital, acquired through the export of the national wealth, at \$80 billion. These funds could have been used for conducting real reforms. But they remain in the West. At the same time, as you know, Yeltsin asks for \$24 billion from the West, from the I.M.F.

LaRouche: They beg for \$3 billion! It's like Venezuela, it's like Colombia, like Argentina, like Brazil; it's a Third World country.

Kuzin: Therefore, it's no accident that the Yeltsin government has earned the name of a government of national betrayal.

LaRouche: They ought to start using the old communist term, "comprador."

Kuzin: Yes. At the same time, there's a great stratification, with respect to who has what, in Russian society. You have on the one hand this narrow group of the super-rich elite, the former communist *nomenklatura*, and mafia capital. And on the other side, almost ninety per-

cent of the people now live below the poverty line, which means that whereas a monthly subsistence minimum requirement would be a 90,000 Ruble wage, the average wage is 50,000 Rubles.

LaRouche: That's \$80-90, approximately, for the requirement.

Kuzin: Suffice it to say, that a normal family, if, for example, the refrigerator or the television breaks down, in order to buy a replacement, the entire family would need to work for the entire year, and spend their whole salary on just that. Even the purchase of clothing has become problematic.

LaRouche: So they bake bread, and they sell it in the street—

Kuzin: After the decontrol of prices in January 1992, approximately forty million people on pension overnight essentially lost their entire income, what they had in banks. This is the underlying reason, defining political developments in the recent period.

Now under these conditions in Russia, the criminal business, the mafia, has begun to acquire extraordinary clout, because a normal economy cannot develop. So you have the dope trade, and trade in weapons; and we have even begun to see develop a new type of business, with international contacts—trade in human organs.

By August of this year, the executive branch was forced to admit they were impotent to combat the mafia, and had had to sit down at the negotiating table with the mafia. The subject of the agreement was to jointly maintain at least some modicum of order in the city.

During the crisis days of September and October, Yeltsin set himself the goal of dissolving the Parliament, understanding perfectly well that he was liquidating a parliamentary republic in Russia and the democratic Constitution, and that he was breaking once again the fragile tradition of representative democracy in Russia, just as his predecessors, the Bolsheviks, did in 1917, and that he was returning Russia once again to that very dangerous political tradition of one-man rule, of an oppressive dictatorship and the cult of personality.

He was able to accomplish this in those days, essentially, by relying on the Army and the support of the West. I would stress again, that Yeltsin was not acting against just that given Constitution, but against constitutionality as such.

During those days, in fact, the Army virtually did not support Yeltsin, but insofar as Minister of Defense Pavel Grachov is a crony of Yeltsin, he acted to disorganize the section of the Army that would have wanted to support the Parliament, and deprive it of the ability to communicate internally.

LaRouche: I think that it was all settled by Sept. 15. The

army troops, the right troops were moved up, the wrong ones were not there. You had provocations, provocateurs. Everything was set up. There was a plan: Number one, destroy the intelligentsia, which is being done economically, chiefly. It's being done because when you have the communist system destroyed, you have the *nomenklatura* largely self-discredited.

Leadership for a Nation

There are only two institutions in Russia which can pull the country back together, two alternatives: You have only the intelligentsia and the military, with the church in the background, with the church preferring the military, historically.

If you destroy the intelligentsia, if you crush the people, what you are going to get is either chaos or a dictatorship which is not necessarily a military dictatorship, but which *rests* on the military. Because the military's function, catalytically, in that circumstance, is as a unifying force. It's the only force left to unify.

The dangerous thing is that the mistake people in the West are going to make, is to misunderstand what the words "Third Rome" mean. In the West, they think it's an ideology. (Not everyone.) It is *not*. It is the Russian coming out from under the Mongol Conquest, in which all of Russia was looted by the Mongol Conquest. Everything that existed before Genghis Khan [1162-1227] had been looted, the people driven to the lowest level. And then this horror and fear of the West and the corruption of the West, the inability to understand the world at large, so that, in a sense, "We must control the world, everybody outside is an enemy, everybody is a danger." The Third Rome requires only the idea—not of Filofei of Pskov⁹—but only the idea, that a unifying institution, or a set of unifying institutions, unify the Russian people.

The question, therefore, is: We have a great intellectual and moral crisis in Russia. The ideas have failed; therefore, what are the new ideas? At the same time, a fear of new ideas. If you starve the intelligentsia—

Kuzin: Who has this fear of new ideas?

LaRouche: People will be afraid of new ideas, the peasant will be afraid of new ideas.

Kuzin: But I get the impression that people in general, despite everything that's been done to them, are open to new ideas. But the political forms—we have not escaped from the old totalitarian structures.

LaRouche: Exactly. Therefore, the question is, since the people have this historically determined problem, the people are going to look to find institutions which can unify them against their problems, particularly after the terrible winter which is now going to happen. I think

that, in Russia, we are facing horror in the coming months into the spring.

Now if the intelligentsia is in place, with all the problems involved, but if it were still in place—the institutions—as long as they did not give way to lies (the lies are the problem)—

Kuzin: All the intelligentsia, practically, is giving in to lies, and you could count on your fingers the number of people who remain devoted to the interests of the people. That is one basic problem. Yeltsin is, in the very near future, either going to have to go to war against the people, or leave the scene.

LaRouche: Or the Army will dispense with him. He's made himself a prisoner of a process. Remember, we're dealing with other things that are going to happen in the world, besides just inside Russia.

The World Crisis

Kuzin: When I'm talking about Yeltsin, I'm not separating him from the Western support that he depends on. This is a powerful force.

LaRouche: Oh, no, but we're talking about a world crisis, though. People in Russia have to see what the global reality is. That history of lies blinds people to the global reality. We have old stereotypes from the old regime, and now we have the new stereotypes from the Yeltsin regime and the news media. But what is really happening, is something more complicated. You have to see the insanity and self-destruction in the West, in order to see the full picture.

I'll give you the picture from my standpoint. In October 1988, in a television broadcast which I gave nationwide, in the speech I gave in Berlin, I said two things especially: that the Russian economy is going to collapse, that the East Bloc is going to collapse, Germany will probably be reunited, there will be a major rebuilding crisis facing Russia and Poland.

I saw what was going to come, it was very clear to me. And, what we must do, we must build. We must not stop. We must build railroads especially, and so forth. Use the existing production facilities to full capacity, wear them out, and replace them. Mobilize the military scientist group to apply their skills to the problem of the non-military sector, through large-scale production.

What happens? 1989. Did the West respond intelligently? No. Now they say, "We don't have to be sane any more."

If you look at the governments of Western Europe and the United States since 1989, you see something happen. You see, George Bush went clinically insane, absolutely insane. But if you look at what happened in

'If I were in Yeltsin's position, I would say, *My friends, we're going to have to drop all this Free Trade nonsense. Create a national bank. Create true currency reform, with currency controls to wipe out speculators. Create a credit issue; not to give money out, but to pay money as credit through the national Parliament, loaned by state institutions through the national bank.*



Russian President Boris Yeltsin (left) with Vice Prime Minister Yegor Gaidar, architect of the I.M.F. "shock therapy" program who resigned this January.

France, the destruction of the government of Italy, the destruction of Germany inch by inch and so forth, you see that they are now destroying the world. Now, part of this is intentional.

Kuzin: Is it their will, or that of those behind them?

LaRouche: Those who are behind them. And also they, but they don't know any better. The Bengal man-eating tiger does not know the morality of what he's doing. He's only eating; and so it is with some of these governments. The most essential thing, to understand what faces Russia, is that what will happen in Russia, will be, in large part, a response to new developments which will probably occur elsewhere.

So you have people who say as follows: Russia is gone, it is no longer a power. *We* are the power, *we* have the power now. Therefore, whatever we desire, will happen because nobody can resist us.

Now, Yeltsin sees this. When he looks in the eyes of Washington and London, that's what he sees. He says, "Ah. We're already conquered. We lost the war. They can do whatever they wish to with us." And he says: "I am smart. I am going to submit." He says to his friends, "We're smart. We'll work with them. These people in the Parliament, they're living in the past. We're in the present."

Therefore, what's the situation? You have these people in Washington and London. Listen to Margaret Thatcher, to what she says. It has no correspondence to reality. Listen to Washington. The greatest crisis in the history of modern civilization has broken out and is dripping into our economy. The entire financial system of the Anglo-

American powers is about to collapse—the most insane speculative financial bubble in all human history. And to survive they come to Russia and suck blood, as they do in the developing countries.

Now you see Somalia, you see former Yugoslavia, you see China—the West are idiots, they're insane, what they're doing in China. You have 400 million adult Chinese from the interior, who are ready to starve to death. So they move millions of Chinese adults from the interior to the coast, to work like slaves at Auschwitz.

Kuzin: There is also economic genocide in Russia today. Because of the extreme impoverishment, which resulted from Gaidar's economic measures, for around a year, the death rate has exceeded the birth rate.

LaRouche: In China, that's the basis. But they call this "prosperity"!

Then you look at Somalia, Haiti, and so forth, the world. Here's the great one-world superpower, the United States. And what is this government doing? It's talking about a health-care plan which cannot work. The family of Czar Nicholas II of Russia [1868-1918], never went to the level of stupidity, that the Washington government's on today!

So you have governments who are submitting to this policy—insane!

See, they forget about two powers that exist, which they forgot they didn't conquer. One, they've forgotten about God. They've finished him off, they say. They also forget nature, that nature itself will not obey them.

Kuzin: You can't fool nature.

LaRouche: That's right. So what's happening is, we are now in a period where the entire system is collapsing. What you have, is a process of a plunge into chaos around the world. And what have they got in mind? What they always had in mind, this crowd. Their intention is to have a North-South war, including to have Russia in a war with Central Asia, with Iran and other Islamic states.

Kuzin: To reduce the population and clear political space for themselves, geographically?

LaRouche: To have a war. It's geopolitical. This is a population war, a Malthusian population war. Now to do this, they say we need this war to "give a structure," so that the twenty percent of the population in the Northern Hemisphere will survive at the expense of eighty percent in other parts. With the so-called environmentalism, they are trying to destroy science, technology.

Kuzin: And why are they trying to destroy science and technology?

LaRouche: Well, this comes again from the species of the *fondi*. It's all throughout history. Remember the slave-owners in the United States, where they controlled the law, made it a capital offense to teach a slave to read and write. Look at the decrees of Diocletian in the Roman Empire. Once human beings understand that they as individual persons are in the image of God by virtue of creative reason, can they accept a system where they see their fellow human beings treated like animals and slaughtered like cattle?

You see, their purpose is to simply perpetuate the rule of a permanent group. Look at the world population curve, as we're able to trace it, and you'll find that the great increase in population worldwide occurred after 1440. It occurred why? Because of two things: a new conception of political institutions, including the invention of modern science as science, and the commitment to evangelization of the world. This particular benefit, which was developed within Europe, focussing in that period, where it crystallized, transformed the world by uplifting the institutions and the productive powers of labor of mankind.

The people who advise the *fondi* in this matter, are not the stupid politicians we see or the stupid this-or-that we see. For an example of this, you read things such as Gibbon's *Decline and Fall of the Roman Empire*, which is merely one of many works which were used by the British in order to design their attempt to create a British Empire. So these people know what they're doing. They just happen to be evil—that's all.

What I was doing with the S.D.I., was to attempt to use patriotism, essentially, to mobilize nations against the oligarchy. And today we've come to the point that the

enemy has triumphed, but in his triumph, the enemy is bringing about his own destruction. And thus we're going to have a crisis which will change the correlation of forces globally, and we have to look at the Russian situation in terms of that changing global correlation of forces.

While we don't ignore trends inside Russia today, after you look at the trends, then say: "What are the institutional factors in Russian society which we can look at in terms of changing the response of the society as a whole?" By default the military is the last bastion against chaos.

The Intelligentsia in the Army

Kuzin: Yes, and just now Yeltsin is drastically purging the Army.

LaRouche: That's a dangerous thing for him to do.

Kuzin: It's not just a purge. The leader of the parliamentary group, Army Reform, Col. Vitali Urazhtsev, who's a consistent anti-communist and became the leader of the first military trade union ["Shield"], believes that under the guise of reforms, the Army is actually being destroyed.

LaRouche: The other element is, that the Army has certain limitations, *except* that the Army has a built-in intelligentsia, which is what Yeltsin would go at. We have two elements of the intelligentsia in the Army, which you can watch very carefully, because they're crucial, because they exist by definition. One is the strategic intelligentsia. These are the students of strategic thinking. Then you have the scientific-military intelligentsia, who are the brains of the military-industrial facilities. And you have the technical cadres who work with them.

Then, in Russia as a whole, you have another intelligentsia, and that is the historians, scientists, and so forth.

These are the only institutions which exist in a country with Russia's history, which can respond. You have a very concrete problem. What can you do with the military-industrial complex in Russia, to save Russia?

Kuzin: That is, how to utilize the technical capability of the military-industrial complex, its enterprises, in such a way as to transform them into enterprises for civilian-sector needs? Yeltsin, instead of this, is effectively destroying these capabilities.

LaRouche: You have to look at what the function of this sector has been, and see in its organic past what its present capabilities are. It developed some of the characteristics of a Roman legion, in the sense that it began to develop its own economic base, in large degree, to sustain itself, independent of the economy.

Kuzin: A self-sufficient system, so to speak.

LaRouche: Yes, right. So now the point is, that's what it is. The question is, don't convert it in a way that destroys that.

Kuzin: So far, under the guise of conversion, they've been destroying that sector. This destruction was inflicted too openly, to consider that it was a mistake.

LaRouche: Oh, no, it was deliberate. It's plain looting. You take something, and you say, "Why is it cheaper?" It's because you're going to export it at a cheap price. So, therefore, you take something which is at a high price, and export it at a cheap price.

But you must *not* go to a lower level of technology. What I proposed with the S.D.I., is the same thing: Don't go to a lower level of technology. Use the baseline for infrastructure-building.

In Russia, you have several sections of the obvious sectors, say, the tank production. These capabilities, these cadres, must be kept together, because you have a heavy tool industry capability behind tank production. You have the Ural complex, Uralmash. I could build a transportation system with these capabilities.

We have, in Russia, vast distances. The great problem of the Russian economy, the great distinguishing problem, is the low population density of the territory of Russia. The big problem, is that they don't have enough Russians! (So we have to tell the men and women to go back to normal things!) Because if you must transport something a great distance, you have two costs. One is the cost of transport, the other is the waiting time. Because when you have this time, you have to build up more inventory to make up for the time it takes to move things.

You also have food loss, great loss of food and spoilage. Therefore, the one-rail track system is insane! You need two- and four-track systems. They must be high-speed. You must be talking about 200-300 kilometers *per* hour at least.

Kuzin: How should these measures be carried out: through the private sector, through the state sector, or through some combination?

LaRouche: A combination.

Kuzin: And what would the component role of each be?

LaRouche: Friedrich List and Sergei Witte understood: You have national banking, not central banking. You have protection of your industries, protection of foreign exchange and capital exchange—everything the I.M.F. prohibits.

Let's look at this from a *physical standpoint*, not a monetary standpoint. "Do I have labor? Do I have unemployed labor that I must employ? Do I have factories? Do I have farms?" "Ah!" "Do I have needs?"

Therefore, everything we need internally, we have. We only have to think about what we must import, that we cannot produce.

The first thing is, we take national infrastructure building. So I would take the military-industrial complex. I'd take railway systems, water management sys-

tems, power systems, power distribution systems, communication systems, health and education. That's the national sector base. I'm going to produce high-speed rail lines. Why not make them magnetic? We have magneto-hydrothermodynamics in Russia. We have the technology. Work with the German design, and make a common design. We're going to build a railroad system from Brest to Vladivostok. We have the capacity. Don't take anything down! We need it.

Nuclear: Russian designs of nuclear plants are defective. Ah! But we have a Russian nuclear industry. In Germany, Asea-Brown-Boveri has a good design. There are new designs in the United States, not yet being used. France is good at these designs, in a different way. The nuclear industry can produce its part. The rest is concrete, aggregate, steel, and so on.

You can have a phased development of a railway system where you put in track immediately, then you also upgrade that to high speed and then to magnetic levitation. If you take the corridor from St. Petersburg to Moscow and then into Central Asia, if I go 500 kilometers an hour, if I have the type of car that I can take on and off quickly, if I use my nuclear waste to irradiate food when I seal it so it doesn't spoil, then what is the change in the Russian economy simply by doing this? At 500 kilometers an hour, how long is it from Moscow to Vladivostok?

Kuzin: This is all very valuable. The main problem for Russia right now, is how we are going to get a government, such a power, which would conceive of these undertakings as a priority?

LaRouche: First of all, you have to have the idea based among the people to build a political constituency. You cannot whisper to government, *you must take the idea to the people*.

You have the military, the retired people who were in the military, who were pilots, who were engineers, who were tank drivers. You come from a country that had universal military service. The proudest members of this service, have technical backgrounds in the military. You have a core of a scientific intelligentsia, which was once one of the best scientific intelligentsias in the world, and the largest. People who understand these things.

Now you take the problem of Russia. It's cold in the winter; and the winters are long. Ah! So how do we grow food? Do you want strawberries in Murmansk in the wintertime? How? Well, if you have cheap energy, then we grow the strawberries in a building. Hydroponics. The difficulties of Russia are the potentials for new industries. *Every difficulty is a potential new industry*.

All these professors of economics know nothing about economics.

Kuzin: All professors of economics, or our Russian ones?

LaRouche: Virtually all, all, all today. Why? Because, what is the definition of profit? For most of these people, such as Gaidar's advisers, it is theft. For others, it is trading. For others, it is interest or rent—which are also lies. Karl Marx didn't know any better.

The true source of profit, or true profit, is the *increase of output over input*. And how is that done? By improvement in the productive powers of labor. And how is that done? Technological-scientific progress.

So the basic formula, without which there is no solution, is to take the known potentials for this in Russia, to mobilize them, not destroy them—to do this. Because every time we take a Russian and we effectively employ him in modern technology, we solve the problem.

The Question of Power

Kuzin: To what extent is all this compatible with the current dictatorship, which has come back into existence in Russia? How much can this correspond to its plans and interests?

LaRouche: Not really at all. Well, in a sense, *under pressure*, under political pressure, you can make a dictatorship do something.

Kuzin: How can we pressure, if we are bereft of political rights and freedoms?

LaRouche: What if the backing of the dictatorship is weakened? What is Yeltsin? Yeltsin is a man who sees himself as a smart thief who has adapted to the reality of a master overseas.

Translator: And if the backing from the West is weakened?

LaRouche: He's nothing.

Kuzin: Yeltsin's not thinking about that.

LaRouche: He may not worry about it, but he's going to begin to worry about it. He will see, the master begins to go away. And others will see it.

Look at August 1991. What happened in August? My view is that the problem is that the Russian intelligentsia or at least a section of it, did not have an idea of what to do which could then be imposed upon a dictatorship.

Kuzin: You know, this is my problem. I have a very murky concept, of how one would influence the Yeltsin regime, or the Gorbachov regime in the past, from below, because these regimes are not democratic. They are repressive, dictatorial regimes. They depend basically on the support of the West, as everybody now should be able to see. Their political survival, therefore, does not at all depend on the support of the population. Therefore, they simply will not fulfill any desires or demands from society.

LaRouche: I would not disagree up to a point with that.

But in our business, the point is, you always look for the thaw, and you must move properly in the thaw.

Kuzin: And what presages this thaw?

LaRouche: That's not the problem. The problem is, how do you *prepare* for that opportunity? The problem was, there was not preparation for the opportunity in 1991. The characteristic of 1991, was that you had a Russian population which was very upset by the deterioration of life in the two years since 1989. *Perestroika* tasted good when you ate it, but it didn't sit in the stomach.

The very Yeltsin phenomenon itself, is part of that. Yeltsin at the White House, I remember that. I've been in prison all this time, you know, but some things you can see even from here.

Kuzin: But to what degree was that serious and genuine, and to what degree was it a show in which Yeltsin was participating, not even being conscious of what he was doing? Because for all intents and purposes, Yeltsin then continued the line of Gorbachov, preserving the same layer of power in power.

LaRouche: That part's simple. Yeltsin is like a sentimental pimp who likes to go to concerts on Saturday afternoon. He even goes to church once in a while. One must not overestimate the man. He's an *apparatchik*.

But what happened to *Russia*, what happened to Moscow, in August, in November of that year? Yeltsin is only like a symptom.

What was the naiveté? You had Gorbachov. Oh, his wife wore shoes from Gucci, Gucci handbags and so on. He was the first Russian General Secretary ever appointed by the Queen of England. So you had *glasnost*, *perestroika*, so forth and so on. What did it amount to: "We're taking ideas from the West, we're taking ideas from the West."

In August-September of 1991, the Russian people said "We don't need you any more; we'll take our ideas from the West directly." But then you had all these *apparatchiks* of the *nomenklatura* saying, "I spent a lot of time in New York myself, I'll give you the ideas." Where were the *Russian* ideas? So, you talk about democracy, but it doesn't mean anything.

Kuzin: Right, that's the problem. Even in August of 1991, the Russian people were not deciding anything. They were allowed into these events to the extent it was required to convince the West, that this was a real democratic revolution, just as during the whole *perestroika-glasnost* under Gorbachov, people were permitted now *to speak*—

LaRouche: And to think.

Kuzin: But they still could not decide anything.

LaRouche: The question is, to define what is the fundamental issue. The word "democracy" doesn't mean anything. What means something, is the right of the individ-

ual as a person under law, the protection of the family, the right of people to have families. *And*, above all, the right of their mind to participate in a process by which they're governed.

All revolutions generally take the form—except for peasant revolts—of student-led revolutions, for a very simple reason. Good revolutions, bad revolutions. How? Because during certain apertures in the process, in the social process, in the educational process of people who are reaching the middle years of adolescence and beyond, they get ideas. This process, which I've been through a couple of times personally, in participating as a teacher at one time, and experiencing the 1930's and the wartime period—the power of adolescent and post-adolescent youth, particularly the intellectual youth, to lead a nation in its ideas, must not be underestimated. And in the process of educating youth, you find that people who *teach* them, who are really involved in this process, are excited and they become *alive* again.

Kuzin: Our woe is that basically this young generation, which has gotten into the power structures recently, these have preferred to make themselves a personal career and to be bought off by the *nomenklatura*, to occupying any honest positions.

LaRouche: That's what I mean by the lies. The genesis of lies leads to careerism. For example, in Germany in the postwar period: The German educational system, up until 1970-72, was still the Humboldt standard. Going back to Humboldt came out of a reconstruction of Germany education following Hitler, to rebuild the education system. You have a process. You have those who started this process, up to 1955 in Germany, from 1947-48 to 1955, under early Adenauer. They were committed. Then you have the generation that came in 1955, into the universities, 1955, 1960 and beyond. They were the career opportunists. Then you had, up until 1968-70, you had people coming out of the Gymnasium education, who were well educated. Then, after the Brandt reforms, where this was destroyed, now you have there, as you have in the United States, *unbelievable* immorality and stupidity.

Kuzin: Why did this happen? What was the reason?

LaRouche: Because of the opportunism of the parents. I went to war, not very seriously war, I was in Burma and so forth. I came in very little danger of being killed, but still I was away. In the war, I saw conditions in India. So I said, "Well, this we cannot tolerate any more. We cannot have a world that's safe, as long as people suffer like this." I also saw how the Communist Party of India, under orders of Stalin, in collaboration with Churchill, betrayed India. Many people with me as soldiers shared my views,

that we must not let the world go on like this any more.

But when I came back, most of the people, very soon, within two or three years, were opportunists. They became terrified. They wanted to make money, to have success. The environment of moral commitment was gone from their family household.

What happened, is that they grew up without that kind of moral commitment which makes for a good intellectual life. They had three parents: a mother, a father, and a television set; and they became very shallow, not as ignorant as they are today; but in the postwar period, I saw the population of the United States degenerate.

But nonetheless, I've seen what I've been able to do with a few friends. We've been able to shake the world. They wanted to kill me, but that didn't work, so they put me here. But that's all right. I did what I had to do—not enough. Not enough.

Kuzin: I would ask this question: Yeltsin and his people constantly say that for Russia's economy to develop, we don't have enough money in the budget. But at the same time the national wealth is being stolen. In your view, if financial aid were given to Russia, what would be its fate? Would it really aid progress, or are there other possible consequences?

LaRouche: Money doesn't mean anything. If I were in the position that Yeltsin's in in Russia and were faced with the problem, I would say, "My dear friends, we're going to have to drop all this free trade nonsense," and I might even say, "If you don't let me do this, my military's going to kill me and bomb you. Now you better let me do this." This is the best way to handle the problem. Create a national bank. Create true currency reform, with the currency controls; we're going to wipe out the speculators by the currency reform; we're going to tax them for everything they made.

Now we're going to create a credit issue. We're not going to waste the money, we're not going to give money out; we're going to *pay* money as credit through the national Parliament, loaned by state institutions through a national bank on the authorization of the national parliament.

Kuzin: Would these investments go into private businesses, or the state sector?

LaRouche: State sector. Now we go from the state sector, we loan the money, on progress payments. That is: We're going to build a railroad. We're going to get employment going again, so we're going to create projects.

Kuzin: But still, it would be helpful to be precise on this question of the role of private firms, and here's why. People say in Russia: "Oh, the state sector, that's socialism. We've had it with socialism!"

'All problems have beauty. The beauty is, that the problems force us to solve them. If you have a people saying: We have problems, yes, but the problems force us to use our mind to find solutions. We are not oxen, we are people who *create*.

'The majority of the oppressed people of the world are trained to think in what they call traditional ways: *What my father and grandfather did*. They think they honor their father and grandfather by doing the same thing. They *dishonor* them, because it becomes as if their lives were for nothing.'



Soyuz-37 cosmonauts V. Gorbatko (right) and Fam Duan.

LaRouche: It's very simple. The way the private sector works, is you want to build a railroad. You're going to build a power station, you're going to build something. So you go to hire a construction firm and you do it the way it used to be done, in the United States. Every week, every month, they get a loan. They don't get the money, they get a loan. Every week, their payroll is paid by the bank. Their bills for materials are paid by the bank, based on an inspection to make sure they've completed that part of the work. So the public sector will be the principal contractor of the main public works. But these firms will then contract with local firms to supply what they need to do their work.

The problem is this: There exist in Russia no real national private industries. There are certain factory buildings and capacities that exist. Now if a bunch of citizens want to take over this factory and run it, we'll sell them the factory on credit. All they have to do, is con-

vince us they're going to be able to run it. Many of these people, if they're intelligent, are going to take one of our public works, and they're going to find something they can do, that they can sell to the public firm.

Let me give you an example, I think an example makes it clearer. In Russia, one of the big problems is spoilage of food. What do we do? Our military sector has nuclear expertise. We have radioactive isotopes, all you want. The United States and others have experimented on how to irradiate food to keep it from spoiling. So, we say, we're building a transportation system to improve this. Now we have to have a standard system for the security of the population, for grains and other things. We'll seal them, we irradiate them; you move them. This is going to be helpful. We're going to get less food spoilage, you're going to get more food. You want to set up a business to participate in this process? Okay. You want to come to the railway, take a

truck and deliver this? Okay. We'll give you a two months' trial. If you can do it, we'll give you a permanent loan and you're in business.

So you go through a list of things that are needed, that can be done on that basis. And you use the old Russian method, you have meetings in every town and village and community and *oblast* in the region. Do you want to find out what the opportunities are? You come to the meeting, we'll tell you what's the latest.

They have to have an education on how to do this; so therefore you have to have a process which is like a political process, where they're *engaged* in it.

Kuzin: For us this is again the problem of power, because the current government has no desire to teach anybody, and does not want the firms to come into the hands of people who would actually be interested in producing something. So it comes back to this question of power. Everything that you're saying is rational and this is what the authorities in the nation should be dealing with, but they're not.

LaRouche: That's the point. That's the issue. Sure, power, I know. Obviously. I'm *here*. It's a power struggle. No disagreement.

But the point is, that the wasted opportunities in power are what the danger are. And one must prepare for the aperture. The lack of clarity on what needs to be done, weakens the will at the time when the opportunity for action occurs. They have to get up from thinking just about themselves, and think about their whole nation, and see ideas about the whole nation.

In 1982-1983, I said we have a Bolshevik state. I had no illusions about the government of Brezhnev or Andropov. But we had to try, by understanding that the problem is not the Soviet government; yes, that was a

problem, but the problem was an international condominium in which the Soviet government was a partner in a condominium with an Anglo-American oligarchy. How do you get the two superpowers to break free of the condominium? Once they break, you create an opening then for reality to intervene.

The great secret of history is that when human beings are doing creative work, *they are different people than when they are not doing creative work*. It's like comparable cases in the Middle East on which I've worked for years, the same thing. I have no illusions about the Israelis. But some of them are more intelligent than others. Out of simple, intelligent self-interest, some of them recognize, they have to work with the Arabs. If they cooperate in great projects to change the region, then you change the way they think.

Every person has two potentialities. They can become a beast or they can become a human being. And you just try to create the environmental conditions under which the human being can be asserted. Particularly when you cannot see all the answers clearly, for me you cling to a few principles which you know will work. And that works. It's like battle command: You have to be extremely flexible on the field of battle, but your principles must be firm; you always have to know which side you're on!

Kuzin: Mr. LaRouche, thank you.

LaRouche: Thank you. I think we've touched on what my concerns are at this point. The crucial thing to me is the development of a network of people around ideas so that you have the ability to take young people and begin to pull them in the direction of a national idea and then the national idea can then seize upon the opportunity and not waste the opportunity. It's going to be very difficult; but maybe we'll have some good fortune. *I've seen some good fortune over time.*

NOTES

1. On April 2, 1993, the Moscow daily reported that Russia was about to propose to the United States a joint experiment on creating a "plasma weapon," to be called the "Trust" project.
2. The greatest principality of the eastern Slavs, Kievan Rus thrived from the mid-ninth until the early twelfth century A.D. Its center was Kiev, today the capital of Ukraine.
3. The Russian princes were tribute-paying vassals of the Tatar-Mongol "Golden Horde" from the early thirteenth until the mid-fifteenth century. Genghis Khan began his offensive to the West in 1219; his grandson Batu Khan crossed the Volga River in 1237, took Ryazan, Vladimir and, in 1240, Kiev. The Horde's grip weakened after a military defeat by Moscow in 1380 and finally ended in the 1450's.
4. The Romanov dynasty ruled Russia from 1613 to 1917.
5. The greatest schism ("*raskol*") in the Russian Orthodox Church occurred in the late seventeenth century, when thousands followed the Archpriest Avvakum in protest against reform of the

rites. His adherents were called Old Believers, Old Ritualists, or simply schismatics—"*raskolniki*."

6. The GRU, or Main Intelligence Directorate, was Soviet military intelligence. The KGB was the Soviet secret police, the Committee for State Security.
7. The World Association of Parliamentarians for World Government met in 1955.
8. Moscow's "Time of Troubles" was the interregnum of 1605-1613, after the death of Czar Boris Godunov.
9. Filofei of Pskov, a sixteenth-century Russian monk, wrote a tract proclaiming Russia's destiny to inherit the mantle of the Roman Empire.

Rachel Douglas of the Schiller Institute served as translator during these interviews, and has provided the edited and translated transcript published here.

On LaRouche's Discovery

by Lyndon H. LaRouche, Jr.

Nov. 21, 1993

The central feature of my original contribution to the Leibniz science of physical economy, is the provision of a method for addressing the causal relationship between, on the one side, individuals' contributions to axiomatically revolutionary advances in scientific and analogous forms of knowledge, and, on the other side, consequent increases in the *potential population-density* of corresponding societies. In its application to political economy, my method focuses analysis upon the central role of the following, three-step sequence: first, axiomatically revolutionary forms of scientific and analogous discovery; second, consequent advances in machine-tool and analogous principles; finally, consequent advances in the productive powers of labor.

These discoveries were initially the outgrowth of 1948-1952 objections to the inappropriateness of Norbert Wiener's application of statistical information theory to describing both the characteristic distinctions of living processes and of communication of ideas.¹ I countered with a contrary, non-statistical definition of negentropy, as that meaning of the term might be derived from the common, physically distinguishing characteristic of an evolutionary biosphere. This non-statistical counter-definition of negentropy was then stated in terms of a successfully self-developing physical economy; the efficient impact of scientific discoveries' communication within such a negentropic physical-economic process was treated as most typical of the communication of ideas in general.

That was the initial core of my discovery, up to the year 1952. Yet, up to that point, the appropriate mathe-

matical representation of such a form of physical-economic negentropy was still wanted. The third step, taken through an intensive 1952 study of Georg Cantor's 1897 *Beiträge*,² opened the doors of the transfinite domain upon a fresh insight into relevant features of Bernhard Riemann's contributions.³ Thence, the applied form of my definition of physical-economic negentropy acquired the title of "LaRouche-Riemann Method."⁴

I. Negentropy in Physical Economy

Initially, during 1948-1952, I made two principal arguments against Norbert Wiener's application of statistical method to living processes. The first of these two was, that, insofar as we employ the term "negative entropy" to signify the characteristic distinction of living processes in general, the phenomenon referenced cannot be described either in terms of a simple time-reversal of thermodynamical statistical entropy, or in terms of the term "energy" used as a notion reducible to a scalar measure of heat. The second of the two objections was, that, for similar, related reasons, statistical information theory has no appropriate application to the processes of generation and communication of ideas.

On the first of these two classes of objections, the kernel of the matter is, that, for the case of an indefinitely

successfully self-developing biosphere, the imputable ratio of free energy to energy of the system increases at the same time that the total energy of the system increases, and, that, similarly and concurrently, the ratio of free energy to rising energy-flux density is also rising.

The second of the two objections is brought to light more conveniently, by examining the analogous case of a successfully evolving physical economy. The obviously intrinsic advantage of this choice of subject-matter is that metrical characteristics of the phenomena are predefined in the clearest way: input-output relations of physical labor and physical consumption, defined in *per capita* and *per square-kilometer* measures. The most readily accessible illustration of this argument is provided, broadly, by successful models of modern, post-fourteenth-century economies of the type addressed by Leibniz's 1672-1716 work of founding that science of physical economy also known as the science of technology.⁵ Such cases are typified by the characteristic feature of generally increasing intensity of use of heat-powered machinery. The measurement of such model cases in terms of both *per capita* and *per square-kilometer* caloric values of input and output, leads to an array of inequality relationships, by means of which the most relevant relations can be measured comparatively in terms of chronological successions of changes of state of each such economy studied as an integrated whole process.

Only the evolutionary model of such a heat-powered process of increase of the productive powers of labor brings the meaningful issues into focus. By contrast, any zero-growth, non-evolutionary model of physical economy is axiomatically entropic, and corresponds to no durably successful model of national or global economy.

For the evolutionary case, progress in scientific and analogous forms of knowledge is the driver of those changes in practice which lead toward a consequent expression of the indicated, life-like negentropic forms of economic development. It should be stressed, that this role of generation and communication of ideas is illustrated by considering Leibniz's study of the proposals for an industrial development based upon the combination of heat-powered machinery and analogous thermodynamical development of modes of production and transport generally. This Leibniz case is a bench-mark from which the history of physical economy in general may be traced backward and forward in time.

That Leibniz case, of increase of the productive powers of labor through employment of the heat-powered machine, has two readily identified, ironically juxtaposed aspects. First, immediately, there is the simpler aspect, the increase of productive powers of labor, in some functional correlation with increase of heat power supplied efficiently *per capita* and *per square kilometer*. In the comple-

mentary aspect, on account of nothing other than some improvement in employed principles of design, one machine, using no more power than a comparable second machine, yields greater increase of the productive powers of labor. The second case, the general notion of an efficient improvement in design principle, illustrates the notion of *technology*.

For purposes of analysis, the term technology must denote a set of all those machine-tool and analogous principles of design which may be derived commonly from, implicitly subsumed by a specific, axiomatically unique quality of scientific or analogous discovery. Reference the refined design of a crucial experiment employed to demonstrate the proof of principle of a crucial scientific hypothesis. Each type of such refined experimental design for that same crucial hypothesis subsumes a set of machine-tool principles, or a *technology*; all of the sets subsumed by crucial proof-of-principle design for that same hypothesis constitute a family of such sets, or a family of *technologies* derived from that proof of principle.

Thus, does scientific discovery lead, typically, through subsumed technologies, toward consequent increases in the productive powers of labor. The relevant task of analysis in physical economy is to show that such generation and transmission of valid creative discoveries, as ideas, is the source of the realized negentropy of physical economies, and, hence, of negentropic increases of the potential population-density of mankind in our universe. My argument, in opposition to statistical information theory, was, that the generation and transmission of such noetic (negentropic) ideas exhibits fundamentally the principle underlying, bounding externally, the transmission of ideas in general.

This discovery posed two paradoxes. The first of these paradoxes is the formal difficulties posed by stating that the characteristic of all physical-economic processes which meet persistently the standard of increasing potential population-density, is negentropy. The apparent paradox lies in the fact that I defined negentropy as corresponding to an increase of the ratio of free energy to energy, and to energy-density of the system, under the condition that the energy of the system is continually increasing both *per capita* and *per square kilometer*.

The second of these two paradoxes is the notion of the functional role of technology's mathematical discontinuities in the theory of heat-powered machinery.

Perhaps it may be said, that, as treasures of pagan mythology are guarded by dragons, forbidding paradoxes often deter the timid from reaching out to the crucial discoveries otherwise within their reach. These apparent paradoxes of my argument proved not the weakness, but rather precisely the strength of my case against positivists such as Wiener, John Von Neumann,⁶ *et al.*

II. The Paradoxes Of Negentropy

To define my post-1951 attack upon the metrical problem, consider the following.

The two paradoxes identified above should be recognized as echoing the issue of Isaac Newton's confession as to the source of his so-called "Clockwinder" paradox. Newton warned, thus, that the false-to-nature image of an entropic universe had infected his *Principia* through defects inhering in what he regarded as his only available choice of mathematics.⁷ But for my adolescent grounding in such relevant works as the *Clark-Leibniz Correspondence*⁸ and *Monadology*,⁹ I, too, would probably have been frightened off the track of my discovery by the appearance of the indicated paradoxes.

The influence of Leibniz upon my view of these two paradoxes is situated historically, summarily, as follows.

In synopsis, the relevant background of Newton's "Clockwinder" problem" is this. Although the solar-astronomy roots of modern mathematical science reach back far beyond 6,000 B.C. in Vedic Central Asia¹⁰ and in the culture of China,¹¹ a comprehensive, mathematical basis for a unified body of science ("natural philosophy") was first founded by Nicolaus of Cusa, *et al.* during the early middle decades of Europe's fifteenth-century Golden Renaissance of Cusa, Piccolomini, Toscanelli, Leonardo da Vinci, Raphael, *et al.*¹² The complication, leading to Newton's "Clockwinder" problem, was the spread of a Venice-directed opposition to the Council of Florence, an attack which featured the neo-Aristotelian empiricism of such Gasparo Contarini associates as Pomponazzi¹³ and the Franciscan cabalist Francesco Zorzi.¹⁴ Through this continuing influence upon England of such Venetian potencies as the notorious Paolo Sarpi, we have Baconian empiricism and British philosophical liberalism generally.

Respecting the two paradoxes originally posed to me by my theses against statistical information theory, the relevant problems in mathematics are a tangle of two respectively distinct, but interlocked sets of problems. Once this tangle is understood from an historical vantage-point, my solution to the cited paradoxes is more readily intelligible.

The founding work of modern science is Nicolaus of Cusa's *De Docta Ignorantia*,¹⁵ in which the pivotal mathematical discovery referenced is Nicolaus' revolutionary treatment of Archimedes' theorems on quadrature of the circle.¹⁶ Nicolaus' new solution for these theorems¹⁷ is also a form of demonstration of the general solution for the ontological paradox depicted within Plato's *Parmenides* dialogue.¹⁸ Nicolaus's discovery is, in fact, an

illustration of Plato's principle of human knowledge: *hypothesizing the higher hypothesis*.¹⁹

To this, the anti-Renaissance associates of Gasparo Contarini counterposed, violently, the dogma of *neo-Aristotelian empiricism*, the deductive treatment of sense-certainty, which is otherwise recognizable as the philosophical "materialism" of the Renaissance's seventeenth and eighteenth centuries' principal adversary, the Enlightenment. Thus the spread of the Enlightenment's cabalistic empiricism is typified by the influence of such notables as Francis Bacon, Robert Fludd, Elias Ashmole, René Descartes, Isaac Newton, John Locke, and Immanuel Kant.

The view of the problem of quadrature from the standpoint of Plato's *Parmenides* shows, perhaps most efficiently, the root of Newton's "Clockwinder" failure, and exposes also the more general form of practical differences in scientific results between the two opposed, Renaissance and Enlightenment, methods of work. This shows explicitly, in this way, the implication of my initial treatment of my own two scientific paradoxes.

The gist of the matter is as follows.

The Archimedean quadrature of the circle relies upon the so-called method of exhaustion famously employed by Plato's collaborator, Eudoxus. By simultaneously inscribing and circumscribing regular polygons, of the same species, and by increasing the number of sides of these polygons, equally and concurrently, we may estimate the value of π accurately to any desired decimal place. Slovenly thinking would argue, mistakenly, from this, that the perimeters of the two polygons must ultimately coincide with a circular perimeter.²⁰

The same species of philosophical problem arises in deriving the uniqueness of the five Platonic solids. In the case of quadrature, what exhaustion proves, is that, never, even at conjectural infinity, could the number of sides be increased sufficiently to produce coincidence of the polygonal and circular perimeters. Thus is illustrated by the fact that a circle, as a species, is not constructible by a geometry premised hereditarily upon the axiomatic assumption of self-evident point and straight line; another, axiomatically different geometry must be adopted, one in which circular action supplants axiomatic definition of point and straight line.

Two points representing the case are relevant for understanding my solution to the negentropy paradoxes.

First, very briefly, the fact that point and straight line are theorem-existences in a geometry premised upon circular action, but not the reverse, shows that the non-circular forms externally (epistemologically) bounded by circular action (in this sense of external bounding) have only that inferior, dependent existence, dependent upon the necessary existence of the higher. This, notably, is an

argument congruent with the ontological proof of existence of God. Thus, the mind must, so to speak, leap from the falsely imagined elementarity of the simpler, to recognize that the elementarity lies actually in the superior. Thus, does human reason free man from subjugation to the bestiality of neo-Aristotelian sense-certainty. This appearance of an ontological leap typifies the phenomenal guise of creative thought.

This is the same species of problem posed by Plato's *Parmenides*, that problem, which, as paradox, blocks the pathway to that true knowledge, which is opposite to mere sense-certainty, derived uniquely, not from simple deductive sense-certainty; this true knowledge is typified by the recognition that a necessary existent, which bounds externally a set of phenomena of mere sense-certainty, is the relative ontological reality, the relative One, which adumbrates the mere shadow-existence of sensory appearances.

Thus, Cusa's treatment of quadrature implicitly defined ("hereditarily") the non-algebraic higher mathematics which Leibniz and Johann Bernoulli proved physically by the case of light refraction, a quarter-millennium later.²¹ This gave modern science two levels of mathematics, the lower, the algebraic, and the higher, the non-algebraic, the latter later called transcendental.

Second, still later, by the same method of discovery employed in Plato's *Parmenides*, and used by Cusa in his treatment of Archimedean quadrature, Georg Cantor, two hundred years after Johann Bernoulli's announcement,²² announced the discovery of a third, still higher domain of mathematics, the transfinite, superseding the transcendental.²³ It is only a view of the relatively subsumed, transcendental, space-time continuum, a view obtained from the standpoint of the transfinite, which permits an adequate comprehension of cognitive problems underlying the deductively apparent paradoxes of negentropy.

By 1951, the specific, narrowly defined difficulty which confronted me was, that any function defined in terms of those successive, axiomatic transformations which correspond to generalized, continuing scientific-technological progress, cannot be represented functionally by any generally accepted form of classroom mathematics. I view that as a more general form of the difficulty which trapped a misled Newton into an entropic, "Clockwinder" morass.

I expressed my own notion of negentropy in such paradoxical terms which posed that conception most simply. To this purpose, I adopted conditionally the implicit assumption of customary, classroom algebraic physics, that any body of algebraically formal scientific knowledge, up to the moment of an axiomatic-revolutionary advancement of principle, is being perfected formally as a

consistent, deductive theorem-lattice. In that case, the arrival of the axiomatic-revolutionary discovery represents, deductively, an absolute mathematical discontinuity separating axiomatically knowledge preceding the discovery from that which follows. So, the formal representation of a function corresponding to a succession of such axiomatic discoveries is depicted essentially as a function in terms of what appeared to deductive formalism as absolute mathematical discontinuities.

It follows, that if the discoveries of that succession each represent implicitly an increase of the productive powers of labor, the historically cumulative density of the formal discontinuities so portrayed represents an increasing *power* of knowledge. This notion of power of a so-selected succession of formal discontinuities, describes the needed alternative to ordinary classroom notions of function. Such is the functional form of this alternative definition of both biological and physical-economic negentropy.

My 1952 study of Cantor's *Beiträge* provided the key to developing this conception further. Following that study, later the same year, I was electrified by re-reading the relevant, most crucial passage of Riemann's habilitation dissertation.²⁴ Applying the Cantorian implications of my own notion of negentropy to Riemann's stated crucial problem of a continuous manifold "sent sparks flying in all directions." Cantor's transfinite was key to bringing the two elements together in this way, my own and Riemann's.

This combined view of the universe of physical economy's experience, seen as a functional continuum, guided me to construct revisions in the applicable theory of knowledge: to exclude all residues of sense-certainty's notion of linear ontological elementarity, and to replace these entirely by the elementarity of universal, negentropically evolutionary *change*, in Heraclitus' and Plato's sense of the ontological elementarity of nothing but change.

This required that the popular idea of a mathematical certainty must be put aside, to be superseded by a corrected view of the theory of knowledge. No system of deductive contemplation of our sense-experience can be human knowledge; we know the universe only to the degree we surpass sense-certainty by reflection upon the willful means through which we increase man's power over our universe.

This aspect of mankind's relationship to nature is the central feature of the Leibniz science of physical economy. All matters are subject to crucial tests in terms of choices of pathway of scientific changes in axioms, pathways which generate successive increases in mankind's potential population-density, as the latter relationship to our universe is measured relative to our planet Earth.²⁵

I argued that this physical-economic definition of

knowledge implicitly defines a superior scientific method, and, therefore, a fresh overview of the term “mathematics” from a higher standpoint.

In recent decades, I have underscored the following, subsidiary form of that latter argument. I argue that what these reflections pose for mathematics is typified by the ontological paradox of method central to Plato’s *Parmenides*. That dialogue is to be recognized, taken together with Cusa’s treatment of quadrature for this purpose, as a forerunner of Cantor’s conception of the transfinite, and also as a precedent for Kurt Gödel’s derived, comprehensive refutation of the radical positivist fallacies permeating axiomatically the central mathematical theses of Bertrand Russell, John Von Neumann, and other beliefs of that positivist genre, including Wiener’s information theory.²⁶

Typical of this ontological implication of the *Parmenides* is Cusa’s discovery, that the circle does not come into existence, “even at infinity,” by means of any merely formal geometry of the axiomatically rectilinear theorem-lattice kind. As an outcome of that discovery by Cusa, *circular action*, also known (later) as Leibnizian *least action*, is recognized *ontologically* as an independently higher form of existence, an existence which bounds externally all merely algebraic space-time.

From this argument, it follows, that the term “reason” must not be used as Kant does, must not be degraded to a mere synonym of mechanistic, linear “logic.” Reason must signify, typically, valid modes of those kinds of axiomatically-revolutionary discovery, modes by means of which ontologically higher forms of existence, such as Cusa’s circular action, are shown to be the necessary existence bounding externally an array of inferior, predicated phenomena. Hence, the recommended use of the descriptive term “creative reason,” to place the needed emphasis upon this intelligible use of the terms “creative” and “reason.”

Such is the principle of creative reason demonstrated by Cusa’s treatment of quadrature. One should return to this application of Plato’s *Parmenides* by Cusa, to illustrate the proper, constructive-geometrical standpoint from which to comprehend the ontological implications of Cantor’s superseding of transcendental, merely mathematical, merely symbolic space-time, by the higher ontological standpoint of transfinite *physical space-time*.

It must be recognized, in this way, that the successive levels of mathematics—algebraic, Leibnizian non-algebraic (transcendental), transfinite—define a transfinite array of predicates of a shared common *type*.²⁷ All three of these are each traceable directly from Cusa’s treatment of Archimedean quadrature.²⁸ Each is separated formally from its predecessor by an axiomatic-revolutionary change, a true mathematical discontinuity (singularity).

Each change is effected in an equivalent way, referenced to a common point of origin; and, thus, the array qualifies as a *type*. Each change illustrates the Platonic principle of *hypothesis*; the array as a *type* illustrates the Platonic principle of *higher hypothesis*. That array of successively higher *types* which is physical scientific (as distinct from merely mathematical) progress, is a higher *type* of a trans-finitely ordered array of higher hypotheses: in other words, a *higher type*, corresponding to Plato’s notion of hypothesizing the higher hypothesis.

Thus, Cantor’s discovery of that transfinite which bounds externally the mathematically transcendental, might appear to be the solution for the mathematical appearance of a paradox in my definition of negentropy. Certainly, this was an indispensable step, but did not represent a complete solution of that paradox. Negentropy is essentially a notion of causality; mathematics, even a merely mathematical notion of the transfinite, is not a true physics, but only a higher form of symbolism; such mathematics cannot represent causality as such. Another step was required. A turn to Riemann’s work, later during 1952, pointed the direction to the needed next step.

III.

Negentropy as ‘Ontologically Transfinite’

Situate Riemann’s significance for my work, by restating briefly the context for the 1952 reading of, especially, Riemann’s *Hypothesen*.

From 1948 on, through 1951, my anti-reductionist notion of negentropy was developed into approximately the form it may be broadly described today. Yet, until my “electrified” reactions to successive, 1952 studies in the work of Cantor and Riemann, it remained unclear to me how to situate this seemingly paradoxical conception with respect to generally accepted forms of classroom mathematical physics.

The geometrical solution to this paradox was supplied, in large part, by aid of Cantor’s *Beiträge*, but only with respect to mathematical formalities. As already stated, *mathematics as such cannot represent causality*, and the central feature of my notion of negentropy is causality as the elementarity of physical space-time. An ensuing study of relevant features of Riemann’s arguments respecting the metrical qualities of a continuous manifold, prompted a conceptual insight into this remaining difficulty.

The explicit solution to the remaining margin of paradox is not to be found within those writings of Riemann which were published during his lifetime.²⁹ The relevant, electrifying, crucial passage from the habilitation disser-

tation had produced its needed effect only because two leading notions from the history of science were brought to bear upon that 1952 re-reading. The first of those two was the Heraclitus-Plato concept of the unique, universal, physical elementarity of change.³⁰ Re-read Riemann's crucial passage to the effect that the continuity of negentropy, as elementary change, is the ontological *type*, or *characteristic*, which defines a continuous manifold as continuous. The second of these two is Leibniz's 1714 *Monadology*. For emphasis, read that *Monadology* as it was incompetently attacked by Leonhard Euler.³¹ On this latter account, regard Cantor's transfinite in its aspect as a devastating refutation of Euler's blunder, and, thus, a definitive, formal rehabilitation of Leibniz's *Monadology*.

Viewing my 1952 reading of the Riemann *Hypothesen* more broadly, five crucial conceptions were thus conjoined by this treatment of Riemann's uniquely relevant argument. *First*, the Heraclitus-Plato notion of the unique physical (i.e., causal) elementarity of *nothing but* change. *Second*, Leibniz's *monads*. *Third*, the Cantor mathematical transfinite. *Fourth*, my notion of negentropy. *Finally*, Riemann's treatment of the metrical paradoxes of a continuous manifold. If one substitutes for the materialist's fantastic, discrete elementarities of sense-perception-like objects, the Leibnizian sovereignty of existence of the individual monad, and if one were to show necessary and sufficient reason that a continuum, premised uniquely upon an elementary ontological quality of negentropic change, must necessarily develop such efficient monads, the paradox, as paradox, were implicitly resolved.

That proof of the existence of monads which will be shown here, as I developed it, is provided from the combined standpoint of both the theory of knowledge and physical economy. An intervening, preparatory report must be provided at this point: assuming that negentropy of the relevant form does exist, what are the elementary mathematical implications of the existence of such a phenomenon?

From the standpoint of a *discrete manifold*, the discontinuity which is typical of a negentropic "power" function occupies a space-time location within the transcendental manifold *analogous to* the *transinfinitesimal* difference between an indefinitely extended algebraic quadrature and never-obtainable congruence with the relevant circular perimeter. It represents thus a Dedekind-like "cut," an interruption in the continuity of any otherwise apparently continuous line of the maximum of transcendental density of *denumerable* locations. It appears in merely mathematical space-time as an otherwise empty location of virtually-zero, virtually null-dimensional scale.

This is analogous to proposing for physics, that the discreteness of any sub-atomic, ostensibly elementary particle consists only of the virtually null-dimensional,

mathematically circumscribed singularity embedded within a functional notion of that volume of merely mathematical space-time which the particle, as a phenomenon, is estimated to occupy.

The portent of this, is that the non-algebraic (transcendental) mathematical domain defines the location of phenomena in space-time. It cannot represent causality as such. It can pin-point the space-time "location of matter" with virtually inexhaustible refinement, but it does not define physical existence in any other sense than that of space-time location. As useful, even indispensable as this may be, it does not define a *physical space-time*, the latter the higher domain within which causality is expressed.

It is thus indicated, that we must not confuse the two mutually distinct ontological states, mere space-time and physical space-time. We must think of the *transcendental* as a certain image of space-time, a subsumed phase-space of the higher, externally bounding, *transfinite* domain of *physical space-time*.

Such reflections should prompt a reflection upon the character of those Cantor writings, notably his *Grundlagen* and *Mitteilungen*, which preceded his *Beiträge*. The *Beiträge* unveils the formal discovery of the transfinite; the preceding writings, especially those cited two predecessors, enable us to recognize the process of Cantor's thinking, grounded, from the outset, in Karl Weierstrass's treatment of some of the demonstrable boundaries of Fourier analysis.³² Cantor's extensive review of both ancient and modern philosophy³³ is an integral part of his preparations for developing the concept of the transfinite. As Cantor stresses the implications of his proof, that a higher-order mathematics, the transfinite, bounds externally the transcendental, space-time domain, require us to adopt afresh Plato's theory of knowledge. Specifically, Cantor's *transfinite* domain corresponds precisely to the intent of *Becoming* in Plato's theory of knowledge, as Cantor himself insists; similarly, the *Absolute*, which bounds demonstrably the transfinite, corresponds ontologically to that *Good* which bounds externally Plato's *Becoming*.³⁴

This view of the Cantor to Plato parallels is not an optional topic in mathematics today. The central structural feature of the organization of the transfinite domain as a whole is Plato's theory of knowledge: *hypothesis*, *higher hypothesis*, and *hypothesizing the higher hypothesis*.³⁵ Cantor's notion of *type* and *equivalence* are cognate with that threefold structure of Plato's theory of knowledge.³⁶

Cantor's emphasis upon the Classical philosophical theory of knowledge was in no sense gratuitous or even dispensable. Like the Cantor of my 1952 studies, I faced the requirement for a kind of proof which cannot be supplied merely by any localized sort of laboratory experiment. The appropriate experiment can be conducted only

in the domain of physical economy in general. One must re-pose the Classical theory of knowledge as a study of the science of physical economy from the vantage-point of the study of the internal history of fundamental (“axiomatic”) discoveries of higher principle within physical science in general. One must then prove whatever is adduced from the study in respect to progress in principles of composition in the Classical forms of plastic and non-plastic arts.³⁷ This proof, or its reflections, therefore occupies a leading place in my writings on political-economy or policy-shaping in general.³⁸

The characteristic, absolute superiority of our human race over all lower species, is expressed implicitly by mankind’s rise from a bestial, baboon-like, rock-artist-like potential population density of circa ten millions living individuals, to a technologically-determined potential of more than twenty-five billions today. This change is owed entirely to a quality which the Christian’s Latin terms *imago Dei* and *capax Dei*, the Mosaic tradition of Genesis 1, that man, male and female alike, is cast in the image of God. This likeness is by virtue of that power of *creative reason* which is most simply illustrated by a revolutionary-axiomatic superseding of inferior by superior principle of scientific practice.³⁹ Thus, in effect, mankind is the only super-species, the only species which can willfully self-develop itself to the physical-economic equivalent of a succession of successively higher species.

To state this pivotal point very briefly, this quality of being such a “super-species” of creative reason is the image of negentropy as far as the human mind is capable of defining that notion. As such a “super-species,” insofar as our physical-economic practice is premised upon such a continuing process of science-driven increase of our power of physical-economic practice, *per capita* and *per square kilometer* of our earth’s habitable surface,⁴⁰ our conscious reflection upon our revolutionary practice is this idea of negentropy, this notion of the ontologically transfinite. This identifies a Platonic conceptualization of that ontological reality which adumbrates the mathematical imagery of Cantor’s *Beiträge*. That is what is fairly described as my updated presentation of Leibniz’s principles of a general theory of knowledge.

My argument on this point is summarily as follows.

IV.

The Theory of Knowledge

The adequate solution to the paradox of negentropy lies within the domain of a theory of knowledge, an epistemology. We proceed to that as follows.

It is useful now to introduce the relevant, subsidiary argument, that perhaps the most notable feature of my work in this field is that these discoveries were not already established standard as textbook knowledge long prior to my initial, 1948-1952 work in this area. The shocking fact is, that such properly obvious consequences of Riemann’s and Cantor’s combined contributions were left to be adduced by one of my then modest qualifications in mathematics. Situate this point in the appropriate terms of reference: If one takes into account the most recent 550 years of science, especially the indispensable internal political history of science, the irony of my discoveries is crucially, and most instructively anomalous; it is not rightly considered to be mysterious.

Similar anomalies have appeared in the history of science in the circumstance that the discovery in question has been implicitly forbidden by some more or less intimidating imposition of false axiomatic assumptions upon established institutions of learning, such as commonplace classroom opinion. In my own case, the root of such false, but commonplace opinion is, of course, ultimately traceable to the Venetian neo-Aristotelians of the late-fifteenth and sixteenth centuries; but, the circumstance bearing directly upon the irony of my successes are to be traced to the more recent, special U.S.A. conditions arising in mid-twentieth-century teaching since around the close of the nineteenth century.

To illustrate the kind of argument required: The combination of London-directed,⁴¹ French Jacobin lunacy, and, later, conditions imposed by the 1814 Congress of Vienna, ended France’s more than two centuries of supremacy in science and technology.⁴² Similarly, Anglo-Saxon empiricism’s subjugation of both the U.S.A. and continental European classrooms came about chiefly through the political hegemony institutionalized under the Versailles and later Yalta-Potsdam peace agreements. The same political logic applies to changes in Twentieth Century scientific opinion within the United States.

Until the close of the nineteenth century, at first French, and then, later, German world-leadership in science had been the standard of leading educational and governmental institutions. The cases of Bache⁴³ and Agassiz⁴⁴ are illustrative of the influence of Gauss in particular.⁴⁵ At the turn of this century there occurred the onset of a sweeping change, toward radical empiricism in the cultural paradigms of relevant U.S. institutions. The concurrence of President Eliot at Harvard University, of Jim Crow law, and the nearly successive U.S. presidencies of Confederacy admirers Theodore Roosevelt and Woodrow Wilson, were all cut from the same piece of treasonous political cloth. The patriotic, economic-protectionist tradition of Washington, Monroe, Adams, and

Lincoln was supplanted once again by the “free trade” and related dogmas of those presidents upon whom Britain’s villainous Lord Palmerston had most relied, Pierce and Buchanan. At the onset of the century, William James and the British Fabian Society’s John Dewey had been unleashed to ruin U.S. public education. Gradually, scientists in the Bache tradition, such as Chicago’s Harkins,⁴⁶ were supplanted, at least in large degree, by a dominant role of increasingly radical expressions of empiricism.

These changes in culture fostered corresponding effects in the teaching and practice of science, of political economy, of philosophy, and of history within the world’s increasingly hegemonic, Anglo-Saxon Establishment institutions. That politically aversive indoctrination of most among the elites of the world’s nations trickled down to its effects upon the opinion-shaping in the classrooms, and among the populations generally.

The specific relevance of this for the case at hand is signalled by comparing this twentieth century imperial rise of empiricism to a related *pogrom* against Georg Cantor by the cronies of Leopold Kronecker.⁴⁷ That shameful political lynching of Cantor was a correlative of the same empiricist mob’s malice shown so prominently by Bertrand Russell and other members of the Cambridge Apostles in their continuation of the earlier efforts of Kelvin, Helmholtz, Maxwell, and Rayleigh to bury the principal achievements of Riemann, Weber, and Weierstrass.⁴⁸

But for such specific historical circumstances, all that which is in my original contributions would have been well established knowledge long before my initial work of 1948-1952. Consequently, my role has resembled that of the rude little boy in Hans Christian Andersen’s celebrated tale of “The Emperor’s New Suit of Clothes.” Beginning 1948-1952, I worked to fill a vacuum which had been created almost solely through a pervasive, political corruption of prevailing classroom opinion.

In this circumstance, looking at that retrospectively today, what I did was to extend what I had learned from the hand of Leibniz, to meet the challenge of refuting Wiener’s “information theory.” By aid of re-reading Riemann’s dissertation through the transfinite eyes of Cantor, I developed a fresh overview of the theory of knowledge. This fresh overview, on which I report now, was required to resolve the remaining paradoxes posed by my locating of negentropy *elementarily* within the higher domain of the ontologically transfinite.

What is now to be said here may be read in part as parallel to Leibniz’s 1695 “Système Nouveau de la Nature.”⁴⁹

The neo-Aristotelian system of deductive sense-certainty, as introduced to the sixteenth century by the gnos-

tic Venetian associates of Gasparo Contarini,⁵⁰ is self-obliged by its own formalities to reduce everything to some smallest, discrete, finite, elementary particles. This system regards sense-impressions as virtually mirror-images of a reality outside our skins. Within such a linear materialist system, as for Aristotle himself, neither an intelligible notion of creation, nor of living processes, is logically possible; entropy rules always, everywhere. Formally, for Aristotle, his own existence is, speaking formally, like Newton’s “Clockwinder” universe, a logical-mathematical impossibility. If, according to his own system, the historical Aristotle ever existed, that would be sufficient proof that his system had no right to exist. If the prescribed system of knowledge implicitly prohibits the existence of the knower, that system has no right to exist.

The remedy for this fallacy of Aristotle’s system was already defined by Plato before the completion of Aristotle’s own studies at the Athens School of Rhetoric, the latter headed by the Sophist Isocrates. Negatively, in the sense of Plato’s dialectical method of Socratic negation, we can demonstrate rigorously the necessity for the ontological elementarity of negentropy, i.e., for the Platonic elementarity of Heraclitus’ notion of universal change. We can also represent this by means of a rigorously Platonic approach to use of constructive geometry, as Cusa thus treated the paradox of Archimedean quadrature. However, we cannot show this positively by means of any among today’s generally accepted forms of classroom mathematics; this difficulty is, once again, an echo of Newton’s “Clockwinder” paradox.

We cannot render this notion of negentropic elementarity intelligible from the standpoint of sense-certainty. That is key to the formal fallacy permeating that Boltzmann theorem employed by Norbert Wiener’s “information theory”: that is also the form of the sundry kindred blunders of John Von Neumann, on economy and the human mind.

By means of what faculty can we overcome such paradoxes? Plato provided the general approach needed, but an adequate solution can be achieved only from the standpoint of the Leibniz science of physical economy. The contributions of Cantor, Riemann, and so on, were indispensable, Platonic steps toward my solution of the crucial, relevant issues of an intelligible theory of knowledge; but, *until these preliminary results were situated within the domain of physical economy, no adequate proof of the principles of knowledge is accessible.*

The form of this required solution is indicated by treating this issue in first approximation in its aspect as a problem in physics. A valid axiomatic-revolutionary discovery in natural philosophy is expressed, as customary, in the form of one or more crucial-experimental designs,

experiments which demonstrate the principle of the discovery, each in a crucial way. Each such successful design, adequately refined, supplies a new principle to be incorporated usefully in either sundry machine-tool designs, or some similar use. The application of such designs, accompanied by the transmission of the corresponding new knowledge, expressed as use of improved tools of production, improved products, and so on, results in an increase in the physical productive powers of labor, *per capita* and *per square kilometer*. In other words, an increase in the potential population-density of mankind.

So, the continued successful existence of mankind⁵¹ relies upon the mental processes which generate and replicate valid, newly-discovered, axiomatic-revolutionary changes in scientific and related knowledge. It is by adopting such manifestly creative states of mind, instead of naive sense-certainties, as the subject of conscious reflection, that we may access the pathway leading to the required theory of knowledge. This policy was the pivotal conception which emerged during my inquiries of the 1948-1952 interval, guiding me to my conclusions, through the pathways of Cantor and Riemann.

This emerging overview of the most crucial problem to be solved, prompted me to turn my earlier notions of geometry upside-down. Rather than build up a geometry, by extension, from primitive, linear sorts of axiomatic formal and ontological assumptions, take the reverse course. That which efficiently bounds externally as the relative macrocosm, is to be seen as the relatively elementary. It is the whole so defined which determines the part. This supplied me a corrected notion of the statement: "The whole is always greater than the sum of its parts." This view of the axiomatic structure of geometry-in-general freed my conscience from any further reliance upon accepted forms of classroom mathematics.

The realization that, axiomatically, none of the relevant epistemological paradoxes I was facing could find a model representation in terms of any presently accepted notion of a theory of functions, forced me to focus upon the internal history of mathematical physics, in search of some notion of an ordering-principle among axiomatic-revolutionary discoveries. The obvious place to begin a first attempt is the discovery addressed inclusively, and crucially, in Riemann's habilitation dissertation, the famous, ubiquitous theorem of Pythagoras. After all, obviously, the thirteen books of the *Elements*⁵² bring the student from reconstructing that theorem, through, step by step, to Plato's five regular solids inscribed within a sphere. Give up those ordinary notions of denumerable ordering central to all algebraic and transcendental functions; seek a more modest notion of necessary ordering. For every axiomatic-revolutionary discovery, certain other such discoveries are necessary predecessor, and every

valid such discovery is a necessary successor of others. Every professionally qualified teacher of mathematical physics employs that guiding notion in constructing efficient lesson-plans.

This approach to, implicitly, teaching mathematics and physics, shifts the focus from learning theorems and their formal proofs, to replicating in the student's mind the experience of each crucial, original axiomatic-revolutionary discovery as this occurred, in essence, in the original case, in the mind of the putatively original discoverer. Instead of treating theorems as the principal subject, make the subject the process of axiomatic-revolutionary discovery as replicably experienced by the student in each case. Make that moment of *Platonic hypothesis-formation* the subject.

Then, next, find the ordering-principle—the Cantorian *equivalence, type*—among a series of such successful acts of hypothesis-formation. Determine, according to such an adduced equivalence, the *type* of ordering of a network-sequence of such hypotheses according to the rule of "necessary predecessor"/"necessary successor."

The following step must be to render that adduced ordering-principle, that *type*, the intelligible subject of conscious comprehension. This is done, in first approximation, by contrasting this scientific method, as a Platonic method, to Aristotelian formalism. The recognition of the incurable fallacy of all Aristotelian and analogous argument, from this standpoint, is the beginning of a true epistemological insight into the required principles governing a scientific method.

That view of the *type* of ordered hypotheses, is rendering the higher hypothesis an intelligible subject of conscious comprehension, in turn. It is at this stage of the process of inquiry, that the crucial features of my definition of negentropy become adequately intelligible; the essential paradox is thus solved.

Reconsider the steps just described.

In a preliminary way, this pedagogical approach to the internal history of science has a well-established basis in Christian Classical humanist secondary education. The case of Groote's Brothers of the Common Life, and, later the Schiller-Humboldt educational reforms, are obvious references.⁵³ These great Christian humanist educational reforms were reflected also, if in a diluted way, in the later examples of pre-1970, pre-catastrophe, U.S. secondary education.⁵⁴ In the better schools, as reflected in traditional professional scientific practice still, the student comes to know an axiomatic-revolutionary, or related discovery of principle by both its approximate date of occurrence, and the personal name (plus a short biographical sketch, perhaps) of the discoverer. I emphasize: that discoverer as an individual thinking person, whose discovery today's student can master only by replicating the mental process

of discovery which occurred in that historic moment of discovery by the original discoverer.

As already noted, a teacher's good lesson-plan must reflect some degree of insight into the matter of arranging topics of principle according to "necessary predecessor"/"necessary successor." The crucial difference of emphasis proposed, relative to such established classroom precedents, is to shift the emphasis from getting to the accepted proof of the theorem, to concentration upon the internal features of the mental process of formulating the relevant hypothesis.

Thus, to each valid, axiomatic-revolutionary discovery assign the name of *hypothesis*. As said above, assign to the idea of an *equivalence* in ordering of necessary successive hypotheses, an *higher hypothesis*.

In the classroom, and here, too, the notion of hypothesis is brought into clearer focus, by contrasting hypothesis with the theorem-proofs of a formal, deductive theorem-lattice. In the latter case, every provable theorem of that more or less indefinitely expandable array will be deductively consistent with a set of axioms and postulates which underlies the initial germ-kernel of theorems of that lattice.

Let us denote such deductive consistency of formal theorem-lattices by a term borrowed from the customary usage of our adversaries, "hereditary principle."⁵⁵ Every possible theorem of a consistent theorem-lattice will be nothing but a reflection of the original body of "genetic material," the underlying set of axioms and postulates. The *Platonic hypothesis*, generated by the Platonic dialectical method of Socratic negation, overturns one or more of the axioms and postulates of any theorem-lattice of reference.

Thus, for the hereditary form of theorem-lattice, the theorem-proof of deductive consistency is the characteristic mental activity of the student. Once we introduce true discovery, and therefore *hypothesis*, theorem-proof is submergèd; creative mental activity as such is everything. It is in this latter domain of conscious thought, and only here, that my notion of negentropy becomes adequately intelligible.

The challenge immediately presented at that juncture in our argument is the following: *If we abandon formal theorem-proof, as we must (since we are replacing axioms or postulates), what is the nature of proof of hypothesis?* The required proof has two fundamentally distinct aspects, two aspects which ultimately dissolve into one another, but not at first consideration.

For the student, the first kind of proof encountered is study of crucial discoveries from the past. Once that student has adduced a sense of the equivalence (higher hypothesis) of valid past discoveries of an axiomatic-revolutionary quality, the student's first resort, at each con-

fronting of an unfamiliar such discovery, is to test that discovery for its quality of Cantorian *equivalence*.

Later, that student may acquire a second notion of proof, a proof rooted in the Leibnizian notion of a science of physical economy. If an hypothesis satisfies the standard of equivalence, and also increases implicitly humanity's potential population-density, it is *relatively valid*.

These two proofs merge into one historically. The equivalence among past discoveries (hypotheses) reflects the test of an implicit increase of mankind's potential population-density.

That is the general principle of the relevant theory of human knowledge, but only in one aspect, natural science.

V. Language and Negentropy

This brings us to the last of the principal issues posed by Wiener's "information theory," to the subject of communication of ideas. We focus upon the idea of a language in its most general sense of a medium for communicable aspects of ideas. Within that setting, we treat the crucial special case of ideas which, by their nature, cannot be communicated literally. Consider the case for those ideas which correspond to Platonic hypothesis.

Since all ideas are subsumed by the notion of metaphorical communication of ideas of hypothesis, and, since language as a whole is bounded thus by those same principles, the notion of metaphorical provocation of hypothesis is the crucial case for all communication.

In the instance of every new Platonic hypothesis, language appears primarily as a mode of posing paradoxes to such effect that a speaker's new idea, which cannot be identified literally in existing language, can be replicated nonetheless in the mind of the hearer.⁵⁶ This leads us to the broader proposition, that *ideas* are not *primarily* sensual imageries, but are, *primarily, elementarily*, those valid, intelligible conceptions which cannot be named at first communication by a recognizable term of established usage. That is to say, that all valid ideas first appeared to existing language in no other form of communication but metaphor. Among such new ideas, the highest class, subsuming all other classes, is that of axiomatic-revolutionary ideas. Ideas of this class refer to a quality of sovereign mental activity within the speaker, an idea whose form is that of, variously, Platonic hypothesis, higher hypothesis, or hypothesizing the higher hypothesis. For reasons outlined above, all ideas were introduced to language first in the guise of metaphor. Then, and, even after many gen-

erations of use, those ideas were, and are still subject to those same functional notions of idea demonstrated by the case for Platonic hypothesis.

Perhaps the best illustration of metaphor, is the paradoxical quality of Plato's *Parmenides*. The same principle so shown by the *Parmenides*, is employed as the central feature of Nicolaus of Cusa's original solution to the ontological paradox of Archimedean quadrature.⁵⁷ *The metaphor* is the ontologically required, indivisible concept which unifies a paradoxically juxtaposed set of predicates for the case the latter reflect the same function. For Plato's *Parmenides*, the indivisible *one* is always existent in *the ontological form of change*, Heraclitus's ontologically unique quality of *universally elementary change*. The form of this change may be compared to Cantor's principle of transfinite *equivalence*; for Cantor's mathematics, Heraclitus's *change* is the highest *type* in Plato's universal *Becoming*. In Cusa's titles *De Docta Ignorantia*⁵⁸ and "De Circuli Quadratura,"⁵⁹ the passage from the "Parmenides paradox," of an endless series of regular polygons, to the circular perimeter as an ontologically higher form of an axiomatic existence, is characterized by a shift from Euclidean space, to the higher, non-algebraic domain of space-time; the axiomatic *least-action*, or *isoperimetric* definition of the circle is closed *action* expressing a constant change, and *equivalence*, a higher *type* than formal Euclidean geometry, or algebra.

In both cases, Plato's *Parmenides* and Cusa's axiomatic-revolutionary treatment of quadrature, we are presented with examples of a true metaphor in approximately the barest-bones form of representation. *Cusa's non-algebraic generation of the circle, as constant change, is the metaphor represented by Archimedean quadrature*. That circle's existence cannot be competently defined in the axiomatic framework of ordinary Euclidean geometry; to construct a circle, we must employ a ruse of construction excluded from the underlying set of axioms and postulates of Euclidean theorem-lattice. We must employ *rotation*, as one does by drawing the circle with a compass. Rotation is the ordering of *action* in *non-algebraic space-time*, not Euclidean space.

This cannot be brushed aside with the argument that I am stretching a point here. There is a four-hundred-fifty year, connected historical development, from the origin of Cusa's discovery, through Leonardo da Vinci, Kepler, Fermat, Huygens, Leibniz, Bernoulli, and then to Hermite, *et al.* at the close of the nineteenth century, to define rigorously the transcendental distinction of π .⁶⁰ It is often, that proverbial, smug hand-waving at the blackboard is employed to evade even the most devastatingly crucial issues. Such has been the long, stubborn refusal to acknowledge that rotation is, axiomatically, ontologically external to a formal Euclidean theorem-

lattice, or, as Augustin Cauchy's calculus has often been read to evade, the truth is that asymptotic limits are not theorems of the theorem-lattice employed to describe the relevant function.

All formal language, such as a grammatically literate spoken language, is laden with equivalent axiomatically ontological limits. Thus, contrary to the nominalists, all important ideas are introduced to a subsequent state of communicable recognition by means of initially metaphorical identification.

Those were the considerations, although more crudely formulated at the time, which obliged me to include in my 1948-1952 work on negentropy a corresponding treatment of the principal characteristics of metaphor in communication. For the purpose of this study, I chose then musical settings of poetry which had been composed during the 1780-1900 interval. The composers selected were chiefly Mozart, Beethoven, Schubert, Schumann, Loewe, Brahms, and Hugo Wolf. The central sub-topic of this study was two or more alternative musical settings of the same poem. The poets upon whom I concentrated were Goethe and Heine. The focus was upon the use of musical forms of metaphor in relationship to the natural musical vocalization in hearing and the poetic enunciation of the spoken line.

Later, beginning 1982, at my urging, aspects of my 1952 results were reconstructed with improvements by some of my musician associates. The latter study, of the 1982-1991 interval, is reported in the recently published Book I of *A Manual on the Rudiments of Tuning and Registration*.⁶¹ The object of both this latter and the original study was to show the connection between creativity *per se's* expressions in both the domain of natural philosophy and Classical art-forms. To treat the implications of negentropy for communications in general, thus to refute "information theory" adequately, it was necessary to demonstrate a relevant degree of *equivalence* of creativity *per se* in one medium to that in the other.

As I have identified this recently in "History as Science,"⁶² the case of the Indo-European language family shows language in general to be premised centrally upon three elements.

First, the spoken language as typified by reading Classic Vedic hymns and Sanskrit from the standpoint of philologist Panini.⁶³ This working assumption of the 1948-1952 period was referenced then chiefly to the Classical English-language poetry, from Shakespeare through Shelley and Keats. Years later, the argument was given a selected crucial test against the Italian of Dante Alighieri's *Commedia*.

Second, the visual space-time field of geometry. This correlates with the most essential feature of spoken action, the transitive verb. By this use of the verb, we are

able to locate qualities of transformation in space-time.

Third, music. All spoken language is governed by musical principles, even in the rudest of violations of those principles.⁶⁴ The application of this to choral singing among naturally determined different species of singing voices is again *bel canto polyphony*. *Bel canto polyphony* determines faultlessly a well-tempered tuning of the temper used by Bach, Mozart, Beethoven. This is determined by the natural harmonics of the biological speaking and singing apparatus of human beings all as members of but a single species. Thus, the system of well-tempered, Classical,⁶⁵ *bel canto* polyphony was not an historical accident of taste preferred only by some people, in some time and place. This was the musical medium implicitly ordained by God; it is implicitly imbedded in the genotype common to all members of the human species, past and present. The same argument governs the principles of *vocalization* of a spoken form of language.⁶⁶ Music is derived from the natural vocalization of Classical forms of poetry, as the Vedic hymns typify this general case.

It should be interpolated here, as a relevant point to be stressed. “Text” in the sense the term is used by “Deconstructionists” such as Jacques Derrida, does not—or, certainly should not—exist.⁶⁷ As the pagan god was reminded, his invention of writing was useful, with some potentially disastrous side-effects, of which Derrida is one. Written text should be heard by the writer and reader as it is being read, or written. The music—the vocalization of the spoken word, as shadowed on the written page—is an integral part of speech, as the geometry of space-time is also an integral part of speech, as Plato was first to show, as Leonardo da Vinci and Kepler later emphasized.

Fifty years ago the following point was not considered further than our present account has gone up to this moment. Even this much of the treatment of relevant musical matters so far, already includes some supporting material dating from times later than 1952. This, and the point now to be added respecting Plato’s regular solids, are included here as they provide crucial supporting evidence for those conclusions respecting the theory of knowledge already reached, if on a narrower basis, forty years ago.

The Classical Greeks, who knew well-tempering in Plato’s time,⁶⁸ recognized, more broadly, that natural beauty in art was characterized, in vision and in hearing, by harmonic orderings consonant with those of living processes. The whole design of the Classical Athens Acropolis attests to this.⁶⁹ Plato documents this.⁷⁰ Two key followers of Nicolaus of Cusa, Luca Pacioli and Leonardo da Vinci, demonstrate⁷¹ that; Johannes Kepler bases the beginnings of a comprehensive mathematical

physics upon the common harmonic characteristics of vision, music, and Plato’s five regular solids. In modern language, this current in mathematical physics indicates Kepler to be the initiator (guided by Pacioli and da Vinci) of what is most fairly named today “quantum field theory.”⁷²

We are speaking of a theory of knowledge. We are gauging these queries against Riemann’s referenced warning, on the subject of the metrical features of a continuous manifold. Thus: how can man come to know the crucial implications of the five Platonic solids? What is the nature of the available evidence on this matter? What was available to Plato’s Classical Athens?

We have referenced the Acropolis. The Greeks knew the principles as artistic, and architectural proportions according to an harmonics of circular sections. They recognized, thus, as natural visual beauty harmonic orderings consonant with that Golden Section which is characteristic of Plato’s five solids. This Golden Section-pivoted harmonics was recognized, as by da Vinci⁷³ and Kepler⁷⁴ later, as that characteristic which distinguished living from non-living processes. It is the metrical characteristic of actions governed by negentropy, as I defined negentropy, earlier here, and forty-odd years ago. The Golden Section was also recognized by Plato, for example,⁷⁵ as the characteristic of musical training. We have just considered the natural basis for that well-tempered system of *bel canto* polyphony, congruent with the Golden Section, which is implicitly determined by the human genotype. In short, vision and hearing are the imbedded metrical guides to our communicable forms of representation of our universe, in terms of the Golden Section’s implications. Nonetheless, it is in the implicitly well-tempered underlay of the determination of a least-action mode of vocalized speech and singing, where lies the aspect of language in which this metrical principle of thinking is imbedded. The well-tempered, *bel canto* polyphonic domain is the model for a quantum field, the model for a quantum-field conception of the metrical qualities of our physical space-time universe.

That leads directly to the principal point respecting a theory of knowledge.

Knowledge is accessible to mankind only in the forms corresponding to a theory of Cantorian *types*, in terms of hypothesis, higher hypothesis, and hypothesizing the higher hypothesis. We can know only *change*, the notion of universal elementarity of change which is associated with the writings of Heraclitus and Plato. That change is known to us in terms of *hypothesis*, or, in Cantor’s terms, *types*.

However, the distinction between truthfulness and falsehood, respecting principles of nature, requires an experiment, an experiment which can be of but one *type*,

physical economy as the practice of maintaining progress in increasing the potential population-density of mankind. This is uniquely the form of experiment which tests the relative validity of those choices of higher hypothesis (*types*) which govern the generation of those axiomatic-revolutionary discoveries which foster increase of potential population-density.

Thus, the popularized notion of “objective science” is so dangerously misleading that we must regard it as absurd, or even worse. Knowledge is *subjective*, in the sense that we must act upon principles of discovery which can be known to us only by proving their validity in practice in terms of the benefit to mankind as a whole, a benefit which is crucially centered upon the requirement of the continuing increase in the potential population-density of our species as a whole.

The source of our personal knowledge to this effect, is the reliving of history from this standpoint. The idea of a Christian Classical humanist education, such as that of Groote’s Brothers of the Common Life, or the Schiller-Humboldt reforms, the reliving of moments of great, axiomatic-revolutionary discovery, as if to replicate that moment from within the mind of the original discoverer in one’s own mind, is a typification of the relevant way in which the child and youth must be developed morally and formally at the same time.

By means of such an education, emphasizing the principles stated here, the mind of the child and youth, repeatedly experiencing the replication of valid axiomatic-revolutionary hypotheses in this way, is enabled to apply the same mental capacity, of hypothesizing, to the ordering (“necessary predecessor,”/“necessary successor”), the Cantorian equivalence of a series of valid hypotheses. Thus, this latter equivalence, or higher hypothesis, is the proper referent for the term *scientific method*. Since conflicting *scientific methods* may be compared by the same method of hypotheses, the student’s mind is equipped, and thus impelled to enter into consciously hypothesizing the higher hypothesis.

This activity within the individual defines a self-critical capability in respect to all aspects of his or her individual practice, and to observing the manifest mental processes and characteristic practice of others, including entire nations and cultures, past, present, and prospective future. Thus, by this developed subjective mental discipline, which is the proper notion of the scientific faculty, the individual judges relative truth, relative falsehood, right and wrong, superior and inferior qualities, and kindred judgment of those qualities for which mere “matters of taste” are not to be tolerated by a people which prizes its own continued moral fitness to survive.

From this relative knowledge, we are assured of a few things of an essential practical importance respecting

absolute matters.

For example, Cantor references this domain by equating his own *transfinite* to Plato’s *Becoming*, and his *absolute* to Plato’s *Good*. *Becoming* is *physical space-time*, in which development occurs through *change*. Absolute, or Good, is reflected in the process of *Becoming*, as a process of perfecting, conceived as a perfected instant, a *One*, everywhere more than co-extensive with the *Becoming*. That said, return to the *Becoming*, and to those notions which have a relatively changeless quality, relative to the marginal uncertainty of approximations.

Once we grasp the idea, that man is distinguished absolutely above all other living creatures, solely by our willful capacity for effecting voluntarily axiomatic-revolutionary improvements, increases in mankind’s command over nature, that voluntary creative activity, the activity of *Platonic hypothesis*, that axiomatic-revolutionary activity, compared with the resulting change in man’s *per-capita* power over nature, is the phenomenon to which all rational employment of the term “knowledge” is referenced.

It is not the observed relations among sense phenomena, which is the subject of knowledge. The proximate subject of knowledge is the *changes* in sensory phenomena’s patterns of behavior which have been, are being effected cumulatively, historically, through the creative faculty of hypothesis generation. It is the relationship of such changes to increases in potential population-density, and to man’s breaking through barriers of technology, to make richly habitable the deserts, or barren planets beyond our own, which test, historically to present date, those adducible principles of higher hypothesis which are thus shown to be the most reliable known choices of guides to truth respecting man’s relationship to nature.

All along, there are certain virtually absolute social truths, with the moral force of *natural law*,⁷⁶ embedded in the cumulative evidence of historically successful, Platonic higher hypothesis.

First, the sacredness and lawful sovereignty of the individual person’s life, by reason of that creative faculty expressed as Platonic hypothesis.

Second, the subsumed sacredness of the parental household, for its interdependent loving (*agapic*⁷⁷) functions of procreation and nurture of new, individual personalities through the ages of infancy, childhood and youth, to blossoming as a young adult with developed creative powers.

Third, the derived sacredness and functions of those institutions we know as republics under *natural law*, those more powerful, less mortal agencies whose function is to defend the sacredness of individual creative life, to defend the institution of the parental household, and to foster and protect the benefits of creative individual work

to the advantage of all present and future generations of mankind.

The Monad

We now come to certain concluding points of summation so crucially important, that I must set them somewhat apart from the immediately preceding pages of this concluding section. The first of these is my fresh proof of the *monad*.

Consider, from the standpoint of language as I have defined language: How do we know with the authority of necessary and sufficient reason, that man possesses an individual soul? It is most appropriate to state the case of the monad in that form, because for Gasparo Contarini's Aristotelian cronies, such as the exemplary Pomponazzi, for all consistent Aristotelians, the individual soul could not exist. Thus, for all empiricists, and other neo-Aristotelians, the individual soul does not exist, but rather a "bolshhevik," e.g., a "collective soul." For whomever rejects the notion of Platonic hypothesis, the individual soul cannot exist; that is the functional connection I am stressing here.

Turn to our earlier treatment of the subject of metaphor.⁷⁸

Any idea, in its guise either as an original discovery, or in its transmission *de novo* as it might have been an original discovery, cannot be transmitted as a literal intent of the language-medium employed, but only as the intent which reposes in the individual user of that language. The idea cannot be addressed by any formal analysis of the language-medium employed. This predicament is a consequence of the fact that any true discovery corresponds to a formally absolute discontinuity in any system of deductive representation previously employed. Relative to language as such, true ideas lie only in the individual, creative mental processes of each person participating in the communication.

This illustrates, and also demonstrates implicitly the relationship between a true, i.e., negentropic continuous manifold and individual existence of the form shown as the originally metaphorical character of all communicated ideas. The truth on this point has been right under everyone's nose for millennia past. Here lies the kernel of Leibniz's *Monadology*, and my own. Here lies the key to exposure of a *politically corrupted* Leonhard Euler's perversely falsified attack upon Leibniz's *Monadology*.⁷⁹ The crucial point here is this; no idea corresponding to a Platonic hypothesis may be communicated to another person except as metaphor; no language can explicitly, literally transmit a true idea. Ideas are transmitted by aid of use of language, but this in a man-

ner comparable to the common features of Plato's *Parmenides* and Cusa's solution for the paradox of quadrature. *Ideas* do not exist among individuals, but only within individuals. They exist within individuals only by being generated *de novo* within each person. They may be communicated only by use of paradox, i.e., metaphor, to provoke the replication of the original generation of the idea within, and by means of the sovereignly individual creative mental, hypothesis-generating processes of that individual person.

That shows us the following. By virtue of the creative-mental, hypothesis-generating processes of the person, *each and all persons are singularities within, of the physical space-time domain*. They are *higher monads*. That point is crucial. This next is also crucial.

The form of both higher hypothesis, and hypothesizing the higher hypothesis, is the form of negentropy as I have defined negentropy in opposition to Wiener *et al.* Thus, to take higher hypothesis as a subject of conscious reflection is to be conscious of this form of negentropy *as an object of conscious thought, a thought-object*.⁸⁰

This next is also crucial, similarly.

Also, that which defines the individual person as having intelligibly a personal soul, is the principle of Platonic hypothesis. To wit: the reason Aristotelians could never solve, or even comprehend the *Parmenides* paradox is not only that the joke against the Eleatics is equally applicable to Aristotle and to Sophists generally. The reason no language could communicate ideas literally is that ideas are generated by functions of discontinuities, that ideas are characteristically of the domain of higher transfinite types. This is the characteristic of negentropy; this is also the proof of the uniqueness of the individuality of the *monad*, of the person.

This next, then, is also crucial.

The idea of a true continuum must be nothing other than a continuous function of hypothesis-generation, an higher hypothesis. That higher hypothesis must be of the characteristic form of negentropy, a form equivalent to the verb "to create."

This next crucial argument follows.

All true human knowledge is of the form of hypothesizing the higher hypothesis. Thus the forms of this process of generating knowledge are the forms equivalent to knowledge of the real world, that real world which is mankind *increasing its per-capita* power over physical space-time. That increasing is the equivalence of the higher hypothesis as itself a process. That process, taken as a subject of willful consciousness, is human knowledge, is *science* in the most comprehensive meaning of the term science since the work of Cusa and Leibniz.

Next, the crucial issue here: that which is elementary within the process of conscious knowledge, defined in this way, is the idea which corresponds to what is elementary in that transfinite universe of Becoming which lies outside our skins.

From the side of language which corresponds to geometry, metaphor addresses a universe which is *elementarily negentropic change*. This view of *elementarity*, opposite to that of the neo-Aristotelian materialists Bacon, Galileo, Newton, *et al.*, is the sure-footed advantage gained by shifting consciousness from obsessive fixation upon sense-certainties, to a consciously critical examination of those internal mental processes by means of which supposed, and real knowledge is generated. That is the shift from the blind, mystical materialist faith in the elementary particles of Democritus and Lucretius, to the elementary reality of change as such. This is a formal solution for the continuum paradox. Summarize that solution as follows. In place of simply a Platonic view of Heraclitus' "nothing is permanent but change," say "Nothing is permanent but change subsumed by continuing negentropic action," defining *negentropy* as I have defined it in opposition to the statistical vulgarization employed by modern, post-Mach positivists⁸¹ such as Wiener and Von Neumann.

To restate the underlying, applicable argument from the domain of the theory of knowledge, *knowledge* is a term properly restricted in use to identify our own minds' conscious image of those of its own cognitive processes which, as a Cantorian *type*, account for the increase historically of man's increased power over nature, *per-capita* and *per-square kilometer* of our planet's surface.

This leaves one correlated topic of language to be considered at this juncture, the notion of the *quantum field*, as that notion is to be traced from Plato's treatment of the five Platonic solids, through the modern work of Pacioli,⁸² da Vinci,⁸³ and Kepler.⁸⁴ The special connections to language now to be stressed here, is the fact that the principles of well-tempered polyphony were already

natural principles of human speech and singing even before the first human language were developed. That is to say, implicitly, that this well-tempered quantum field is already a natural characteristic of the mental image of our speaking and hearing any spoken (or, sung) language. This heard characteristic of those language images correlates to such expressions as the Golden Section with the visual, i.e., geometric facet of language. In the field of vision, this notion of quantum field is also associated with the notion of qualities of color attributed uniquely to respectively partitioned sectors of an ostensibly continuously defined frequency-domain of the visible field. We may thus speak, in this sense, of innate ideas, ideas which appear to us as comprehensible, intelligible ideas only from that higher consciousness of our own conscious processes which is Plato's hypothesizing the higher hypothesis.

Thus, the notions of *monad*, *negentropy*, and *quantum field* are innate ideas whose existence and nature are susceptible of being rendered intelligible to us, if we look at the use of language as a medium for generating those forms of metaphor needed to communicate valid, genuinely creative discoveries of principle by individual persons. If we employ the contributions of such figures as Plato, Cusa, Leibniz, and Cantor to assist us in making ourselves conscious of our own conscious processes, in terms of hypothesis, higher hypothesis, and hypothesizing the higher hypothesis these innate and related ideas are made intelligible to us.

To the degree the human creative processes have been educated, through aid of reliving original acts of creative discovery over a long span of history, to define higher hypothesis governing new discoveries of principle for human practice, that individual mind, seeing its own relevant conscious activity of hypothesis-generation in that way, in that context, is seeing there a mirror of the lawful universality of our universe in its aspect as Platonic *Becoming*. It is in that view of matters that proper notions of knowledge in general, and scientific principles more narrowly, are to be adduced.

NOTES

1. Cf. Norbert Wiener, *Cybernetics, or Control and Communication in the Animal and the Machine* (New York: John Wiley, 1948); 2nd ed., (Cambridge, Mass: M.I.T. Press, 1961).
2. Georg Cantor, "Beiträge zur Begründung der transfiniten Mengenlehre," in *Georg Cantors Gesammelte Abhandlungen*, ed. by Ernst Zermelov (Hildesheim, 1962), pp. 282-356; English translation: *Contributions to the Founding of the Theory of Transfinite Numbers*, trans. by Philip E.B. Jourdain (1915) (New York: Dover Publications, 1941).
3. Bernhard Riemann, "Über die Hypothesen welche der Geometrie

zu Grunde liegen," in *Mathematische Werke*, 2nd ed. (1892), ed. by Heinrich Weber in collaboration with R. Dedekind. English translation: "On the Hypotheses Which Lie at the Foundations of Geometry," in David Eugene Smith, *A Source Book in Mathematics* (New York: Dover Publications, 1959), pp. 411-425.

4. From late 1979 to the close of 1983, the international newsweekly *Executive Intelligence Review* produced a quarterly economic forecast based upon the *LaRouche-Riemann method*. This report was constructed quarterly from, primarily, a GNP-defined data-base, using a set of constraints supplied by this author. During this peri-

- od, that was the only consistently reliable published forecast available from any U.S. source. This forecasting was discontinued during early 1988, at this author's recommendation. The margin of fakery in U.S. government and Federal Reserve System data rendered any report using such data worthless. See "Riemannian analysis predicts industrial top shutdown," *Executive Intelligence Review*, Vol. VI, No. 41, Oct. 23-29, 1979; and "Spectral Analysis' of Collapse," *New Solidarity*, Vol. X, No. 71, Nov. 9, 1979, p. 8.
5. See G.W. Leibniz, "On the Establishment of a Society in Germany for the Promotion of the Arts and Sciences" (1671) and "Society and Economy" (1671), *Fidelio*, Vol. I, No. 2, Spring 1992 and Vol. I, No. 3, Fall 1992.
 6. For John Von Neumann's initial proposal to simulate economics and other "social phenomena" by sets of linear inequalities, see "Zur Theorie der Gesellschaftsspiele," *Math. Ann.* 100, 1928, pp. 295-320, reprinted in *John Von Neumann: Collected Works* (New York: Pergamon Press, 1963), Vol. V, pp. 1-26. See also, John Von Neumann and Oscar Morgenstern, *The Theory of Games and Economic Behavior* (Princeton, N.J.: Princeton University Press, 1944); and Von Neumann's posthumously published *The Computer and the Brain (Silliman Lectures)* (New Haven: Yale University Press, 1958).
 7. Sir Isaac Newton states in his famous four theological letters to the Reverend Dr. Richard Bentley: "That gravity should be innate, inherent, and essential to matter, so that one body may act upon another at a distance through a *vacuum*, without the mediation of anything else, by and through which their action and force may be conveyed from one to another, is to me so great an absurdity that I believe no man who has in philosophical matters a competent faculty of thinking can ever fall into it. Gravity must be caused by an agent acting constantly according to certain laws, but whether this agent be material or immaterial I have left to the consideration of my readers. . . ."; cited in *Newton's Philosophy of Nature: Selections From His Writings*, ed. by H.S. Thayer (New York: Hafner Press, 1953), pp. 54-57. See also Samuel Clarke's defense of Newton in "The Controversy between Leibniz and Clarke," footnote 8 below, p. 1104. This point is alluded to by Newton in both the General Scholium to his *Principia (Mathematical Principles of Natural Philosophy)*, and in the concluding Quest. 31 (Book Three, Part I) of his *Opticks*.
 8. See G. W. Leibniz, "The Controversy between Leibniz and Clarke," in *Gottfried Wilhelm Leibniz Philosophical Papers and Letters*, ed. by Leroy E. Loemker (Chicago: University of Chicago Press, 1956), vol. II, pp. 1095-1169, for the problem of Newton's "Clockwinder."
 9. See G. W. Leibniz, *Monadology*, trans. by George Montgomery (LaSalle: Open Court Publishing Co., 1989).
 10. See Lokamanya Bal Gangadhar Tilak, *The Orion; Or, Researches into the Antiquity of the Vedas* (1893), 5th ed. (Poona: Shri J.S. Tilak, Tilak Bros., 1972), and *The Arctic Home in the Vedas, Being Also a New Key to the Interpretation of Many Vedic Texts and Legends* (1903) (Poona: Tilak Bros., 1956). Astronomical observations recorded in certain amongst the ancient Vedic hymns place their date of composition at an outside limit of approximately 6,000-4,000 B.C. (*The Orion*); more speculative indications of earlier, Arctic astronomical observations in these sources, would push back fragments of these hymns to the period no later than the climate shift accompanying the ending of the last Ice Age (*Arctic Home*).
 11. The British holist biologist Joseph Needham, whose encyclopedic writings on the history of science and technology in China dominate twentieth-century scholarship, went to great lengths to discredit or cover up the discoveries made in the nineteenth century concerning ancient Chinese astronomy. The French scientist Edouard Biot and the Dutch philologist Gustav Schlegel, proved from evidence in the Confucian classics that astronomical science was already highly developed in the third millennium B.C.; and Schlegel's research led him to hypothesize that significant mapping of the heavens existed at the extremely early date of the sixteenth millennium B.C. Needham, while acknowledging the authority and competence of these scientists, labeled their findings as "quite absurd" and "purely legendary," lying that they had little support and that they "served to discredit what real historical research might reveal"—this because, in keeping with British historiography, Needham insisted such knowledge had necessarily to be "derived from Babylonian sources." See Joseph Needham, *Science and Civilization in China* (London: Cambridge University Press, 1954), Vol. III; Edouard Biot, *Le Tcheou-Li: ou, Rites des Tcheou*, traduit pour le premier fois du chinois par feu Edouard Biot (Paris: 1851) (Taipei: Ch'eng Wen Publishing Co., 1969); Gustav Schlegel and Dr. Franz Künert, *Shu King Finsterniss*, Journal V.K.A.W.A.-L, Amsterdam, 1890; Gustav Schlegel, *Uranographie Chinoise* (Leyden and The Hague: 1875).
 12. The Golden Renaissance of the fifteenth century is centered around the 1439-1440 Council of Florence as the principal event. Nicolaus of Cusa is the principal figure of that period, whose work on science directly shaped the work of such figures as Leonardo da Vinci and Luca Pacioli and indirectly thus the entire school of Raphael and also the work of Kepler.
 13. Pietro Pomponazzi (1462-1525); philosopher who enjoyed the patronage of the Contarini family, he studied and taught at the University of Padua. Pomponazzi took Averroës as his point of departure, and by dichotomizing discourse into the philosophical and the religious, argued that according to reason the soul must die with the body, but according to the teaching of Christianity, we know it to be immortal; this argument appears in his major work, *De Immortalitate Animae (On the Immortality of Souls)* (Bologna: 1516). See *The Renaissance Philosophy of Man*, ed. by Ernst Cassirer, Paul O. Kristeller, and J.H. Randall (Chicago: University of Chicago Press, 1948); also see *Studi su Pietro Pomponazzi*, ed. by B. Nardi (Florence: 1965).
 14. Francesco Zorzi (or Giorgi), a Franciscan friar descended from the patrician Zorzi family of Venice. Authored *De Harmonia Mundi* (1525), a mystical work with elements deriving from the Cabbala. Zorzi supported the arguments of King Henry VIII of England when Henry sought the annulment of his marriage to Catherine of Aragon, and he was called to the English royal court, where he remained active between 1531 and his death in 1540. Zorzi was a proponent of a satanic and pseudo-Platonic school of mysticism called Rosicrucianism, which became an important component of English and British Freemasonry.
 15. See Nicolaus of Cusa, *De Docta Ignorantia (On Learned Ignorance)*, trans. by Jasper Hopkins as *Nicholas of Cusa on Learned Ignorance* (Minneapolis: Arthur M. Banning Press, 1985).
 16. *Ibid.*, Book I, chap. 3, pp. 52-53.
 17. See Nicolaus of Cusa, "De Circuli Quadratura" ("On the Quadrature of the Circle"), German trans. by Jay Hoffman (Mainz: Felix Meiner Verlag); see this issue, English trans. by William F. Wertz, Jr., p. 56.
 18. As noted in the text below, there is a precise equivalence as to method between the *Parmenides* dialogue of Plato and the method employed by Nicolaus of Cusa to make his discovery in connection with his reading and reconstruction of Archimedes' treatment of quadrature.
 19. See the celebrated image of the Divided Line in Plato's *Republic*, in *Plato: The Republic*, Loeb Classical Library, trans. by Paul Shorey (Cambridge: Harvard University Press), vol. II, Steph. pp. 507a-511e, esp. p. 510a-e.
 20. See Lyndon H. LaRouche, Jr., "On the Subject of Metaphor," *Fidelio*, Vol. I, No. 3, Fall 1992, pp. 18-20; see also, Nicolaus of Cusa, "De Circuli Quadratura," *op. cit.*
 21. See Johann Bernoulli, "Curvatura radii in diaphanis nonuniformibus. . ." ("The curvature of a ray in nonuniform media, and

- the solution of the problem to find the brachistochrone, that is, the curve on which a heavy point falls from a given position to another given position in the shortest time, as well as the construction of the synchrone or the wave of the rays”), *Acta Eruditorum*, May 1697; trans. in D.J. Struik, *A Source Book in Mathematics, 1200-1800* (Princeton, N.J.: Princeton University Press, 1986), pp. 391-396.
22. *Ibid.*
 23. Georg Cantor, *Beiträge*, *op. cit.*
 24. Bernhard Riemann, “On the Hypotheses Which Lie at the Foundations of Geometry,” *op. cit.*, pp. 422-425.
 25. This view of potential population-density connotes a higher definition of our human species: first, as man in our solar system, and next, as galactic man yearning toward a universal mankind.
 26. See Kurt Gödel’s “Richardian paradox,” in Kurt Gödel, *On Formally Undecidable Propositions of Principia Mathematica and Related Systems*, (New York: Dover, 1992); also “The Consistency of the Axiom of Choice and of the Generalized Continuum Hypothesis,” *Proceedings of the National Association of Science U.S.A.*, 24 (1938), pp. 556-557. See also Ernest Nagel and James R. Newman, *Gödel’s Proof* (New York: New York University Press, 1958), pp. 60-63, 66, 85-86. Gödel directly refuted Von Neumann’s “finitist approach” approach in a letter published in *The Theory of Self-Reproducing Automata*, by John Von Neumann, edited and completed by Arthur W. Burks (Urbana and London: University of Illinois Press, 1966), pp. 53-59. Gödel points out in this letter to Burks that Von Neumann’s approach is “in line with the finitistic way of thinking,” like that of Alan Turing. In remarks published posthumously in *Kurt Gödel: Collected Works* (New York: Oxford University Press, 1990), vol. II (“Some remarks on the undecidability results 1972a” and “A philosophical error in Turing’s work”), Gödel states that “Turing in his 1937, p. 250 (1965, p. 136), gives an argument which is supposed to show that mental procedures cannot go beyond mechanical procedures. However, this argument is inconclusive. What Turing disregards completely is the fact that *mind, in its use, is not static, but constantly developing. . .*” See footnote 6 for relevant works of Von Neumann.
 27. For type, see Georg Cantor, *Beiträge*, *op. cit.*
 28. Nicolaus of Cusa, “De Circuli Quadratura,” *op. cit.*
 29. See Bernhard Riemann, “Zur Psychologie und Metaphysik,” on Herbart’s Göttingen lectures, in *Mathematische Werke*, posthumous papers, *op. cit.*
 30. As cited by Plato in *Cratylus*, *Parmenides*, *Greater Hippias*, *Lesser Hippias*, trans. by H.N. Fowler, Steph. p. 402a; for Heraclitus, see G.S. Kirk and J.E. Raven, *The Presocratic Philosophers*, pp. 184-187, 197-198.
 31. See Lyndon H. LaRouche, Jr., “Project A,” Appendix XI, “Euler’s Fallacies on the Subjects of Infinite Divisibility and Leibniz’s Monads,” in *The Science of Christian Economy and Other Prison Writings* (Washington, D.C.: Schiller Institute, 1991), pp. 407-425.
 32. See Georg Cantor, “Über trigonometrische Reihen,” in *Gesammelte Abhandlungen mathematischen und philosophischen Inhalts*, ed. by E. Zermelo (Berlin: J. Springer, 1932; reprinted Hildesheim: Olms, 1966).
 33. Here, “modern” signifies the period of Western European civilization beginning approximately A.D. 1400. This style emphasizes that both modern science and the modern form of nation-state republic were founded during the fifteenth century, both as leading, interdependent features of Europe’s recovery from the rubble of the fourteenth-century “New Dark Age.”
 34. See, e.g., Plato’s *Republic*, *op. cit.*, Steph. pp. 505a-520e.
 35. See footnote 19.
 36. *Ibid.* It is most relevant to note that this Platonic theory of knowledge permeates the philosophy of Plato-student Leibniz, his *Monadology* emphatically; this *monad* also appears under the rubric of *Geistesmassen* in Bernhard Riemann’s posthumously published notes on Herbart’s Göttingen lectures (see footnote 29).
 37. For example, in 1952 this author first described the Classical *lied*’s interface between music and poetry as a “Rosetta Stone,” in connection with a project refuting Norbert Wiener *et al.* on “information theory.” See Lyndon H. LaRouche, Jr., “History As Science: America 2000,” *Fidelio*, Vol. II, No. 3, Fall 1993, p. 32ff.
 38. See Lyndon H. LaRouche, Jr., “The Science of Christian Economy,” in *Christian Economy*, *op. cit.*, pp. 221-223.
 39. See Lyndon H. LaRouche, Jr., “The Science of Christian Economy,” *op. cit.*, pp. 263-266; “On the Subject of God,” *Fidelio*, Vol. II, No. 1, Spring 1993, pp. 24-33; and “History as Science: America 2000,” *op. cit.*, pp. 60-64.
 40. Man’s existence in the solar system is measured relative to the surface of the planet Earth.
 41. At the time of the French Revolution, Jeremy Bentham (1748-1832) was employed by British East India Company executive and British Prime Minister Shelburne to run a “radical writers shop” at Shelburne’s Bowood estate. Bentham and another East India Company operative, Samuel Romilly, penned many of the speeches that were delivered by Jacobins Marat and Danton during the height of the Paris revolt. It was essential for Shelburne and Bentham that the French republican, pro-American forces be crushed, and France be prevented from adopting a constitutional form of government modeled on the U.S. Constitution. Thus, while supporting the ultra-monarchist forces around Count Mirabeau, the British East India Company simultaneously provided covert financial aid to the Jacobins. Records of payments to Marat, Danton, and other Jacobin leaders are still on file at the British Museum.
 42. The systematic destruction of France’s Ecole Polytechnique is a leading example of how the Congress of Vienna’s cultural policies were imposed. The Ecole had been the world’s leading and most vigorous center of advancement of the physical sciences during the 1794-1814 period, under the leadership of its founder, the great Gaspard Monge. Through political intervention, Pierre Simon, Marquis de LaPlace and LaPlace’s protégé Augustin Cauchy were assigned to destroy the Ecole’s instructional program, exemplified in the notorious cases of Niels Henrik Abel and Evariste Galois, both of whose work was first suppressed and then plagiarized, following the victims’ early deaths. LaPlace’s first act in this démarche was to organize the expulsion of Monge. Despite the continued, if much reduced, influence of the collaborators of Monge and Lazare Carnot in France, French science slipped rapidly from its preeminent position worldwide, to a poor second, as Germany’s scientific ascendancy emerged under the tutelage of the Humboldt brothers and leadership of circles associated with Carl Gauss during the 1820’s. See Felix Klein, *Development of Mathematics in the Nineteenth Century*, trans. by M. Ackerman (Brookline, Mass.: Math Science Press, 1979); see also E.T. Bell, *Men of Mathematics* (New York: Simon & Schuster, 1937).
 43. Alexander Dallas Bache (1806-1867), a brilliant graduate of West Point, carried the prestigious name and tradition of his great-grandfather Benjamin Franklin. During the 1820’s and 1830’s, nationalist strategists in Franklin’s old Philadelphia political machine (led by Nicholas Biddle, the president of the Bank of the United States, publisher Mathew Carey, and German emigré economist Friedrich List) successfully organized the initial industrialization of the U.S. In 1837, Biddle sent Bache to Europe to work with scientists and educational leaders, including Carl Gauss, Wilhelm Weber, and Alexander von Humboldt. Back in the U.S., Bache formed a patriotic group of the best American scientists, known as the “Lazzaroni” (Italian for “beggars”), in close cooperation with the German and allied French scientists. Bache’s group designed and organized the U.S. Naval Academy. As head of the U.S. Coast and Geodetic Survey, Bache was chief strategist for the emergence of an advanced U.S. military-industrial capability, and was a leading advisor on intelligence to President Abraham Lincoln.

44. Louis Agassiz (1807-1873), leading zoologist and geologist of the nineteenth century, and one of the greatest naturalists of all time. He was born in Switzerland, trained in Germany at the University of Erlangen, and later worked with the leading French naturalist, Cuvier. In 1846, Agassiz moved to the United States and, as chief professor of the Harvard Lawrence Scientific School, he became a leading member of Alexander Dallas Bache's "Lazzaroni." Together with Admiral Charles Henry Davis, Bache, and Joseph Henry, Agassiz helped found the U.S. National Academy of Sciences in 1863. See his *Contributions to the Natural History of the United States* (Boston: Little, Brown & Co., 1857-62; reprint New York: Arno Press, 1978).
45. The U.S. Coast and Geodetic Survey began operation in 1817 as a branch of the Treasury Department, and was the only Federal government scientific agency during the first part of the nineteenth century. It was directed by F. Hassler until his death in 1843, after which Alexander Dallas Bache assumed its direction. Hassler carried on an extensive correspondence with Carl Gauss, who provided both scientific advice and equipment, continuing to advise the Coast Survey under Bache. In fact, most of Bache's leading assistants were either students or correspondents with Gauss. For example, Benjamin Peirce, who took over after Bache died in 1867, was a leading student of Gauss; Admiral Charles Henry Davis translated Gauss' book on the determination of celestial orbits. See Carl Friedrich Gauss, *Briefen und Gesprächen*, ed. by Kurt-R. Biermann (Munich: C.H. Beck, 1990).
46. William Draper Harkins (1873-1951), professor of physical chemistry at the University of Chicago for almost forty years. His students and laboratory equipment, such as the Chicago Cyclotron, made the success of the World War II Manhattan Project possible. See biographical introduction by T.J. Young to Draper's *The Physical Chemistry of Surface Films* (New York: Reinhold, 1952). Young points out that Harkins and E.D. Wilson published the first calculation for nuclear fusion of hydrogen to form helium in 1915. And, in the early 1920's, Harkins, together with Gans and Newson, was the first to generate and detect the formation of an excited nucleus, (Nitrogen-16) in a Wilson Cloud Chamber, "which may be regarded as the first radioactive element produced artificially."
47. Leopold Kronecker (1823-1891), professor of mathematics at the University of Berlin, politically dominated German mathematics during the 1870's and 1880's. A radical empiricist, he believed that integers alone had a basis in reality, and that all other numbers (e.g., irrationals) were figments of man's imagination; hence, Cantor's development of transfinite numbers was seen by Kronecker as a direct threat to his entire theory of mathematics. As early as 1874 Kronecker tried to block publication of Cantor's preliminary work on the non-denumerability of real numbers. Using his political influence, Kronecker threatened the editors of professional journals against publishing Cantor's work, which he denounced as "humbug"—a slander which, coming from so prominent a figure, had a particularly pernicious influence. Kronecker used his influence to prevent Cantor's appointment to a professorship at Berlin or Göttingen, relegating Cantor to a post at Halle, where he was physically isolated and financially impoverished. The strain of intellectual isolation and Kronecker's constant hounding contributed to the nervous collapse suffered by Cantor in this period.
48. See Bertrand Russell, *An Essay on the Foundations of Geometry* (1897) (New York: Dover Publications, 1956); also "On Some Difficulties in the Theory of Transfinite Numbers and Order Types," *Proc. London Math. Soc.* 4, 29-53, 1907. Russell's collaboration with Alfred North Whitehead in the composition of their notorious *Principia Mathematica* was a desperate effort to refute Georg Cantor's *Beiträge* by limiting mathematics axiomatically to the crudest possible forms of *analysis situs*, those of greater than, less than.
49. See G.W. Leibniz, "Système nouveau de la nature et de la communication des substances" (1695); English trans. "A new system of the nature and the communication of substances," in *Gottfried Wilhelm Leibniz: Philosophical Papers and Letters*, *op. cit.*, vol. II, p. 739. See also in *G.W. Leibniz: Mathematische Schriften*, ed. by C.I. Gerhardt (Berlin and Halle: 1849-1863; reprinted Hildesheim: 1962), vol. IV, p. 477.
50. Pietro Pomponazzi lectured on Aristotle at the University of Padua between 1487 and 1509, as well as at Ferrara and Bologna. One of his students was Gasparo (Cardinal) Contarini (1483-1542), a descendant of the Venetian oligarchical family, who became the most important Venetian operative during the period of the Protestant Reformation and the initial Catholic Counter-Reformation. Another influence on the young Contarini was Francesco Zorzi (Giorgi), who became his close friend. Among Contarini's close associates were Gregorio Cortese, the Abbot of the Benedictine Monastery of San Giorgio Maggiore, Reginald Cardinal Pole, a sometime-pretender to the English throne, and Gianpietro Caraffa, later Pope Paul IV. Pole and his friend Vittoria Colonna were central figures of the Italian crypto-Protestant movement called the "Spirituali." In 1537, Cardinal Contarini chaired the Holy See's Council on the Reform of the Church, which issued a decree citing Aristotle and condemning Erasmus, thus initiating the process leading to the Council of Trent.
51. LaRouche, "Science of Christian Economy," *op. cit.*, pp. 241-256.
52. *The Thirteen Books of Euclid's Elements*, trans. by Thomas L. Heath (1925) (New York: Dover Publications, 1956).
53. See Wilhelm von Humboldt, "Preliminary Thoughts on the Plan for the Establishment of the Municipal School System in Lithuania" and "School Plan for Königsberg," which are summarized by Marianna Wertz, in "Wilhelm von Humboldt's Classical Education Curriculum," *New Federalist*, vol. VII, No. 10, March 15, 1993, p. 8; see also *Wilhelm von Humboldt, Humanist Without Portfolio: An Anthology of the Writings of Wilhelm von Humboldt*, trans. by Marianne Cowan (Detroit: Wayne State University Press, 1963). Humboldt's reform program was directly influenced by his long association with Friedrich Schiller. See "On Schiller and the Course of His Spiritual Development," by Wilhelm von Humboldt, and Schiller's "What Is, and To What End Do We Study, Universal History?" in *Friedrich Schiller, Poet of Freedom*, vol. II, ed. by William F. Wertz, Jr. (Washington, D.C.: Schiller Institute, 1988).
54. See Carol White, "The Roots of British Radicalism," in *The New Dark Ages Conspiracy* (New York: New Benjamin Franklin House, 1980), pp. 285-333; see also "Origins of the Counterculture," in *Dope, Inc.: The Book That Drove Kissinger Crazy*, by the Editors of Executive Intelligence Review (Washington, D.C.: Executive Intelligence Review, 1992), pp. 533-553.
55. See, e.g., Bertrand Russell, *Introduction to Mathematical Philosophy* (1917) (New York: Simon & Schuster, Touchstone Books, 1971), p. 21.
56. This incidentally, is the proper standpoint from which to appreciate the non-mysterious implications of Kurt Gödel's famous treatment of formally undecidable propositions (see footnote 26).
57. Note both the treatment of the circle in Nicolaus of Cusa's *De Docta Ignorantia* earlier and then, later, the summation of that in "De Circuli Quadratura" (see footnotes 16 and 17).
58. Nicolaus of Cusa, *De Docta Ignorantia*, *op. cit.*
59. *Ibid.*
60. In 1766-1767, Johann Heinrich Lambert proved the irrationality of the numbers π and e . Based upon Lambert's Theorem, in 1873 Charles Hermite proved the transcendence of the number e . In 1882, F. Lindemann demonstrated the transcendence of the number π as an extension of Hermite's proof for the case of e . See: Johann Heinrich Lambert, "Mémoire sur quelques propriétés remarquables des quantités transcendentes circulaires et logarithmiques," *Histoire de l'Académie Berlin, 1761* (1768), pp. 265-322; partial trans. in D.J. Struik, *A Source Book in Mathematics, 1200-1800* (Princeton, N.J.: Princeton University Press, 1968), pp. 369-

374. Charles Hermite, "On the Transcendence of e " (1873), in David Eugene Smith, *A Source Book in Mathematics*, *op. cit.*, trans. by L. Guggenbühl, pp. 99-106. For a summary of the arguments of Hermite and Lindemann, see Felix Klein, *Famous Problems of Geometry* (1897), in *Famous Problems and Other Monographs* (New York: Chelsea Publishing Co., 1955), pp. 61-77.
61. See *A Manual on the Rudiments of Tuning and Registration*, ed. by John Sigerson and Kathy Wolfe (Washington, D.C., Schiller Institute, 1992), esp. chap. 11 *passim*, pp. 199-228. See also, Lyndon H. LaRouche, Jr., "Mozart's 1782-1786 Revolution in Music," *Fidelio*, Vol. I, No. 4, Winter 1992.
62. LaRouche, "History as Science," *op. cit.*, pp. 24-27.
63. Panini (c.400 B.C.), grammarian of Classical Sanskrit. P.B. Junnarkar's *An Introduction to Panini* (Baroda: Shanti S. Dighe, 1977) includes the full text of Panini's *Astadhyayi*.
64. Cf. *A Manual on Tuning*, *op. cit.*, chaps. 9 and 10, pp. 151-198. If the principle of least action is applied to voice training of singers, the result of this is a form of voice training associated with the *bel canto* tradition carved in stone by Luca della Robbia in the Cathedral of Santa Maria del Fiore in mid-fifteenth century Florence, Italy.
65. See *A Manual on Tuning*, pp. xv-xxix.
66. *Ibid.*
67. See Webster G. Tarpley, "The Evil Philosophy Behind Political Correctness," *Fidelio*, Vol. II, No. 2, Summer 1993, pp. 42-54.
68. Aristoxenus (born c.375 B.C.), a student of the Pythagoreans and Aristotle, developed a fully-conceived system of musical tuning presented in such works as the surviving *Harmonic Elements*, whose "tense diatonic" scale has been interpreted by modern writers as containing a system of equal temperament. See *The Harmonics of Aristoxenus*, trans. and ed. by H.S. Macran (London: Oxford University Press, 1902); see also R. Westphal, *Aristoxenus von Tarent* (Leipzig: A. Abel, 1883-93; reprinted 1965).
69. See Pierre Beaudry, "The Acropolis of Athens: The Classical Idea of Beauty," *New Solidarity*, Vol. II, No. 24, June 24, 1988, pp. 6-7; see also, Lyndon H. LaRouche, Jr., "The Classical Idea: Natural and Artistic Beauty," *Fidelio*, Vol. I, No. 2, Spring 1992, p. 8ff.
70. See Plato, *Republic*, *op. cit.*, Steph. 509d-513e; *Timaeus*, *op. cit.*, Steph. 32a, 35b-36b, 54d-55c.
71. See Luca Pacioli, *De Divina Proportione* (1497) (Vienna: 1896), whose geometrical diagrams of the Golden Section-determined regular solids were drawn by Leonardo da Vinci. Reproductions of these drawings appear in *The Unknown Leonardo*, ed. by Ladislao Reti (New York: McGraw-Hill Book Company, 1974), pp. 70-71.
72. This is not the place to take up the distinction between a so-called "quantum mechanics" and a "quantum field theory." It is sufficient to inform the reader that Planck's work leads as readily to a quantum field theory of quasi-Keplerian type, as to a strained quantum mechanics, and without the distressing paradoxes inhering in the latter. A point here is the theory of knowledge; only that implication is being treated in this part of the report.
73. See footnote 71. Leonardo's drawings and studies of plants and plant growth abound in the application of Golden Section harmonics.
74. See Johannes Kepler, *On the Six-Cornered Snowflake*, trans. by Colin Hardie (Oxford: Clarendon Press, 1966), reprinted by *21st Century Science & Technology*, 1991.
75. See Plato's *Timaeus* in *Plato: Timaeus, Critias, Cleitophon, Menexenus, Epistles*, Loeb Classical Library, trans. by R.G. Bury (Cambridge: Harvard University Press, 1929), Steph. pps. 32a, 35b-36b, 54d-55c.
76. This pertains to the intelligibility of principles of higher hypothesis by creative reason. On natural law generally, see G.W. Leibniz. Natural law signifies those universal, enduring principles of the world as Becoming which are naturally intelligible to individual creative reason. For example, as given in the text, the principle of the sacredness of the individual person, the derived sacredness of the family, and the derived relative sacredness of the republic form of government.
77. The term "agapic" signifies the agapic form of love in opposition to erotic love. The reference is, of course, to the Gospel of St. John, especially the famous verse 3:16, and to I Corinthians 13 of St. Paul, as the standard for defining *agapē*.
78. Lyndon H. LaRouche, Jr., "On the Subject of Metaphor," *op. cit.*, pp. 20-26.
79. G.W. Leibniz, *Monadology*, *op. cit.*
80. See LaRouche, "On the Subject of Metaphor," *op. cit.*, pps. 22-23, 44-47.
81. Ernst Mach (1838-1916) initiated the effort to impose positivism on science in the twentieth century, and is generally credited with founding the fraud known today as modern "philosophy of science." While most of his scientific conclusions have long been proven false—for example, "that atoms [don't] exist"—his general method, particularly his opposition to any notion of causality in science, have become prevalent in modern physics. Mach led a scientific vendetta against Ludwig Boltzmann—eventually leading to his suicide in 1906—because Boltzmann refused to completely abandon the concept of causality in thermodynamics. He afforded similar treatment to Louis de Broglie at the 1927 Fifth Solvay Conference on Physics, and later, to Erwin Schroedinger. De Broglie characterized these events as "a virtual *coup d'etat* in theoretical physics." See Morris Levitt, "Linearity and Entropy, Ludwig Boltzmann and The Second Law of Thermodynamics," *Fusion Energy Foundation Newsletter*, Vol. II, No. 2, Sept. 1976, pp. 3-18; see also Uwe Parpart, "The Theoretical Impasse In Inertial Confinement Fusion," *Fusion*, Vol. III, No. 2, Nov. 1979, pp. 31-40.
82. See Luca Pacioli, *De Divina Proportione*, *op. cit.*
83. See footnote 73.
84. For Kepler's use of "quantum field theory," see his *Mysterium Cosmographicum* (*The Secret of the Universe*), trans. by A.M. Duncan (New York: Abaris Books, 1981); chap. 2 contains his explicit reference to Nicolaus of Cusa. For Kepler's discussion of the Divine Proportion (Golden Section), and of the geometric determination of harmonic relations, both in music and astronomy, see his *Harmonice Mundi* (*The Harmony of the World*), in *Opera Omnia*, vol. 5, (Frankfurt: 1864); English trans.: Books I-IV, trans. by Christopher White *et al.* (unpublished); Book V, trans. by Charles Glenn Wallis, included in *Great Books of the Western World* series (Chicago: Encyclopedia Britannica, 1952).

NOTE

Owing to an editorial error, footnote 49 to Section 2 of Lyndon LaRouche's "History as Science: America 2000," which appeared in the previous issue of *Fidelio* (Vol. II, No. 4, Fall 1993) was incorrect as printed. The corrected note, which deals with Georg Cantor's use of the "power set" to generate the transfinite cardinal numbers, reads as follows:

49. The "power set" is the set of all subsets of a given set. Cantor applied this idea to his transfinite cardinal numbers, and proved that the power set of a given transfinite cardinal number would generate a new, higher-order transfinite cardinal. Cantor's first transfinite cardinal represents the countable or denumerable infinities. The power set of the countable infinities is the non-denumerable continuum, and Cantor demonstrated through his diagonal method that the number continuum is a higher order cardinality than the countable infinities. There may be other non-denumerable aggregates besides the number continuum, as Paul Cohen's proof of the non-demonstrability of Cantor's continuum hypothesis demonstrated. The power set of the number continuum gives a higher order cardinal, the set of all functions, and so on. The capability to generate higher and higher transfinite cardinal numbers is equivalent to Plato's concept of "hypothesizing the higher hypothesis."

On the Quadrature Of the Circle

(1450)

Nicolaus of Cusa

ON THE QUADRATURE OF THE CIRCLE is one of several written by Nicolaus of Cusa (1401-64) on this subject during the 1450's. The first reference in his writings to this topic appears in ON LEARNED IGNORANCE (1440), where he writes that "a noncircle cannot measure a circle, whose being is something indivisible."

In many of his writings, including "On LaRouche's Discovery" in this issue of *Fidelio*, Lyndon LaRouche has identified the importance of the method employed and the conclusion attained by Cusanus in this work, as the unique basis for the development of modern science. We publish this translation as an historical source document, the mastery of which is vital to a full appreciation of Lyndon LaRouche's own scientific method.

The translation, which appears below, is not of the original Latin text, but rather of a German translation which appears in *DIE MATHEMATISCHEN SCHRIFTEN VON NIKOLAUS VON KUES*, published by the Felix Meiner Verlag, Hamburg.

You assert that you are involved with a multitude of commentators on the quadrature of the circle, and you urge me, now, since the needed leisure is provided, to give you an exhaustive presentation of what can be known about this subject. Receive my intuition now in the following proposition. But know, that on your behalf I have so treated the subject, that, after leaving the mathematical sciences, you can proceed more easily, through assimilation of this discussion, to the domain of theology.

Proposition

If to a given perimeter of a triangle an equal circular perimeter can be given, then the radius of this circle exceeds by one-fifth of its total that line, which is drawn from the center of the triangle to the point quartering the side from the corner.

There are scholars, who allow for the quadrature of the circle. They must necessarily admit, that circumferences can be equal to the perimeters of polygons, since the circle is set equal to the rectangle with the radius of the circle as its smaller and the semi-circumference as its larger side. If the square equal to a circle could thus be transformed into such a rectangle, then one would have the straight line equal to the circular line. Thus one would come to the equality of the perimeters of the circle and of the polygon, as is self-evident.

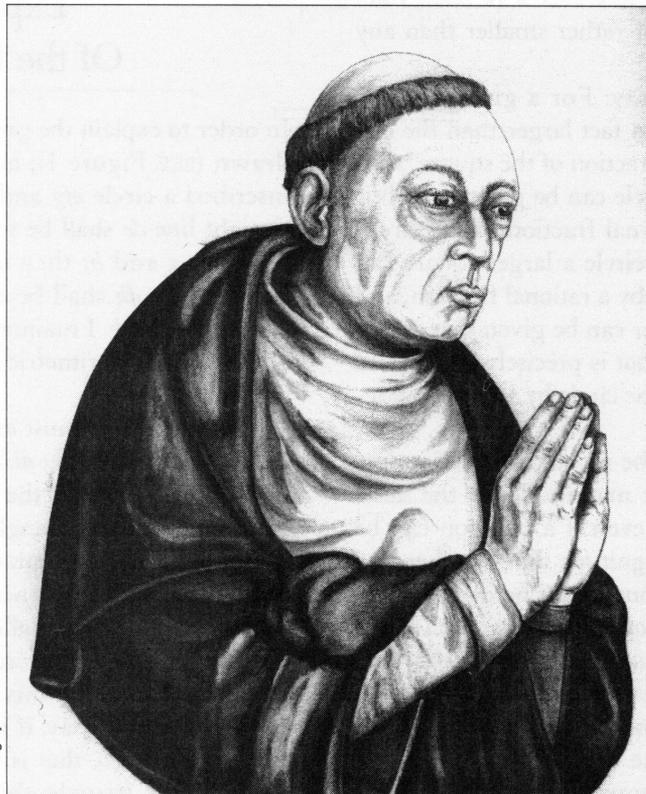
These people also allow for the following conclusion, without which they could achieve nothing, namely: *Where one can give a larger and a smaller, one can also give an equal.* Since one can give a square larger than the circle—as is the circumscribed—, and a smaller—as is the inscribed—, therefore there is also an equal, which is neither circumscribed nor inscribed, but rather is in like

manner circumscribed *and* inscribed. They let the same manner of conclusion hold also for the perimetric lines: Since a circumference greater than the perimeter of a triangle can be given—as is the perimeter of the circumscribed circle—, and since a circumference smaller than the perimeter of a triangle can be given—as is the perimeter of the inscribed circle—, a circumference equal to the triangle's perimeter can also be given, and this circle is neither circumscribed nor inscribed, but rather is in like manner circumscribed *and* inscribed.

There are also scholars, who deny the possibility of the quadrature of the circle, and these dispute all the aforesaid. They assert, namely, that in mathematics the conclusion does *not* hold: *Where one can give a larger and a smaller, there one can also give an equal.* There can namely be given an incidental angle that is greater than a rectilinear, and another incidental angle smaller than the rectilinear, and nevertheless, never one equal to the rectilinear. Therefore with incommensurable magnitudes this conclusion does not hold. That is to say, if one could give one incidental angle that is larger than this rectilinear angle by a rational fraction of the rectilinear, and another that is smaller than this rectilinear by a rational fraction of the rectilinear, then one could also give one equal to the rectilinear. But since the incidental angle is not proportional to [commensurate with] the rectilinear, it cannot be larger or smaller by a rational fraction of the rectilinear, thus also never equal. And since between the area of a circle and a rectilinearly enclosed area there can exist no rational proportion—as little as between the incidental and the rectilinear angle—, therefore the conclusion is also here not permissible.

That will be obvious in the following: Every magnitude which can be converted into another, is necessarily such, that each of its parts could also be part of the other magnitude, since the whole is nothing else than the sum of its parts. A segment that is cut off from a circle by a

straight line cannot, in respect to its incidental angles, which are parts of its surface, be transformed into a rectilinearly enclosed figure; therefore also not in respect to its totality. But this is palpable: If a circle can be transformed into a square, then it necessarily follows, that its segments can be transformed into rectilinearly enclosed figures. And since the latter is impossible, the former, from which it was deduced, must also be impossible. Obviously, then, the semicircle cannot be transformed into a rectilinearly enclosed figure, and consequently also not the circle or one of its parts.



Drawing by Pam Emerson

Nicolaus of Cusa

Every incidental angle exceeds another or is exceeded by it, by the amount of a rectilinear angle, to which it can have no rational proportion. From this it ensues, that all segments of a circle produced by straight lines are in no wise proportional to the circle. And since the largest segment is produced by the diameter, all other segments are not proportional to this. Therefore no rational fraction of the circle can be cut off by such lines, because this fraction is non-proportional to the greatest segment, that is, to the semicircle. Therefore the following proposition does not hold: *One can cut off from the circle a segment greater than a third of the circle and another smaller*

than a third of the circle, and therefore also one equal to a third of the circle. From this it ensues: Segments of a circle, which are produced by a straight line which is smaller than the diameter, can in no way be transformed into rectilinearly enclosed figures because they are rational parts of the circle, but rather because the quadrature of the circle would follow therefrom, if they could be transformed into rectilinearly enclosed figures.

From that you can make clear to yourself, that everything is impossible from which the quadrature of the circle follows. The circle, therefore, because of its uniqueness, has the following property: *Just as the incidental angle cannot be transformed into a rectilinear, so the circle cannot be converted into a rectilinearly enclosed figure.*

However, a rectilinear angle can be given that is larger than the incidental angle by the contingent [horn] angle.—The contingent angle is a divisible magnitude only in its species, since to every contingent angle there is a larger and a smaller contingent angle.—Although the contingent angle is smaller than any rectilinear, nonetheless in this manner one can give a rectilinear angle larger than a given incidental angle, which however is not larger by a rational fraction of the rectilinear angle. Just so, one can give an incidental angle smaller than a given rectilinear angle, and indeed, smaller by the amount of the contingent angle, which is not however a rational fraction of the incidental angle, but rather smaller than any rational fraction of the same.

In the same way one can say: For a given circle a square can be given, which is in fact larger than the circle, however, not by a rational fraction of the square. And for a given square a smaller circle can be given, which is not however smaller by a rational fraction of the circle. From this follows: To a given circle a larger square can be given—larger, however, not by a rational fraction; and to every so given square another can be given that comes nearer to the circle, but none that is precisely equal to it. And none that is smaller than the circle by a rational fraction, likewise vice versa.

And this view I regard as the more correct. Because, since polygonal figures are not magnitudes of the same species as the circular figure, even if a polygon can be found that comes nearer in magnitude than another to a given circle, the proposition nonetheless holds true that: *In respect to things which admit of a larger and smaller, one does not come to an absolute maximum in existence and potentiality.* Namely in comparison to the polygons, which admit of a larger and smaller, and thereby do not attain to the circle's area, the area of a circle is the absolute maximum, just as numerals do not attain the power of comprehension of unity and multiplicities do not attain the power of the simple.

It seemed to suffice those people, who adhere to the first view, that in respect to a given circle a square can be given that is neither larger nor smaller than the circle. Every larger magnitude is namely larger by a fraction of itself or of another magnitude with which it is compared. It is likewise with the smaller. But if the square that can be given is also not larger or smaller than the circle by the smallest specifiable fraction of the square or of the circle, they call it equal. That is to say, they apprehend the concept of equality such that what exceeds the other or is exceeded by it by no rational—not even the very smallest—fraction is equal to another. If one apprehends the concept of equality in this way, then I believe one can justly say: *To a given polygonal perimeter one can give an*

equal circumference, and vice versa. But if one apprehends the concept of equality, insofar as it relates to a magnitude, absolutely, without regard to rational fractions, then the statement of the latter is correct: *No precisely equal non-circular magnitude can be given for a circular magnitude;* and this by means of explanation of the thought that underlies the cited proposition: *If to a given perimeter of a triangle, etc.* So much should suffice. From this you may grasp what you find presented in various ways about this subject in some of my other writings.

Explanation Of the Proposition

In order to explain the proposition, a triangle abc shall be drawn (SEE Figure 1); around the midpoint d shall be inscribed a circle efg and a circle hi circumscribed; the straight line de shall be so drawn, that e is the midpoint between a and b ; then db shall be drawn. Further, a straight line dk shall be drawn from d to the midpoint between e and b . I maintain: dk is smaller than the radius of the circle isoperimetric to the triangle, by one-fourth of the length dk .

Therefore, one must extend dk by a fourth of its total length, and indeed let dl be larger than dk by one fourth of dk . I maintain: dl is the radius of the circle of equal circumference to the triangle. One shall therefore describe the circle lmn . I maintain: The circumference lmn is equal to the circumference abc , and indeed such that lmn is neither larger nor smaller, not even by the very smallest rational fraction of the circumference abc .

In order to prove this assertion, I proceed in the following manner: I say, if it is possible, to draw a straight line from d to eb , that is the radius of the circle isoperimetric to the triangle, then it must be to the sum of the sides of the triangle as the radius of the circle is to the circumference. But since the radius has no rational proportion to the circumference, neither as a linear magnitude nor as power, that is, since the square area of the radius, which represents the second power, has no rational proportion to the area of the circle, it also had no rational proportion to the square area of the circumference, if one could give this. Clearly therefore neither the sought line itself nor its square can be proportional to the length de or db , whose squares are proportional to the square of eb . Therefore one cannot draw that line from d such that it stands in rational proportion to eb or db , just as the endpoint k located from e toward b will not be removed from e by a length proportional to eb or db . If this were so, then the square would be always proportional to the square of eb , which is self-evident. Consequently, no

point on eb can be given, to which one could draw a line, which were precisely that sought. But there is indeed a point on eb , to which one can draw a line, that is neither larger nor smaller than that sought, and indeed by no rational fraction, as small as it may be. Consequently I maintain: Just as no length, which can be drawn from d toward eb according to an rational point of division of eb , can be the sought length, just so little can such a length standing in rational proportion to eb , be proportional to the sought one, as is self-evident, since the squares of all of these lengths are proportional to the square of eb .

I maintain finally: Even if no such length is precisely proportional to the one sought, nevertheless the one will be more proportional than the other. And this is clear; for even if all were non-proportional to de and eb , nonetheless the one is more proportional to eb and db than the other, and therefore less proportional to the one sought. Hence that one, which is most non-proportional to eb , de and db , is of all the least non-proportional to the one sought. Therefore, one length of all those that can be drawn from d toward the points of division of eb will be less non-proportional to the one sought.

On the Search For Proportionals

But in order to investigate the proportionals, one must pay attention to the following: Among the non-proportional lengths, some are like the side and diagonal in the square, and a proportion so precise can never be found, that the divergence is not larger than a rational fraction. For example, a tenth of the diagonal is smaller than a seventh of the side, and the divergence is larger than a rational fraction of the diagonal and of the side; and likewise in the smallest parts.

Another non-proportionality is that of the incidental

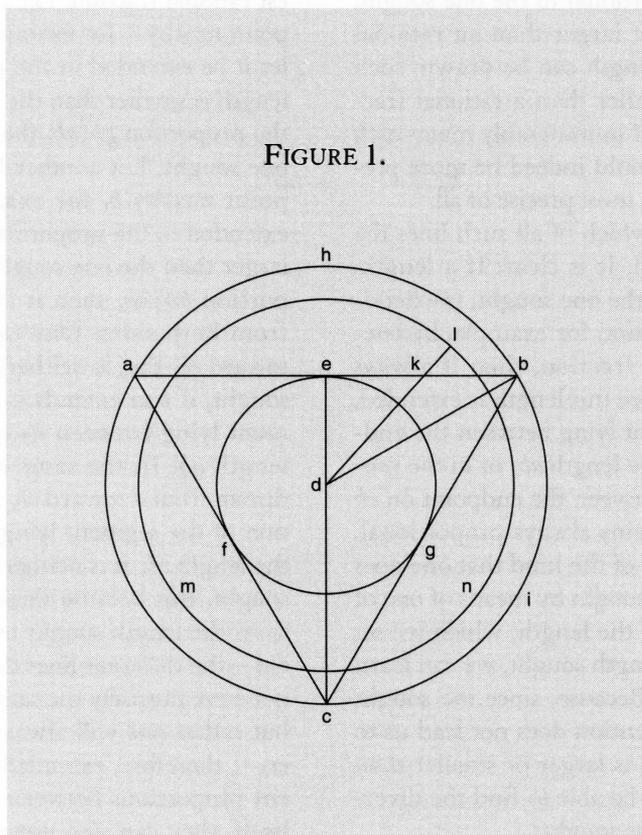
and the rectilinear angle, because a length that corresponds to the incidental angle is non-proportional to a length that corresponds to a rectilinear angle, and the half of the rectilinear angle is larger than the half of the incidental angle, and indeed by the half of the contingent angle. This half is however smaller than any rational fraction of the rectilinear as of the incidental angle.

But that such a proportion can be found in lengths, becomes evident from the following: Since the angle is a surface, and the line the boundary of the surface, it is clear that, in the same manner as the contingent angle is a divisible surface, so also its boundary, that is, the line, which bounds this surface angle, is divisible in its manner. Likewise the line which bounds the surface of the rectilinear angle is divisible in accordance with the divisibility of the surface. One can therefore cut off from the line, that bounds the surface of the rectilinear angle, the line which bounds the contingent angle, and therefore the line bounding the incidental angle is non-proportional to the line bounding the rectilinear angle by the one bounding the contingent angle. Since this line bounding the contingent angle is smaller than any

rational fraction of a line which bounds a rectilinear or the incidental angle, the assertion is clear.

And therein you can observe, that there is a line before all divisibility of the line, which is incomprehensible by any divisibility, by which a straight line can cut a straight line in two. Even if this line is not divisible by a division, by which a line is divided by a line—in this respect it is like an unattainable endpoint—, nonetheless it is in its way divisible by a curve. Consequently that line is likewise called divisible, since it is the boundary of a surface, even if it may appear indivisible in comparison to a line bounded by a point. Just as the divisibility of a surface ends in a line, which is indivisible in respect to the surface, since it is not divisible in respect to surface, whereas seen as the surface's boundary line as such it is a divisible magnitude, just so the divisibility of the straight line by a

FIGURE 1.



straight line ends in a point, which is the boundary of the division and of the line, and as the boundary of the line is linearly indivisible, but seen for its own sake a divisible magnitude. It is thus possible, that a length is smaller or larger than another, but not by a specifiable rational fraction or a larger rational fraction, but rather by a smaller rational fraction. You can recognize therefrom, what one should think of the indivisible lines and points.

I therefore maintain: Even if one can draw a length from d toward eb that is proportional to the one sought, such that the divergence is not larger than an rational fraction, nonetheless no such length can be drawn, such that the divergence can be smaller than a rational fraction. Further I maintain: Even if innumerable many such lengths could be drawn, one would indeed be more precise than the other, but none the most precise of all.

Therefore, we want to see, which of all such lines the human mind can comprehend. It is clear: If a length, which must be proportional to the one sought, is extended by a definite part of its amount, for example, by one-third, one-fourth, or another fraction, then it always remains proportional. If therefore this length is extended, in the proportion of the segment lying between the endpoint on eb and the point e to the length ab , or in the proportion of the segment lying between the endpoint on eb and b to the length ab , it remains always proportional. The proportions are thus either of the kind that one does or does not arrive at the length sought by means of one of them. If not, then, by means of the length, which we set proportional to the unknown length sought, we can learn nothing of the length sought. Because, since the sought length is unknown and the extension does not lead us to it, but rather to a length which is larger or smaller than the unknown one, we shall not be able to find the divergence of the totally unknown one sought.

If you should maintain, that one comes to the sought length by the one extension and not by both, it will be the same one, because we do not know through which extension this should occur and where that line should lie, since indeed infinitely many lines can lie between e and b . If you should maintain, that the extensions be equal and nonetheless smaller or larger than the unknown one sought, once again one can never arrive at the one sought.

The proportional, of which the human mind can avail itself by this kind of procedure to arrive at the length sought, must necessarily be that one which presents, through both equal extensions, the one or the other as the length sought; and this is that line which is drawn from d towards the midpoint f between e and b . And it is the only one whereby the proportion of the distance from e to the length ab is the same one as the proportion of the distance from b to the length ab ; extended in this propor-

tion, that is, by one-fourth of its amount, it leads us to the length sought, as it is possible for us in this kind of procedure to reach the one sought, even if another length could be found more precisely in another manner.

But so that you don't think this to be a mere guess, that the human mind is led to this assertion through no other consideration, you can make a binding conclusion, which in this case is admissible beyond the ultimate precision and within the limits of the difference of the smallest rational fraction. Let a line be drawn from d toward a point nearby e , for example, toward g , (SEE Figure 2) and let it be extended in the proportion $eg:ab$, then the new length is smaller than the one sought; let it be extended in the proportion $gb:ab$, then it is likewise smaller than the one sought. Let another line be drawn from d toward a point nearby b , for example, toward h , and let it be extended in the proportion $eh:ab$, then the new length is larger than the one sought; let it be extended in the proportion $hb:ab$, then it is likewise larger, as it appears from both sides. One can thus draw a length from d toward eb , that is neither larger nor smaller than the one sought, if one extends it in the proportion that the segment lying between its endpoint and e forms with the length ab . In the same manner, a straight line can be drawn from d toward eb , so that, extended in the proportion of the segment lying between its endpoint and b to the length ab , it is neither larger nor smaller than the one sought. But because these two lines, from whose extensions the length sought must emerge, may not be different—the different lines that can be laid from d to eb cannot have precisely the same proportion to the one sought, but rather one will always be more precise than the other—, therefore, extended in accordance with the different proportions between their segments and the length itself, they can also not reach in this manner the same length sought. There can thus necessarily be only one, single line and the same extension, which is only possible in the point f . Consequently, a sufficient explanation for everything that one can know by this kind of procedure is given in the proposition presented.

I have made clear to you everything that one can know about the equality of the perimeters of curvi- and rectilinearly bounded figures, namely, that the following comes closer to the truth: *One cannot know equality*, and even that which one can know most precisely in this area is made clear by a short proposition. With this I have fulfilled your wish, as well as I could. You must know: You have with that a method to investigate everything that can be known mathematically. In mathematical science, any proposition from which the precise equality of circle and square follows is impossible. And any proposition through whose opposite the precise equality could be

introduced is necessarily correct. I even affirm: Whosoever understands in mathematical science, to lead every investigation back to this, has achieved the perfection of this art. Because here is absolutely nothing true from whose opposite the equality of circle and square would not follow. And that is the totally sufficient solution of any mathematical investigation.

But whatever one can know, in the transformation of figures and in numerically incomprehensible proportions, without ultimate precision however in the domain of every perceivable or specifiable error even of the smallest rational amount, I have made clear in the presentation. You know thereby, that the diameter is to the circumference as $2\frac{1}{2}\sqrt{1575} : 6\sqrt{2700}$. True, that is not the precise value, but it is neither larger nor smaller by a minute or a specifiable fraction of a minute. And so one cannot know by how much it diverges from ultimate precision, since it is not reachable with a usual number. And therefore this error can also not be removed, since it is only comprehensible through a higher insight and by no means through a visible attempt. From that alone you can now know, that only in the domain inaccessible to our knowledge will a more precise value be reached. I have not found that this realization has been passed along until now.

Besides, it seems useful to observe that, as you see in this case, through a figure, for example, the square, one can not so precisely attain another, namely, the circle, or conversely, that it could not be given more precisely, even if the error does not step into view in any way. So in every investigation of the true, where we proceed from the one to a discernment of the other—from the known to the unknown—the same is to be noted, namely, how one can arrive at the true in varied and multiple ways short of ultimate precision, by the one consideration more precisely than by the other, however by none perfectly precisely, even if the error does not step into view. The measure with which man strives for the inquiry of

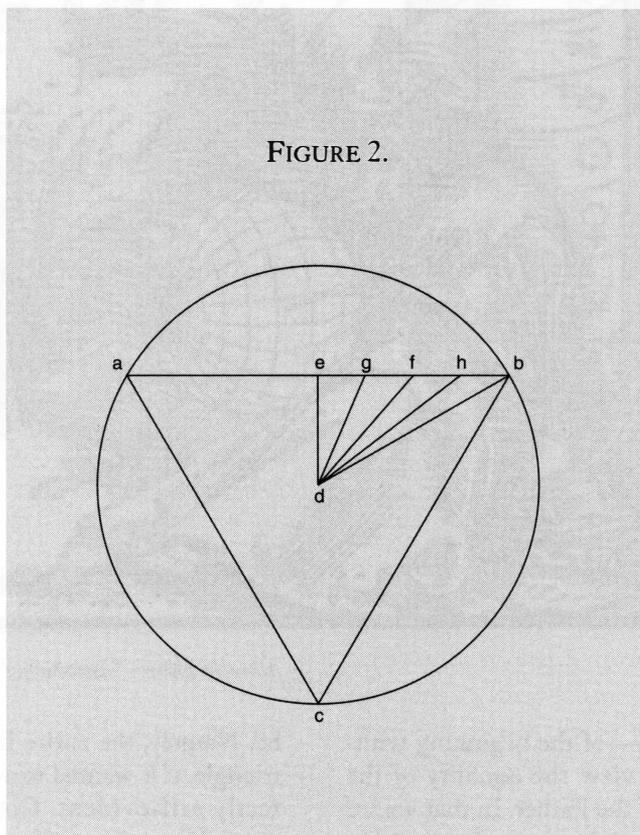
truth has no rational proportion to Truth itself, and consequently, the person who is contented this side of precision does not perceive the error. And therein do men differentiate themselves: These boast to have advanced to the complete precision, whose unattainability the wise recognize, so that those are the wiser, who know of their ignorance.

At the beginning I suggested to you, that you proceed upon this way of assimilation of the mathematical sciences to theology; because

this is the more suitable way of ascension. Mathematical thinking has its seat in the true powers of the mind, since it regards figures in their true form, free of variable matter. From there one ascends more easily to the first form, that is, to the absolute Form of forms, through a kind of assimilation, after one has left the manifold of figures behind oneself. All theologians seek after a certain precision by means of which they can attain the eternity similar to the circle, the unique and most simple. But the infinite power is incommensurable to any non-infinite, just as the circle's area remains incommensurable to any area of a non-circle.

Thus, just as the circle is a figurative perfection, comprehending every possible perfection of figures in itself, and just as its surface embraces the surfaces of all figures and has nothing in common with any other figure, rather is in itself perfectly simple and unique, so is absolute eternity the Form of all forms, which in itself encloses the perfection, and so its omnipotence encompasses all power of the forms, of every kind, but without having a commonality with any other form. And just as the circular figure possesses, in the property of having neither beginning nor end, a certain similarity with eternity, and represents in its area, wherein it encloses the areas of all figures, a certain figure of omnipotence, and represents in the close connection with which it unites circumference and area, in a manner of speaking, a figure of the most loving and infinite connection, so we view in the

FIGURE 2.



divine essence the eternity, which in itself has omnipotence, and in both the infinite union. In eternity we view the beginning without beginning, and just this we name the paternal first cause. In the omnipotence, which comes from the beginning without beginning, we view the unbounded beginning from the beginning, in the infinite connection we view the most loving union of the beginning without beginning and of the beginning from the beginning. Namely in that we see eternity in the divine essence we view the Father. In that we see the power of eternity in the same essence, which cannot be other than infinite, since it is the power of eternity—of the beginning without beginning—, therein we view the equality of the eternal unity, that is, the Son of the Father. In that we see the most loving union of the eternal unity and its equality we view the Spirit of them both. In the simplest unity of eternity we thus see the strongest and most powerful equality, and conversely in equality, unity. Likewise, we also see unity and equality in the union. Without the unity of the eternal essence nothing can be. Without the equality of this unity nothing can be as it is. Without the infinite connection of being and simultaneously of so-being as it is, nothing can be. Therefore, without the triune Cause nothing can be.

All this is illustrated in the circle through its surface and the closest connection, through which the circle is most strongly connected to itself, cohering and by nature united. We observe accordingly: Just as all polygons, according to perimeter, according to area and the connection of both of these, are to the image of the circular figure, and just as every polygonal perimeter falls short of the circumference and every polygonal area remains



Albrecht Dürer, "Astronomer," 1504.

disproportionately behind the area of the circle and likewise every connection of the two, just so are the different species of perceptible things to the Form of forms, so that the species of these perceptible things are in the comparison to God as the triangle, square, pentagon, etc., to the circle.

Each polygon has a definite perfection, outside of which it neither is nor can be. The being of the triangle cannot in any way exist outside of the essence of the triangle; it is the same with the square and so on. Thus every species rests, therefore, in its domain, which is enclosed by its limits. And outside it cannot, and does not wish, to be. Namely, the entire being would withdraw from the triangle, if it wanted to advance into the square, as is perfectly self-evident. Consequently, no species can be moved from its nature, through which it has being and so-being, to its annihilation, and therefore it rests in the limits of its specific nature. And this rest is its own, because, within the limits of its perfection, it holds the divine power in its own manner, and takes pleasure in it in loving union.

Each perceptible species is therefore in its manner a measure for the eternity, the power and the infinite union of love. Certainly in this measuring it has nothing proportional, since every polygon has a diminished power and surface, a weaker connection and union, and thus can have no rational proportion to the circular unity of eternity, to the inexhaustible content and to the infinite union, even if it has everything which it possesses in such a manner, that the power of the circle can participate in the nature of the triangle or square. The proportion of the perceptible species to the Form of forms is therefore that of the polygon to the circle. Further, since there are

many modes of being of the triangle—one is the right triangle, another the acute, another the obtuse—, and in all such figures the various modes of being will sink down in variable matter—, all of these modes are also contracted individuals. Because the species, viewed in themselves and truly, appear in variable matter variously. The triangle can be produced closer to reality and more perfectly in gold than in water or another variable matter, and it is still more truly conceived in the mind than represented in any matter.

From this we therefore observe, that all polygons can be inscribed in a circle, and that in the circle all are more perfectly contained than in matter, since they are circle there; we see in this, that if all polygons can be inscribed in a visible circle, and the circle representing eternity is the actuality of every potential, then all species, according to actuality, are in the species or form of eternity themselves eternal Form, just as all polygons can be visibly inscribed in the circle. And just as the form of the triangle has in our mind a truer being than in variable matter, so have all species of things in the eternal Spirit or in the Word a truer being than in individual diversity; for there they are themselves eternal Truth.

Proceeding still farther, we observe the diversity of circles, and that only one can be the largest, the circle in perfected reality, the self-subsisting, eternal and infinite, to which one cannot ascend through ever so many circles, since, in things that admit of larger and smaller, one cannot come to the simply maximum. And in relation to this infinite circle we ponder wonderful and inexpressible things, which are treated more extensively elsewhere.

We thus maintain, there are entities of the species of the circle, which cannot be their own beginning, since they are not like the simply maximum circle, which alone is eternity itself; the other circles, which indeed do not seem to have beginning and end, since they are viewed through abstraction from the visible circle, are nonetheless, since they are not infinite eternity itself, circles whose being derives from the infinite first eternal circle. And these circles in comparison to the polygons inscribed in them are, in a manner of speaking, eternity and perfect simplicity. They have a surface which exceeds the surfaces of all polygons non-proportionally, and they are the first image of the infinite first circle, even if they are not to be compared with it because of the infinity of the first. And there are entities that have a circular, interminable movement around the being of the infinite circle. They encompass within themselves the power of all other species, and from their encompassing power they develop all other species on the path of assimilation, and, beholding everything in themselves, and viewing themselves as the image of the infinite circle and through just this

image—that is, themselves—, they elevate themselves to the eternal Truth or to the Original itself. These are the creatures bestowed with cognition, who embrace all with the power of their mind.

However, all figures attempt, as well as they can, to measure the power of comprehension of the eternal Truth. But just as the finite has no rational proportion to the infinite, so does God remain above every investigation the undiscerned precision itself, so that he remains not merely the unknown, but also the unknown precision itself, which cannot be discerned in any discernible object. Namely, every creature strives to define its God within the limits of its own essence; just as a triangle would like to triangulate the circle, a square to quadrature, and so on, with the other polygons, so also would the creatures bestowed with cognition like to discern God. But although God, who indeed has no parts, since He is infinite simplicity, exceeds none of all the different modes of measurement according to species by a *specifiable* part, He exceeds absolutely every measure of magnitude, because He is greater than any investigable measure. And in the same way He exceeds each of the fine measures for the smallest fraction, because He is the finest of all these fractions such that He can be precisely grasped neither through ascension nor descension.

But it is sufficient for every creature, if it attains God in its own species and in the manner possible for him. Namely, it is then in rest, since it neither seeks Him outside its species nor comprehends His Being. This sufficient comprehension, therefore, with which it attains Him according to the capacity of its nature, is the rest of the creature, since it is the satisfied movement of its nature.

This explains to us in an assimilating manner the investigation which we have conducted on the triangle, which we wanted to elevate to perimetric equality with the circle. And in the elevation of the triangle to equality with the circle we came to rest only in *one* manner, which we found to be the only precise one, even if deficient. This manner would not benefit the peculiarity of the rectangle. If, however, the square would ascend to equality with the circle in *its* manner, then it could take pleasure in the rest attained, even though no absolute precision were to exist if only one other square were not more perfect in its species. The same holds for the rest of the polygons.

So every spirit comes to rest, if only it feels elevated in the admitted manner of its species to equality with the Infinite, even though the divine precision remains always unattained. This and infinitely many other things you can make clear to yourself. May it suffice to have thus treated the foregoing. Amen.

—translated by William F. Wertz, Jr.

Phaedon, or On the Immortality Of the Soul

(1767)

Moses Mendelssohn

ALONG WITH HIS LIFELONG FRIEND GOTTHOLD EPHRAIM LESSING, *the philosopher Moses Mendelssohn (1729-86)—the grandfather of the composer Felix Mendelssohn—was one of the creators of the German Classical period. He was also the virtual founder of modern traditional Judaism.*

As students, Lessing and Mendelssohn studied in the Leibniz archives, an influence which stayed with Mendelssohn throughout his life. Lessing would later model the protagonist of his revolutionary Christian-Jewish-Islamic ecumenical drama NATHAN THE WISE, on the well-known gentle character of his friend Mendelssohn.

Mendelssohn campaigned for the termination of the Jewish ghettos and the entrance of the Jews as equals into German society, efforts which were aided by his first-ever translation of the Pentateuch into German, and the publication of his political treatise JERUSALEM, which argued for religious toleration within the state, and against the control of civil society by religious institutions, based on the idea that religious conscience could not be legislated, and that man's actions must be guided by reason. These arguments formed the basis of the HASKALAH (Jewish Enlightenment) movement in Eastern Europe and the Russian Pale of Settlement, which liberated these Jewish communities from the Hasidic rabbinate degraded by cabalism and superstition. Mendelssohn's influence in Germany and America led to the formation of the Jewish Reform movement, and was felt strongly during the Civil War through the efforts of anti-slavery spokesmen such as Rabbi David Einhorn, who led the fight against those Confederate Jews who were later to form the core of the B'nai B'rith.

Mendelssohn's PHAEDON, OR ON THE IMMORTALITY OF THE SOUL, the work which made him famous throughout Europe as the "German Socrates," was a novel effort at translation and commentary on the PHAEDO of Plato. The work begins as a strict translation of the Platonic dialogue, but rapidly diverges into an independent work, as Mendelssohn supplies arguments of his own and others more convincing, he believed, than those supplied by Plato's Socrates. The selection below, which begins with rejoinders to the ideas of the French Materialists, British Empiricists, and his contemporary Immanuel Kant, shows in its later portions the clear influence of Leibniz's MONADOLGY. It appears at approximately the position of 91b in the Platonic dialogue.

But, my dear Phaedo, Socrates continued, assuming that truth, in and of itself, is not only reliable and immutable but also not entirely incomprehensible to human beings, and supposing that someone, seeing this kind of sham of reasons and counter-reasons canceling one another out, is seduced into blaming, not himself and his own inability, but rather, out of anger, reason

itself, into hating and loathing all rational arguments for the remainder of his life and distancing himself from all truth and knowledge, would not the misfortune of this man be pitiable?

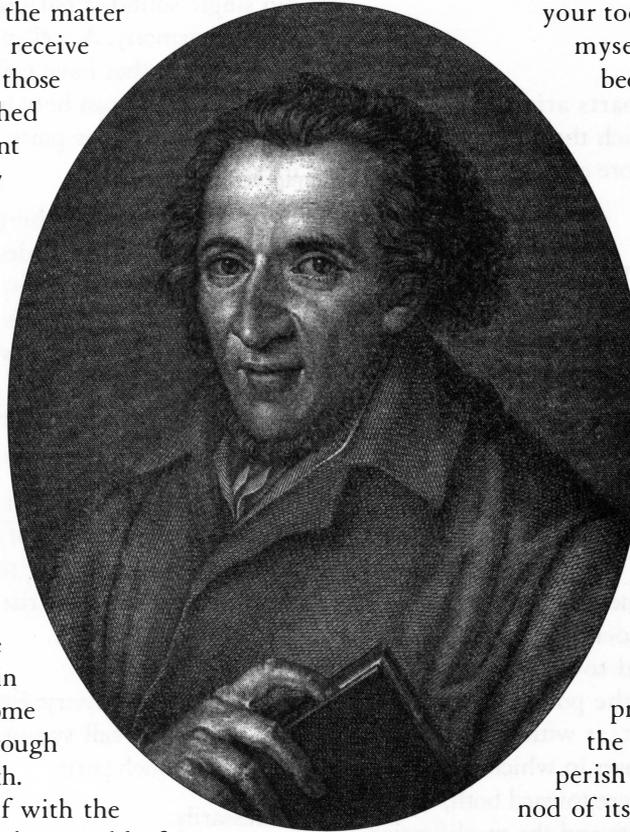
By Jupiter! I answered, very pitiable.

We must, therefore, seek to avoid this error above all,

and to persuade ourselves that the truth itself is not uncertain and wavering, but rather that our reason is often too weak to hold firmly to that truth and master it. Therefore we must redouble our efforts and our courage and ever risk new onslaughts. We are all bound to do that, my friends! You, because of the life before you, and I, on behalf of death. Yes, I have even more of a motive for that, I who may appear to the way of thinking of some common, ignorant people, more addicted to being right than being a lover of the truth. If these people have something doubtful to investigate, they take little trouble about how the matter in itself is constituted if they receive the approval and applause of those present. I shall be distinguished from these people in one point only, that my conveying my opinion to those present is no mere secondary purpose; my greatest concern is to convince myself that my opinions conform to the truth, because I find the greatest advantage in that.

Look, my friends, I draw the following conclusion: If the theory that I put forward is well grounded, then I do well to convince myself; if, however, there is no hope left for the one who is dying, then I gain this at least, that I do not become burdensome to my friends through my complaints before my death.

I sometimes amuse myself with the thought that all those things that would, if true, bring the entire human species true consolation and benefit have, for that very reason, very much probability of being true. When those addicted to doubt object that the theory of God and virtue is merely a political fiction invented for the benefit of human society, then I would like to shout at them, Oh! my friends! invent an instructive concept that is as indispensable to human society, and I wager that it is true. The human species is called to society just as each individual member is called to happiness. Everything that leads to this purpose in a general, secure, and constant way, was indisputably chosen and created by the wisest author of all things as a means to it. These flattering ideas give us extraordinarily much comfort, and show us



Moses Mendelssohn

The Granger Collection

the relation between Creator and mankind in the most invigorating light; therefore, I wish nothing more than to convince myself of the truth of these ideas. Yet, it would not be good if my uncertainty on this should last longer. No! I will soon be freed of it.

In this frame of mind, Simmias and Cebes, I turn to your objections. You, my friends, if you want to follow my counsel, look more to the truth than to Socrates. If you find that I remain loyal to the truth, then give me applause; where I do not, then resist without the least consideration so that I do not, from your too good opinion, deceive you and myself, and so part from you like a bee, which leaves its stinger behind.

Well, my friends! Pay attention and remind me if I omit something of your reasons or present something wrongly. Simmias admitted that our faculty of thought were necessarily either created for itself or produced from the composition and development of the body. Correct?

Right!

In the first case, if the soul is, namely, to be considered as an incorporeal being created for itself, then the further series of conclusions is sanctioned, through which we may prove that it does not cease with the body, and absolutely could not perish except through the all-powerful nod of its Creator. Is this admitted or do some among you hesitate?

We all agree willingly.

And that this all-benevolent Creator never destroys a work of his own hands; so far as I can recall, no one has ever doubted that.

No one.

But Simmias is frightened that our ability to perceive and think is possibly not a being created for itself, but rather, like harmony, health, or the life of plants and animals, the property of an artificially formed body; was it not this that concerned you?

Exactly that, my Socrates.

What we want to see then, he said, is whether that which we know of our soul, and can experience whenever we want, renders this concern impossible. What happens in the artificial formation or composition of things? Aren't certain things brought closer together that previously were distant from one another?

Of course.

They were previously in combination with other things, and now they are combined among themselves, and they form the components of the whole that we call *a compound thing*?

Good!

Through this combination of parts arises first of all, depending on the manner in which the components are together, a certain order that is more or less perfect.

Right!

So the powers and the activities of the components will be more or less modified through the composition, accordingly as they are sometimes obstructed by action and reaction, sometimes accelerated, and sometimes changed in their direction. Right?

So it seems.

The creator of such a composition sometimes attends solely to the spatial proximity of the parts, as for example, with the rational order and symmetry in architecture, where nothing other than the order of the spatially proximate parts comes into consideration; sometimes, in contrast, his purpose is directed toward the changed activity of the components and the power of the combined thing that results from that, as with some engines or machines; yes, and there are cases in which we clearly see that the artist directs his purpose toward both, equally toward the ordering of the parts and the modification of their activity.

That is perhaps somewhat seldom true of the human artist, Simmias said, but the Creator of nature seems at all times to have bound these purposes together in the most perfect way.

Excellent, Socrates replied. However, I will not further pursue this secondary thought. Only tell me this, my Simmias. Can a power in the whole be produced by a combination that does not have its basis in the power of the component parts?

How do you mean, Socrates?

If all the material parts, without action or resistance,

were lying together in an inert rest, would artificial ordering and transposition of those parts be able to bring forth in the whole any sort of motion, resistance, or, in general, power?

It seems not, answered Simmias; no active whole can be assembled from inactive parts.

Good! he said. We can thus consider this as a principle. But we also notice that harmony and symmetry can be found in the whole even though each part in itself does not have harmony or symmetry; how does this happen? No single sound is harmonious; and yet many together form a harmony. A well-proportioned building can consist of stones that have neither symmetry nor regularity. Why is it that I can here put together a harmonic whole from inharmonious parts, a highly regular whole from irregular parts?

Oh, replied Simmias, this distinction is obvious. Balance, harmony, regularity, order and so forth cannot be conceived without multiplicity. For they signify the relations of single impressions as they are represented to us, taken together and in comparison one with the other. Thus inherent in these ideas is a joining together, a comparison of manifold impressions that together make up a whole and cannot therefore be the result of the individual parts.

Continue, my dear Simmias! said Socrates with an inner pleasure at the subtlety of his friend. Also tell us this: If each single sound were to make no impression on the ear, would a harmony arise from many such sounds?

Impossible!

And also for symmetry: Every part must affect the eyes if that which we call symmetry is to come into existence from many such parts?

Necessarily.

We thus see here also that there can be no power in the whole for which the basis cannot be found in the parts, and that all the other features that do not flow from the properties of the elements and components, such as order, symmetry, and so forth, are to be sought only in the manner of composition. Are we convinced of this statement, my friend?

Completely.

It would seem, then, that there are two ways of considering any, even the most artificial combination of things: first, the sequence and order of the component parts in time or space, and then, the connection of the original powers and the manner in which they are expressed in

that compound thing. Through the ordering and the position of the parts, the actions of the simple powers will, of course, be limited, qualified, and changed, but there can never be a power or activity obtained whose origin is not to be sought in the fundamental parts. I linger here awhile on these subtle, fundamental considerations, my friends, like a runner who paces himself at different times in order to then hurry forward with increased drive, to swing round the goal and, if the gods grant him fortune and fame, to carry away the victory. Consider with me, Simmias, whether our faculty of sensing and thinking is not a being created for itself, or is it rather a property of things in combination: Must it not either, as with harmony and symmetry, come from a certain position and ordering of parts or, like the power of the compound thing, have its origin in the power of the component parts?

Of course, as we have seen, there is no third possibility conceivable.

Considering harmony, we saw, for example, that each individual sound is not harmonic and that the harmony consists merely in the comparing and contrasting of the different sounds. Right?

Correct!

There is something similar with the symmetry and regularity of a building: It consists in the combination and comparison of many individual, irregular parts.

That cannot be denied.

But is this combining and contrasting anything other than the action of our faculty for thought? And is it to be found anywhere in nature outside of the thinking being?

Simmias did not know what to answer here.

In unthinking nature, Socrates continued, individual sounds follow one another, individual stones are on and next to one another. But where is there harmony, symmetry, or regularity? If no thinking thing is added that brings together the manifold parts, places them side by side, and perceives in this comparison a harmony, then I do not know where to find it; or do you know, dear Simmias, how to seek its trace in mind-less nature?

I must acknowledge my inability, he answered, although I likewise perceive where this is going.

A happy omen! cried Socrates, when the opponent foresees his own downfall. Nevertheless, answer me without discouragement, my friend! For you will have no small part in the victory which we hope to obtain over you

yourself: Can the origin of a thing be explained from its own effects?

In no way.

Order, symmetry, harmony, regularity, in general, all relations that require a combination and comparison of manifolds, are effects of the faculty of thought. Without the addition of the thinking being, without comparing and contrasting the manifold parts, the most regular building is a mere pile of sand, and the voice of the nightingale is no more harmonious than the groaning of the night owl. Indeed, without this action, there is in nature no whole that consists of many parts that exist apart from one another, because each of these parts has its own being, and they must be contrasted with one another, compared, and considered in connection if they are to make up a whole. The faculty of thought, and this alone in all of nature, is able, through an internal activity, to make comparison, combination, and contrast real; therefore, the origin of all things in combination, of numbers, magnitude, symmetry, harmony, and so forth, insofar as they require a comparison and contrast, must be sought only in this faculty of thought. And since this is admitted, this faculty of thought itself, this cause of all comparison and contrast, cannot possibly spring from these its own work, cannot possibly consist in a relation, harmony, symmetry in a whole that is combined from independently existing parts, since all these things presuppose the effects and works of the thinking being and cannot be real except through that.

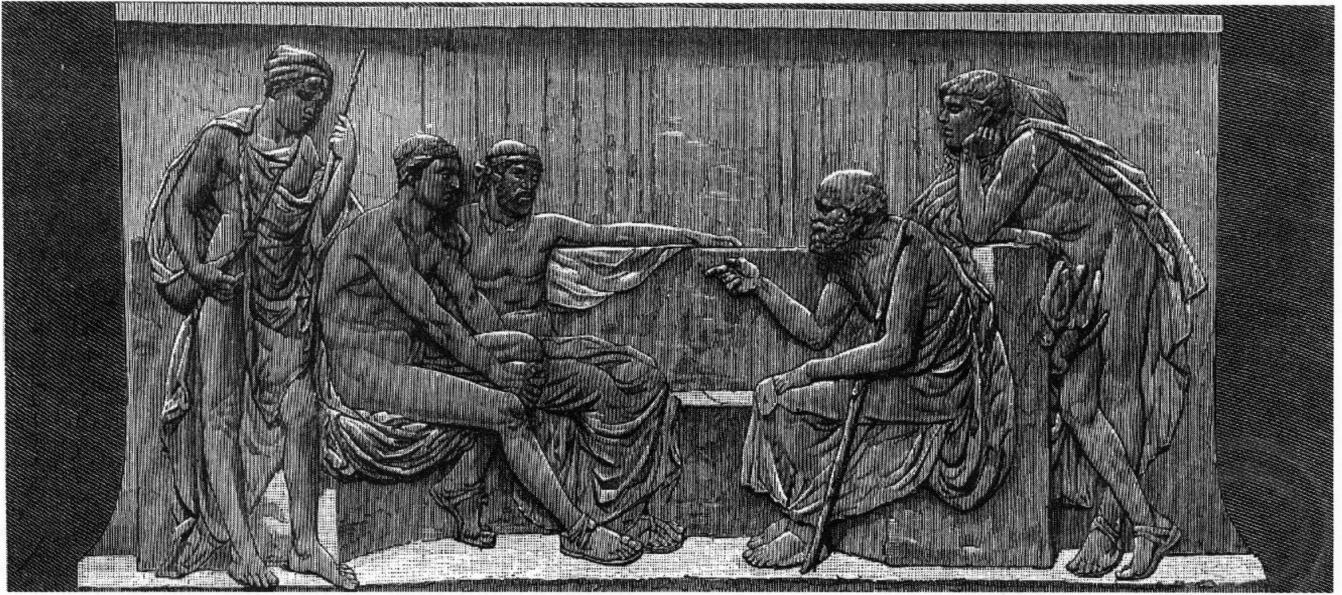
This is very clear, Simmias replied.

Since any whole that consists of parts that are external to one another, presupposes a combination and comparison of these parts, and this combination and comparison must be the work of a faculty of conception, I thus cannot place the origin of this faculty of conception in a whole that consists of such independent parts without allowing a thing to come into existence through its own operations. And not even the mythmakers, as far as I know, have ever dared such an absurdity. No one has placed the origin of a flute in the harmony of its tones or the origin of sunlight in the rainbow.

It seems, my dear Socrates, that the last vestiges of our doubt is now gone.

This deserves, however, particular consideration, he replied, if I do not tire your patience with these thorny investigations.

Venture always! cried Crito, to put patience to this test. You did not spare mine at all when I early today pressed



"Socrates teaching the people in the agora," wood engraving after a nineteenth century relief.

for the comments on a proposal—

—Nothing more of a topic, Socrates said, interrupting him, that is now reliably correct. We have here to investigate things that seem still subject to doubt. Of course, not that our ability to perceive and think is to be sought in the position, formation, order, and harmony of bodily components; this we have rejected as impossible, without moving too closely to either the omnipotence or the wisdom of God. But perhaps this faculty of thought is one of the powers of the compound thing, essentially different from the position and formation of the parts, and yet never found except in compound things? Is this not the single vestige of doubt that we challenge, my dear Simmias?

Of course!

Thus, we wish to take this case, Socrates continued, and assume that our soul is a power of a compound thing. We found that all power of compound things must proceed from the powers of the components. Must, therefore, according to our presupposition, the components not have powers from which the faculty for thought results in compound things?

By all means!

But the powers of these component parts, of what nature and constitution shall we assume them to be? Shall we suppose them to be similar or dissimilar to the activity of thought?

I do not properly understand the question, Simmias

replied.

A single syllable, Socrates said, has in common with the entire discourse that it is perceptible; but the entire discourse has a meaning, the syllable, none. Is that true?

Right!

While, thus, a mere single syllable excites a perceptible but meaningless sensation, there arises from their totality an understandable meaning that acts on our mind. Here, the activity of the whole results from powers of the parts that are dissimilar to it.

That is understandable.

Considering harmony, order, and beauty, we perceived something similar. The pleasure that they cause in the mind springs from the impressions of the components, none of which can cause either pleasure or displeasure.

Good!

There is another example of the activity of the whole being able to arise from the powers of the components that are dissimilar to it.

I concede it.

I do not know whether I do not perhaps go too far, my friend, but I can imagine that all activities of corporeal things could arise from such powers of the primordial stuff that are completely different from them. Colors, for example, can perhaps be resolved into such impressions that are not colored, and motion itself may arise from

original powers that are nothing like motion.

This would require a proof, Simmias said.

It is perhaps not necessary, for now, that we stop here, Socrates said. It is enough that I elucidate through examples what I understand by the words: the power of the whole could arise from the powers of the components that are dissimilar to it. Is that now clear?

Completely!

According to our presupposition, the powers of the components would themselves be either powers of conception, and thus similar to the power of the whole that arises from them, or of a completely different constitution and therefore dissimilar. Is there a third possibility?

Impossible!

But answer me this, my friend. If, from simple powers, a power different from them is produced in the compound thing, where can this difference be found? Except for the thinking being, the powers of the whole are nothing but the individual powers of the simple components as they change and limit one another through action and reaction. The dissimilarity is not found in this direction, and we must once again resort to the thinking being that conceives the powers united and taken together in a different way than it would think of them individually and not united. An example of this can be seen in colors, as well as harmony. Bring two different colors into so small a space that the eye cannot distinguish them; they will still be separate in nature and will remain isolated; but our senses will nevertheless constitute a third color from them that has nothing in common with them. There is a similar situation with taste and, if I am not mistaken, with all our feelings and sensations in general. They cannot, of course, become different in and for themselves through combination and connection than they are individually; but to the thinking being that cannot clearly separate them, they appear to be different than they would be without combination.

This can be granted, Simmias said.

Thus, can the thinking being have its origin in simple powers that do not think?

Impossible, since we saw previously that the capacity for thinking could not have its origin in a whole that consists of many parts.

Quite right! replied Socrates: The assembling of simple powers out of which a dissimilar power of the compound thing is to emerge presupposes a thinking being to which

they will appear differently in combination than they are; therefore, it is impossible that the thinking being should spring from the combination, from this connection. If therefore sensing and thinking, in a word, conception, is to be a power of compound things, mustn't the powers of the components be similar to the power of the whole, and consequently also be powers of conception?

How might it be otherwise since there can be no third possibility?

And the parts of these components, insofar as divisibility can extend, mustn't these also have the same powers of conception?

Incontestably! since every component is in turn a whole that consists of smaller parts, and our arguments can be continued until we come to the fundamental parts that are simple and do not consist of many parts.

Tell me, my dear Simmias! Do we not find in our soul an almost unlimited number of concepts, thoughts, inclinations, and passions that engage us constantly?

Certainly!

Where would these be found in the parts? Either dispersed, some in this one, some in that one, without ever being repeated; or is there at least one among them that would unify and embrace all these thoughts, desires, and aversions, insofar as they are to be found in the soul?

Necessarily one or the other, Simmias answered, and, as it seems to me, the first must be impossible since all conceptions and inclinations of our soul are so intimately joined and unified that they must necessarily be present somewhere undivided.

You rush at me with great strides, my dear Simmias! We would be able neither to remember, nor consider, nor compare, nor think, indeed, we would not even be the person we were a moment ago, if our concepts were distributed among many components and not found somewhere together in their most intimate connection. We must, therefore, at the very least assume a substance that unifies all concepts of the components, and could this substance be composed of parts?

Impossible, otherwise we will need again a composition and comparison by which a whole would be formed from the parts, and we come again to the place from which we started.

It will therefore be simple?

Necessarily.

Also unextended, for that which is extended is divisible and that which is divisible is not simple?

Right!

There is, therefore, in our body at least a single substance that is not extended, not compound, but is simple, that has a power of conception, and unifies all our concepts, desires, and inclinations in itself. What prevents us from calling this substance "soul"?

It is indifferent, my excellent friend, Simmias replied, what name we give it, and all the conclusions that you brought forth for the immortality of the thinking being, are now irrefutable.

Let us now consider this, Socrates interposed: If many such substances were together in a human body, indeed, if we want to consider all fundamental elements of our body as substances of this nature, would my reasons for immortality as a result lose any of their binding character? Or would such an assumption rather necessitate our allowing many rather than one immortal soul, and thus concede more than we required for our purpose? For each of these substances would, as we saw previously, encompass in itself the entire sum of all conceptions, wishes, and desires of the whole man and therefore, as concerns the extent of knowledge, their power could not be more limited than the power of the whole.

Impossible that it should be more limited.

And what about the clarity, truth, certainty, and life of knowledge? If many confused, defective, and uncertain concepts are put together, will a clear, complete, and definite concept be produced?

It seems not.

If a soul is not added that compares them and forms from those a complete knowledge through reflection and consideration, they will not in all eternity cease being many confused, deficient, and uncertain concepts.

Right!

The component parts of the human being have therefore concepts that are just as clear, just as true, just as complete, as the conceptions of the whole; from less clear, less true, etc., nothing can be brought forth through combination that has a greater degree of these perfections.

That is not to be denied.

But doesn't this mean that, instead of one rational spirit that we wish to place in each human body, we assume quite without difficulty a countless quantity of such?

Certainly!

And this quantity of thinking substances itself will not, probably, be all equally perfect; for that sort of useless multiplication does not occur in this well-ordered universe.

The all-highest perfection of its Creator, answered Simmias, allows us to assume that with confidence.

Thus, there will be one among the thinking substances, which we place in the human body, that is the most perfect among them, and it will have consequently the most clear and most enlightened concepts, correct?

Necessarily!

This simple substance that is not extended, possesses the capacity for conception, and is the most perfect among the thinking substances that dwell within me, and that apprehends all concepts of which I am conscious in myself, with the same clarity, truth, and certainty, is this not my soul?

Nothing other, my dear Socrates!

My dear Simmias, now is the time to take a look behind us at the path that we have covered. We presupposed that the faculty for thought is a property of compound things, and then, how wonderful, we bring from this very assumption, through a series of rational arguments, the diametrically opposed proposition, namely, that sensation and thought must necessarily be properties of the simple, not the compound. Is this not a sufficient proof that the former assumption is impossible, contradictory, and thus to be rejected?

No one could doubt this.

Extension and motion, continued Socrates, are able to resolve all that pertains to compound things; extension is the matter, and motion the source, from which change is produced. Both are revealed in the compound in a thousand manifold shapes, and represent in corporeal nature the infinite series of wonderful structures, from the smallest speck of solar dust to the glory of the heavenly spheres that is considered by poets to be the seat of the gods. All agree in their matter being extension and their activity, motion. But to experience perception, comparison, inferring, desiring, wanting, pleasure, and pain demands a completely different capacity from extension and motion, another fundamental matter, other sources of change. Here, a simple fundamental being must conceive much, must grasp together the independently existing, contrast that which exists in a manifold way, and compare that which is different. What is distributed in

the broad space of the corporeal world here is compressed together as in a point to make a whole, and what no longer exists is brought into comparison in the same present moment with that which is yet to be. Here I acknowledge neither extension nor color, neither rest nor motion, neither space nor time, but an internally active being that conceives extension and color, rest and motion, space and time, connects them, divides them, compares, chooses, and is capable of still thousands of capacities that have not the least thing in common with extension and motion. Pleasure and pain, desire and aversion, hope and fear, happiness and misery, are not changes of place of small bits of earthly dust. Modesty, human love, benevolence, the charms of friendship and the sublime feeling of piety are something more than the rush of blood and the pulsing of arteries that they are commonly accompanied by. Things of such a different kind, my dear Simmias, of such different properties, cannot be confused with one another without the most extreme carelessness.

I am completely satisfied, was Simmias' answer.

Yet another comment, the former replied, before I turn to you, my Cebes! The first thing that we know of the body and its properties, is that anything other than the way that it is presented to our senses?

Can you make that somewhat clearer, my dear Socrates!

Extension and motion are conceptions the thinking being forms of that which is real external to himself, correct?

Granted!

We would like to have the most reliable reasons to be assured that things external to us are not otherwise than they normally appear to us. But does not the conception itself always come first, and the assurance that its object is real follow later?

How is it otherwise possible? replied Simmias, since we can be informed of the existence of things external to us only through their impressions on us.

In the sequence of our knowledge, therefore, thinking being always comes first, and extended being follows; we first come to know that concepts, and consequently a conceiving being, are real, and from them we conclude the real existence of body and its properties. We can convince ourselves of this truth because body, as we saw before, forms no whole without the work of the thinking being, and motion itself, without holding together of the past with the present, would not be motion. We may thus consider the subject from whichever side we want, we always first encounter the soul and its works, and then

follows body and its changes. Conceiving always precedes the conceived.

This concept seems productive, my friend, said Cebes.

We can arrange the entire chain of being, Socrates continued, from the infinite to the smallest particle of dust, into three ranks. The first rank conceives, but cannot be conceived by others; this is the unique one, whose perfection transcends all finite concepts. Created spirits and souls make up the second rank: These conceive and can be conceived by others. The corporeal world is the third rank, which can only be conceived by others, but cannot conceive. The objects of this last rank, in the sequence of our knowledge as well as in existence itself, are external to us, and always the last in order since they always presupposed the reality of a conceiving being. Do we want to concede this?

We cannot do otherwise, said Simmias. After what came before, it all must be conceded.

And yet, continued Socrates, human opinion for the most part gets this order backwards. The first thing we believe we are assured of is body and its changes; this controls all our senses so much that we for a long time consider material existence to be the unique one, and everything else as properties of the same.

I am glad, Simmias said, that you yourself, as you so clearly give us to understand, went this perverted way yourself.

Of course, my dear Simmias, replied Socrates. The first opinions of all mortals are similar to one another. This is the Rhodes from which all begin their journey. They wander aimlessly in searching for the truth, up and down among the seas of opinion, until their reason and their reflection, the children of Jupiter, illuminate their sails, and proclaim a happy landing. Reason and reflection lead our soul from sensory impressions of the corporeal world back to its home, into the realm of thinking being, first to its equal, created being that, because of its finitude, can be thought and clearly conceived by others. From this, they lift it to the source of thinking and the thinkable, to that all-conceiving but by all inconceivable being of which we, to our consolation, know enough to realize that everything that is good, beautiful, and perfect in the corporeal world and the world of souls, had its reality from him and is preserved through his omnipotence. For our happiness in this and in the other life, we need no more than to be assured by this truth, touched, and penetrated by it in the deepest intimacy of our heart.

—translated by John Chambliss



EIRNS/Markus Normann

A New Elite to Shape History Schiller Institute Conference Debates 'History as Science'

Under the banner of the Schiller Institute and the Civil Rights Movement-Solidarity, nearly five hundred people assembled in Kiedrich, Germany, on Dec. 10-12, 1993, to discuss the ideas needed to address the world's grave crises. At the center of the discussion was the paper by U.S. physical economist and statesman Lyndon LaRouche titled "History as Science: America 2000" [SEE *Fidelio*, Vol. II, No. 3, Fall 1993].

The delegations to the conference came from literally around the world, including Ethiopia, Mexico, India, the Republic of China, and the Peoples Republic of China. While the United States and most countries of Eastern and Western Europe were amply represented, the biggest non-European delegations came from the former Soviet Union (Russia, Ukraine, Georgia, and Armenia) and from China.

The problem for discussion over the three days was presented by the keynote speech written for the occasion by political prisoner LaRouche: "We see a process of a world as a whole going to

hell; and a group of elites ruling these nations—at least in the majority—who seem utterly incapable of grasping the nature of the situation or understanding the effects of their policy."

The solution, LaRouche emphasized, is not just to provide the appropriate policies to the elites, who, along with the population, are increasingly incapable of understanding and implementing them. What is needed is to replace the axioms of the New Age with the axioms of scientific progress and reconstitute an elite based on such an axiomatic change. "We must renew, regenerate, and, to a large degree, replace, the present ruling elites over society, and to replace them with an emerging beneficent elite of philosophers who care for society and who seek to instill in nations and in individuals within those nations, the kind of conscience which is needed to guide nations to make those kinds of cooperative decisions, those changes in policy, which will enable us to escape from the New Dark Age now facing us."

Helga Zepp-LaRouche, the founder

Left: Audience at Institute Conference in Kiedrich, Germany. Below: Hungarian speaker Janos Denes. Facing page: top, Taiwanese speaker Gau-Jeng Ju; bottom, Hungarian speaker Tibor Kovacs.



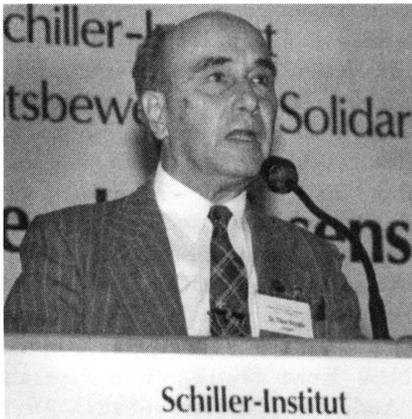
EIRNS/Markus Normann

of the Schiller Institute, concentrated her keynote presentation on the moral crisis facing Europe in particular, especially Europeans' tolerance of genocide in the Balkans and of the Roman fascist concept of setting up a global boundary between an "ungovernable" South and a fortress North. We are in a situation where eighty percent of the world's people live in a kind of hell, she said.

Restore Natural Law

The fundamental question is why there is no mass outcry against the collapse of the developing-sector nations and the Balkans, Zepp-LaRouche continued. This has to do with the fact that most people have lost the conception of natural law, and, most important, have capitulated to the pragmatic British ideology of the Enlightenment. Even Kant, who otherwise admired the British Empiricists, distanced himself from the British utilitarian degenerates, she pointed out.

The theme of changing the axioms on which mankind operates, was the implicit subject of a conference panel



devoted to exploring the basis for a productive ecumenical dialogue among the major monotheistic religions. The panel was led by Zepp-LaRouche, who argued that all major monotheistic religions are under attack, and that they must find a basis for collaboration in a manner like that which Cardinal Nicolaus of Cusa discovered in the fifteenth century [SEE p. 4, this issue].

Joining Zepp-LaRouche on this panel were the Rev. James Bevel, the American Civil Rights leader who ran as LaRouche's vice-presidential candidate, Civil Rights leader Amelia Robinson, and Muriel Mirak-Weissbach. Mirak-Weissbach focussed her remarks on the historical basis for potential collaboration among Judaism, Islam, and Christianity in the Middle East, with special emphasis on the Islamic Renaissance. Given the current targeting of Islam, and the current crisis in the Middle East peace talks, the urgency of making such a dialogue productive was obvious.

The conference then turned to discussion of the axioms now prevailing in

education and science, which threaten to destroy the ability of the next generation to maintain anything like civilized society.

Amelia Robinson discussed the education crisis in the United States. She described the current depredations of Outcome-Based Education (O.B.E.) as the natural outcome of the devaluation of children in today's society. Centered more on the assumptions required for a good education was the presentation of Gabriele Liebig, who reviewed the approach which nineteenth-century German educator Wilhelm von Humboldt took toward developing children as human beings who understood their place in human history, and their creative capacities as individuals.

The science presentations were especially polemical, presenting LaRouche's devastating critique of the dominant mathematical theories of cybernetics and John Von Neumann. The final panels of the conference dealt with the principles of Classical music, and the current crisis in the world's most populous nation, the Peoples Republic of China. The China panel was composed of presentations on G.W. Leibniz's approach to Chinese culture, and the economic projects required to develop that nation today. In his "History as Science" paper, LaRouche had identified China as the crucial case study for

changing the course of human history. The connection between achieving such success in China, and making political breakthroughs in the West, was dramatized by the final presentation—a videotape lecture by China expert and U.S. political prisoner Michael Billington. Billington is imprisoned in Virginia with a sentence of 77 years for political organizing.

What Must Be Done

The hours of discussion at the conference went back and forth between presentations of particular problems which various nations face, and presentations on what various of the participants had learned from LaRouche. Numerous individuals who had visited LaRouche, Billington, and other LaRouche-movement political prisoners in jail addressed the conference on what must be done.

The remarks by former Moscow City Councilman and human rights advocate Viktor Kuzin demonstrate the mood. What we see today, Kuzin said, is the rapprochement between the evil elites of East and West. They are on an offensive against the majorities of populations throughout the world in very similar ways. We cannot afford to be hopeless, but we must go out and educate new leaders to defeat this evil. Our strength must come from our own determination to do what has to be done.



Baritone Robert McFerrin and soprano Elizabeth Lyra Ross perform concert of German lieder, Italian arias of Verdi, and Afro-American spirituals at Institute conference.



EIRNS/Dianne Sare

Fisk University Concert 'Let Freedom Sing'

Metropolitan Opera baritone Robert McFerrin and musical Civil Rights leader Sylvia Olden Lee led a tribute to the dignity of man at Fisk University Memorial Chapel in Nashville, Tenn. on Nov. 10, on the fourth anniversary of the fall of the Berlin Wall, and in celebration of the birthday of Friedrich Schiller, the Poet of Freedom.

Featured in the program were the Nashville Boys' Choir and the Fisk Jubilee Singers. Dr. Reavis Mitchell, of the office of the President of Fisk, opened the concert by noting that Fisk was the first university founded after the Civil War to make the best Classical education available to African-Americans: "The program presented here tonight, is in that tradition of the Fisk Jubilee singers, and of those who had founded our University."

The Fisk Singers are named after the Old Testament *Jubilee*, the fiftieth year, in which all slaves were to be freed and all debts forgiven; in the United States, 1864 was known as the "Year of the Jubilee." By 1874, after traversing the U.S. and Europe, the group of eleven singers, eight of them ex-slaves, had raised the money to build the school.

The musical program began with the Nashville Boys' Choir performing "Come Bow Down and Worship Him." They were followed by the Fisk Jubilee Singers, directed by Delisse Hall, singing "Oh, Freedom," "Precious Lord," and "Wasn't That a Mighty Day?"

McFerrin, Olden Lee Perform

Then Robert McFerrin and Sylvia Olden Lee took the stage to perform from Schumann's *Dichterliebe*, "Cortegiani" from Verdi's *Rigoletto*, and a selection of Hall Johnson spirituals.

Both McFerrin and Olden Lee have ties to Fisk's Classical tradition. Mrs. Lee's great-grandfather, Nelson Merry, was the only Black founder of Fisk, which was set up by the American Missionary Society in 1866. A slave who gained his freedom, Merry also founded the Spruce Street Baptist Church in 1855, the major Black church in Nashville until the 1960's. Liz Merry, Mrs. Lee's grandmother, was one of the original Jubilee Singers. Mrs. Lee's mother, Sylvia Olden, was a piano student at Fisk and one of the finest sopranos of her day. Her father, J. Clarence, was a singer in the famous Fisk

The Fisk Jubilee Singers celebrate "the dignity of man."

Quartet, along with Marian Anderson's great teacher, tenor Roland Hayes.

Mrs. Lee became the first Black professional musician at the New York Metropolitan Opera, as vocal coach in 1954-56, hired just before Marian Anderson's 1955 debut, and was professor at the Curtis Institute of Music in Philadelphia for over twenty years. She is known as the teacher and inspiration for dozens of singers, including Kathleen Battle and Jessye Norman.

Baritone Robert McFerrin studied at Fisk University himself; there, after seeing Marian Anderson perform, he decided on the spot, with little knowledge of European music, that he wanted to become a singer of German *lieder* and Italian opera. After further studies at Chicago Musical College, he won the New York Metropolitan Opera's "Auditions of the Air" in 1953. After Anderson's ground-breaking debut as the first Black artist at the Metropolitan, McFerrin became the first African-American male artist at the Met the same year (1955), singing Amonasro in Verdi's *Aida*, and starring in *Rigoletto* and other roles.

Amelia Boynton

Civil Rights heroine Amelia Boynton Robinson was honored in Selma, Ala. on Nov. 14, at a ceremony held at the National Voting Rights Museum and Institute, which opened a month-long Living History Exhibit to celebrate her commitment to Civil Rights. Mrs. Robinson, who is now the vice-chairman of the Schiller Institute, was surrounded by seventy-five family members, friends, and associates during the afternoon program, which featured an exhibit organized around the theme "Footprints to Freedom."

The event recalled the nearly fifty years of fighting for justice for all Americans, which began in the 1930's,



LaRouche Associates Jailed

On Nov. 4, 1993, Judge Clifford Weckstein of the Roanoke (Va.) Circuit Court sent four associates of Lyndon LaRouche to prison for sentences of between 25 and 39 years: Donald Phau (25 years), Laurence Hecht (33 years), Paul Gallagher (34 years), and Anita Gallagher (39 years).

Weckstein acted only two days after Virginia voters had resoundingly rejected former Virginia Attorney General Mary Sue Terry's gubernatorial bid. As Attorney General, Terry had indicted, arrested, and prosecuted a number of associates of Lyndon LaRouche, including the above four. Her gubernatorial

campaign ran ads identifying a "public enemies" list that was headed by LaRouche and his associates.

The four political organizers had been tried and sentenced in Judge Weckstein's court in 1990 and 1991 on charges of "securities fraud," after the state of Virginia determined retroactively that political loans were "securities," making it a felony to solicit such loans without a broker's license.

After a three-hour sentence reduction hearing, Judge Weckstein ordered the Gallaghers, Hecht, and Phau to jail for decades—despite the fact that thirteen members of Virginia's General Assembly

Political prisoners (left to right) Laurence Hecht, Paul Gallagher, Anita Gallagher, and Donald Phau.

had written to the judge to advise him that the sentences were excessive.

Judge Weckstein is infamous for his correspondence, during the period the defendants faced trial in his courtroom, with the leadership of the Anti-Defamation League of B'nai B'rith (ADL). Judge Weckstein allowed prosecutor John Russell to introduce only three items of evidence at the hearing, including the introduction to a book published by Executive Intelligence Review, *The Ugly Truth About the ADL*, and a press release written by defendant Paul Gallagher, to argue that no mercy should be shown because the four defendants were members of a "cult."

Instead of rejecting Russell's improper tactic, Judge Weckstein rewarded him with the comment that he, Weckstein, was very familiar with the views of the defendants' organization on the ADL, having recently read two of their books on the subject cover to cover—*The Ugly Truth* and *Travesty*. The latter is the story of the 1992 kidnap conspiracy plot against LaRouche associate and du Pont heir Lewis du Pont Smith, in which plot the ADL played a role.

Robinson Honored in Selma

when Mrs. Robinson and her first husband, Samuel W. Boynton, organized sharecroppers to fight for fundamental human rights in poverty-stricken rural Alabama, a commitment which grew into her battle in the 1950's and 1960's, alongside Dr. Martin Luther King, Jr. and the Rev. James Bevel, for voting rights for African-Americans.

The program was moderated by Mrs. Robinson's grand-daughter, Carver Boynton, who is named after Dr. George Washington Carver of the Tuskegee Institute, a close friend of the Boynton family. Sam Walker, the museum's director, welcomed the crowd.

A declaration to honor Mrs.

Robinson enacted by the Selma City Council, the majority of whose members are white, named Nov. 14 Amelia Boynton Robinson Day and was read by Bruce Boynton. Helga Zepp-LaRouche, founder of the Schiller Institute internationally, sent a proclamation which was read at the event, announcing that the Schiller Institute will celebrate Nov. 14 every year as Amelia Boynton Robinson Day, in combination with annual events to honor Friedrich Schiller's birthday on Nov. 10. Zepp-LaRouche noted, "I know Schiller would be happy to hear that, given that Amelia is the perfect beautiful soul he was writing about."



Amelia Boynton Robinson

Maestro Junichi Hirokami and
President Yasukazu Uemurai,
Tokyo College of Music

‘Musical ideas
must be created within
the *individual* mind’

The Tokyo College of Music is the oldest private school dedicated to the preservation and development of Western Classical music in Japan. It was founded in 1907, toward the end of the Meiji Era, by Japanese private contributors, to bring the best ideas from the West.

The College’s Orchestra toured the U.S. in November for the second time only in its history, playing at Orchestra Hall, Chicago; debuting at Carnegie Hall, New York; and performing at Washington’s Kennedy Center.

The College has almost 2,000 students, including 200 in a special music kindergarten program, 300 students of the Tokyo College of Music High School (grades 9-12), and 1,500 university undergraduates. In April, 1993, the first class was formed of its new Graduate School.

Maestro Hirokami is a graduate of the College, and now conducts the Norrköping Symphony in Stockholm, Sweden. This interview with Maestro Hirokami and Tokyo College of Music president Yasukazu Uemura was conducted by Kathy Wolfe in Washington, D.C. on November 17, 1993.

Fidelio: Tokyo College of Music was founded at the end of the Meiji Era. What was the school’s mission?

Hirokami: The purpose was not for every student to become a professional musician, although of course some

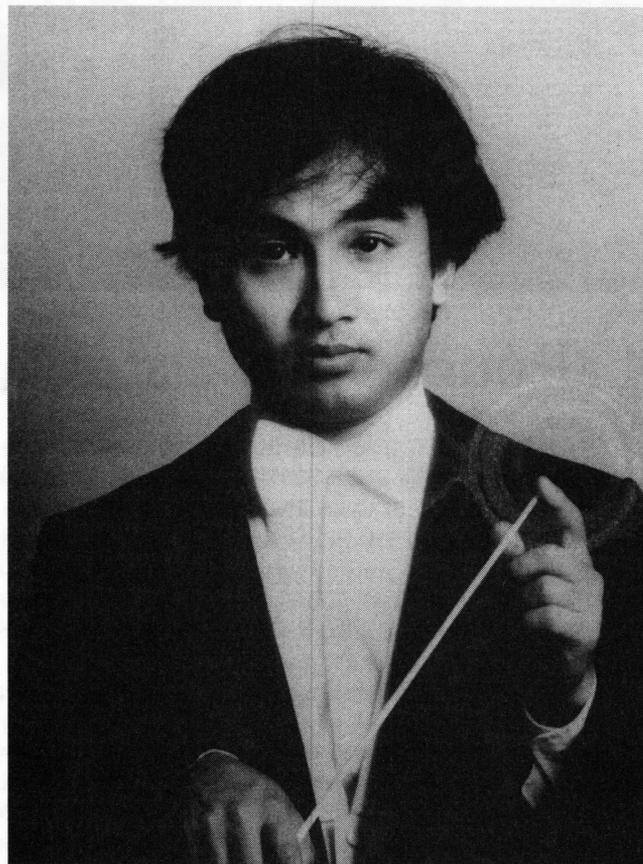
will become professionals. Others would become workers or housewives. However, by studying music, through this development of the heart, the personal strength of the individual, and the contribution one can make to society are advanced.

Fidelio: For the entire population, not just for the elites?

Hirokami: Yes, we want to give this basic education to everyone.

Uemura: Because this will raise the general level of culture of the population, the same idea you have with your magazine, in promoting Classical music in the U.S. By raising the level of culture of the individual, we are raising the level of their personal responsibility and morality, through a deeper understanding of music, and by this, the students will make an impression on the society, which raises the general level of morality of the society as a whole. Of course this is a high ideal; but this is what we’re at least trying to do.

Fidelio: One of the fathers of the Meiji



Maestro Junichi Hirokami

Courtesy of Terry Harrison Artists Management

Era was Yukichi Fukuzawa. The basis of Meiji philosophy, he once said, was that “I regard the human individual as the most sacred and responsible of all orderings on earth.” He said that the purpose of his work in trying to introduce Western culture into Japan was to raise up this idea. Was there a similar idea to Fukuzawa’s, behind the founding of your school?

Hirokami: Originally the idea I think was simply to train individual students in the music but, in fact, it turned out to be true that, while following the study of Western music, that that quality of individual thinking method and individual character is rapidly developed. Music must be thought about individually, ideas about it must be created within each individual mind.

Uemura: Yes, to build the character of the *individual* which is necessary for the

study of especially Western Classical music.

In this way something else Fukuzawa said will also come about: that through the College itself, this kind of training will also make the students ready to become citizens of the world, not just of Japan. One of the major purposes of our school of course is to help the students understand all aspects of Western culture. We have a number of

While following the study of Western Classical music, the quality of individual thinking method and individual character is rapidly developed. Through this development of the heart, the personal strength of the individual and the contribution one can make to society are advanced.

exchange programs, and the purpose is to make these young people feel that they are an important part of the world, not just of Japan.

Fidelio: Fukuzawa also said that what really interested him in the large canons which U.S. Commodore Perry had on the ships which he brought into Tokyo Harbor was not the guns *per se*, but the “philosophy behind the guns.” Is there a similar idea at your school, to try to study the philosophy behind what would enable Beethoven or Mozart to construct such great music?

Uemura: Yes, we do have that idea. It’s not just the technique of Western music that we’re after; the school and the teachers all want to teach the full background of the world’s music. Together with the music, we want students to pay attention to the entire history, language, and culture behind all the music of these countries. When Ryohei Nomoto, who built up the school after the war, was president, he brought in foreign professors, to teach for example, the religious background of Western Classical music, the Bible, the entire background, as well as English and all the other languages.

Fidelio: You have almost 2,000 students, including 200 in a special kindergarten music program. Why the gap between

kindergarten and senior high?

Uemura: In Japan, everyone can go to a public school very easily for free from first grade through junior high school, so we can’t compete. To get into the best high schools, the exam competition becomes more difficult, so then we get students, at the high school level, when they also have to begin to choose a major. And we do have, for students in grades 1-8, a Saturday “Academy,” like

Juilliard Prep, where students come every week.

Fidelio: Maestro, tell us about your own training.

Hirokami: My parents were against my becoming a musician, because a musician never knows about his future. I was an only child, born in 1958, and at that point all boys, especially an only child, had to become businessmen, that’s why Japan is now so strong. And it was also at that time that people in Japan first became interested in Western music at all. I studied piano from the age of six, not so seriously, but when I was in junior high school, I began talking about music, studying more seriously, and then entered Tokyo College of Music for my university.

Fidelio: But how did you decide just from playing piano, that you wanted to be a conductor?

Hirokami: From the beginning I was planning to be a conductor! Basically, I just really like to move my arms, I felt I had a natural talent to express things with my body. Of course then you must learn all the scores, the structure of all the music. But before that, if you feel something, that when you are listening to music, you can move your body to it in a certain way, then this indicates an important natur-

al talent for conducting.

Fidelio: Does that mean you also wanted to compose?

Hirokami: I tried that but I had no talent for it. Even though I’ve now become a conductor, I’m not so sure that was a good idea, either. The more my career advances, the more intense it becomes—now I have a European orchestra, I have a Japanese orchestra—I sometimes really feel that my talent is too small for all this. But you must never give up!

I think that’s the most important sentiment in music: Never give up! And that’s what I’ve been trying to show the students, when I conduct them now, especially for this tour: No matter how tired you are, no matter how nervous you are, just keep on going, do your best!

This is my U.S. debut. When we first got to Chicago, the students didn’t have the confidence to go on and play in Carnegie Hall—the Carnegie Hall debut was too big a dream. So I just kept telling them: Don’t give up! And I have to be an example for them. This is my first time in America, too, I told them, I’m in the same boat as you. And I had all this conducting to do, I had teaching to do, I was exhausted—but they all know my history, that I’m from the same background as they are, I had to show them how to do it.

And if they continue to remember this trip, it will influence the rest of their lives, and help each of them to have a better life. That’s really why, I think, we really made this tour, and these kids will remember this.

So this is exactly as Fukuzawa said, with all his ideas about how to improve the individual mind: because you have to do your best, to improve your mind. You can never give up—because music depends on every single individual’s best possible personal effort.

I also want to thank the American people and the personnel in Chicago, Carnegie Hall, and here at the Kennedy Center, for such a very warm welcome to the students and to me. Your hospitality was incredible for a student orchestra with an unknown young conductor, and we will never forget it.

'Good for the Eye, Good for the Mind': Jewels of the Bruges Renaissance

Jan Van Eyck "invented" oil painting; Petrus Christus was his pupil; and Hans Memling was, in the words of one highly influential art historian, the epitome of the "major minor master." So go the standard clichés on these three masters of the fifteenth-century Netherlandish Renaissance in art-history survey books.

The three men's work spans the grand epoch of the "Northern Renaissance" from the revolutionary era of the 1420's, when Jan Van Eyck's first altarpieces appeared, to the end of the century (Memling died in 1494). All three worked in Bruges, the economic hub of The Netherlands, with its many ties to Florence, both in commerce and banking, and in art and ideas—until the port silted up and Bruges declined in the sixteenth century.

This spring, Americans will be treated to three exhibits of these artists, between the nation's two foremost art museums—the Metropolitan Museum of Art in New York and the National Gallery in Washington. As National Gallery curator John Hand put it, the shows will be "good for the eye, and good for the mind."

Good for the Eye

Netherlandish painting in this era gives rich reward to patient contemplation. Some pictures were painted under a microscope with a single-hair brush. The loving depiction of particular textures and details goes hand in hand with an attitude about the material world which saw the hand of the Creator everywhere at work, and hidden layers of meaning in the most ephemeral phenomena.

The sheer joy expressed in imitating divine creation is typical of the decades which followed the Council of Florence, the event which drew together the whole Christian world to form a new unity on a higher level, just as nation-states were emerging with their unique contributions and conflicts. Bruges artists remind us especially of the personality of Cardinal Nicolaus of Cusa, the German-born prelate and scientist (1401-1464) whose life's work wove together the threads of Italian, German, and Classical Greek civilization. (The Netherlands must be considered as "German" culture in the broad sense.)

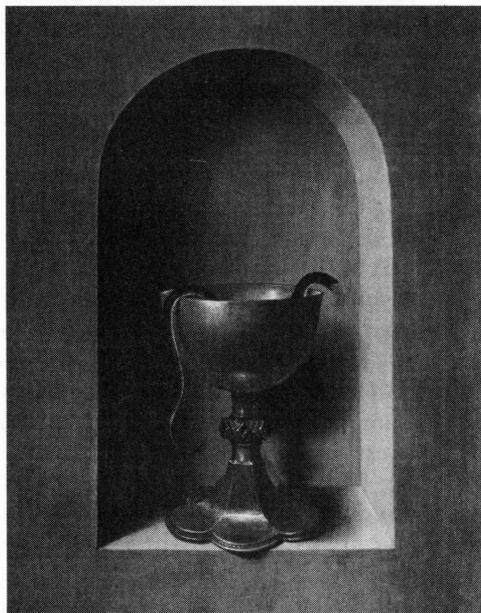
Van Eyck's fabulous "Annunciation" in a Gothic cathedral, to be exhibited to

the public in May again after a long absence in the conservation laboratory, will show that whatever his role was in developing the oil medium, he was a consummate master of his craft. This panel was once in the Czar's collections and came to the United States in 1931 when the famine-stricken Soviets sold many art treasures to American millionaires.

This "Annunciation" shows the moment of the Incarnation. The Virgin Mary, a queenly figure praying in the church interior, is approached by an equally regal Angel Gabriel. The words "Ave Maria" in gold letters issue from the divine messenger's lips, while Mary's reply—intended to be read in Heaven, and thus lettered upside down—is "Ecce Ancilla Dei."

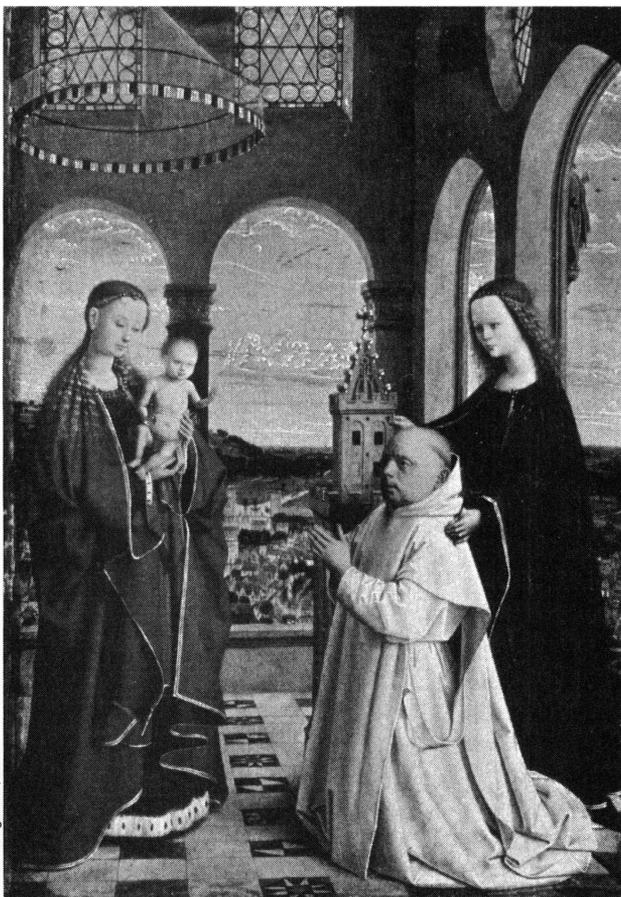
The painting is celebrated for its inclusion of the whole story of the Fall of Man and Old Testament events. These stories and symbols are depicted by Van Eyck as incised floor tiles, fictive statues, and stained-glass windows in the architectural setting.

The National Gallery's John Hand told *Fidelio* that he intends to display the newly restored picture with two manuscripts which are being borrowed for the occasion from the Getty Museum in Malibu and the Walters Gallery in Baltimore, respectively. These manuscripts will show that, while the choice of a cathedral interior for the Annunciation was unprecedented in the Netherlands around 1430, it had already been used in France a generation earlier, and that in turn, Van Eyck's inventive



Hans Memling, "The Chalice of St. John," reverse of "St. Veronica." Memling was a master of illusionistic effects.

National Gallery of Art, Washington, D.C.



Petrus Christus, "Virgin and Child with St. Barbara and Jan Vos (Exeter Madonna)," c. 1450. Vos was a leading figure in the monastic life of The Netherlands.

composition influenced manuscripts of the 1450's.

The "jewel-like" glow one expects from manuscript painting is replicated in Van Eyck's large panel, an indication of his exceptional skill in manipulating oil paints. New conservation techniques, including infrared reflectography, have allowed conservators and curators to see much more of Van Eyck's preparatory underdrawing.

Masters of Geometry

One reason that Petrus Christus has often been considered a Van Eyck disciple was his own prowess in producing that same richness. The "St. Eligius" on display in the Lehmann Wing of the Metropolitan Museum is a spectacular example [SEE inside back cover, this issue]. This saint, patron of goldsmiths, is shown at work in his shop as a young

couple comes to buy a ring. A concave mirror captures two other clients on the other side of the window—where the viewer stands.

Anyone who has read the dialogue in Nicolaus of Cusa's *Idiota de Mente*, written in the decade (1440's) when the "St. Eligius" was painted, will quickly connect the Cusan metaphor for the unique powers of the human intellect to this scene. Nicolaus demonstrates the human capacity for measurement, the discovery of order in the universe, by having one of his characters, the "Layman," point to marketplace operations of weighing gold and other commodities.

As early as 1441, Jan Van Eyck was mentioned in Italy

by a well-informed writer as the foremost master of geometry. Yet it was Petrus Christus, who was probably born in a village on today's Holland-Belgium border and became a citizen of Bruges in 1444 shortly after Van Eyck's death, who was the first Dutch or Flemish artist to have understood and applied the principles of one-point perspective. This discovery had been pioneered in Florence in the early fifteenth century.

The concave mirror, which had been famously used by Jan Van Eyck in his portrait of the Italian banker Giovanni Arnolfini and his bride, reveals a fascination with positive and negative curvature common to the most advanced artists in northern and southern Europe.

These great Bruges artists worked frequently for Italian patrons. Among the pictures the National Gallery will lend to the Metropolitan for the

Christus exhibit April 12-July 31, are two portraits by Christus of a donor and donatrix identified recently by scholar Joel Upton as members of two Genoese families, the Lomellini and Vivaldi. The Metropolitan already has on exhibit another such set of donor portraits, those of Tommaso Portinari and his wife, painted by another Netherlandish artist, Hans Memling. Portinari was the bank manager for the Medici, the leading Florentine family which had done much to encourage the early Renaissance in art.

Hans Memling

Hans Memling, like Jan Van Eyck and Petrus Christus before him, was an immigrant rather than a native of Bruges. Van Eyck had originated in the Rhine Valley. Memling was born near Cologne in Germany and became a citizen of Bruges in 1465.

The National Gallery will reunite two panel pictures of sacred subjects by Memling which have not been seen side-by-side since the 1930's. The Gallery's own "Veronica" is thought to have formed a diptych with the "St. John the Baptist" now in the Munich Alte Pinakotek. Such paintings would have been intended for private devotion among well-to-do families.

"Veronica" is the holy woman who tradition says wiped the face of Christ on his way to Calvary, producing the "true image" (*vera icon*) which is venerated as the likeness of the Savior. In Memling's little painting, she holds up the Sudarium with the image beautifully imprinted on it.

On the reverse, Memling depicted a chalice with a snake in it. This refers to the miracle of the chalice of St. John the Apostle, who according to an old tradition was handed a poisoned cup, and blessed it. The deadly poison turned into a snake and crawled away, thus saving the saint from death.

On the reverse of the "St. John the Baptist" panel is a complementary message: the skull which warns of the physical death which awaits us all. A Latin inscription warns viewers: "You too will die."

—Nora Hamerman

Is Natural Law 'Anachronistic'?

The *Political Writings of Francisco De Vitoria* (1485-1546) is a valuable addition to the Cambridge series of texts in the *History of Political Thought*. The importance of Vitoria is that he promulgated the concept of natural law developed by St. Thomas Aquinas (1225-74) and applied it to the policies of Spain in the New World in the period just prior to the Council of Trent, to which he was nominated by Charles V as a delegate, but was forced to refuse because of ill health.

In the book's Introduction, the translators report that Vitoria has been called the father of international law, but then disclaim such a notion as "anachronistic," since according to them the concept of an international law has its origins in the "modern" natural law theorists, Hugo Grotius and Samuel Pufendorf, who were antagonistic to the Thomist concept of natural law.

In reality, Grotius and Pufendorf deliberately divorced international law from natural law, as the latter had been defined by both St. Augustine and St. Thomas Aquinas. Vitoria, on the other hand, defined the law of nations either as natural law or as derived from natural law. Thus, rather than being "anachronistic," Vitoria's concept of international law is merely *unpopular*, in a world that has been shaped intellectually by the British Empire.

In fact, Vitoria's writings on law provide one of the most compelling arguments that can be made against the validity of the British-spawned so-called Black Legend, which portrays Spain and Spanish policy toward the New World as a criminal policy of genocide. Vitoria was not uncritical of abuses against the Indians; but he denounced reports of such butchery and pillage as being contrary to the natural law—which affirmed the Indians' equality before God—which he promulgated as

the basis for Spanish policy. From that standpoint, among the most important works of Vitoria contained in this volume are his lectures "On Law," "On Dietary Laws, or Self-Restraint," "On the American Indians," and "On the Law of War."

Man in the Image of God

The most important conception which Vitoria affirms as the basis of natural law is that all men, including the Indians, are created in the image of God. On this basis Vitoria argues explicitly against the Aristotelian contention that the Indians, being insufficiently rational to govern themselves, were slaves by nature and could therefore be justly enslaved by the Spaniards.

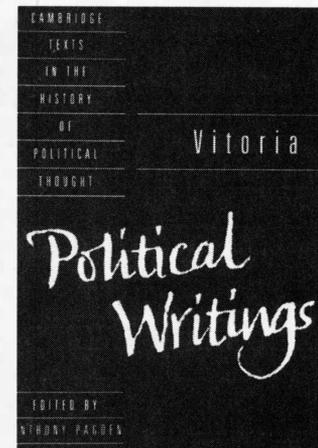
On the same grounds, Vitoria dismisses the following four justifications for brutalizing the Indians: that they are (1) sinners; (2) unbelievers; (3) madmen; or (4) insensate.

In answer to the first, he says that "man is the image of God by his inborn nature, that is by his rational powers. Hence he cannot lose his dominion by mortal sin."

To the second, he responds that according to Aquinas, unbelief does not cancel either natural or human law. "It is clear that it is not lawful to take away the possessions of Saracens, Jews, or other unbelievers on the grounds of their unbelief *per se*; to do so is theft or robbery, no less than it would be in the case of Christians."

To the third, he counters that the Indians' humanity cannot be violated on the grounds that they are irrational in the sense that they are children before the age of reason, because "the child is already formed in the image of God."

In answer to the fourth argument, he says that "they are not in point of fact madmen, but have judgment like other



Francisco De Vitoria:
Political Writings
 edited by Anthony Pagden
 and Jeremy Lawrance
 Cambridge University Press,
 New York, 1991
 399 pages, paperbound, \$18.95

men. This is self-evident, because they have some order in their affairs; they have properly organized cities, proper marriages, magistrates and overlords, laws, industries, and commerce, all of which require the use of reason. They likewise have a form of religion, and they correctly apprehend things which are evident to other men, which indicates the use of reason. Furthermore, 'God and nature never fail in the things necessary' for the majority of the species, and the chief attribute of man is reason; but the potential which is incapable of being realized in the act is in vain."

He concludes that if the Indians seem to us insensate and slow witted, "I put it down mainly to their evil and barbarous education."

Moreover, Vitoria agrees with St. Thomas Aquinas that forcible conversion to Christianity is evil. "The proof is that belief is a matter of will, but fear considerably diminishes the freedom of will. To come to the mysteries and sacraments of Christ merely out of servile fear would be sacrilege. . . . Hence the barbarians cannot be moved

by war to believe, but only to pretend that they believe and accept the Christian faith; and this is monstrous and sacrilegious."

Doctrine of Just War

Ultimately, then, according to Vitoria, the only basis in natural law for Spanish military policy in the New World is the *just war* doctrine developed by St. Augustine and elaborated by St. Thomas Aquinas. To this doctrine Vitoria adds several additional conditions implicit in the writings of the aforementioned: (1) "difference of religion cannot be a cause of just war"; (2) "enlargement of empire cannot be a cause of just war"; and (3) "the personal glory or convenience of the prince is not a cause of just war."

Vitoria also stipulates that the "sole and only just cause for waging war is when harm has been inflicted," but that "not every or any injury gives sufficient grounds for waging war." Moreover, Vitoria argues that "we must take account of the scale of injury inflicted" and that "punishments should be diminished in favor of mercy. This is a rule not only of human law, but also of natural and divine law."

He concludes with three rules of war: (1) "since princes have the authority to wage war, they should strive above all to avoid all provocations and causes of war"; (2) "once war has been declared for just causes, the prince should press his campaign not for the destruction of his opponents, but for the pursuit of the justice for which he fights and the

defense of his homeland, so that by fighting he may eventually establish peace and security"; and (3) "once the war has been fought and victory won, he must use his victory with moderation and Christian humility."

In a world in which genocide is being committed openly in Bosnia and elsewhere, and in which "Free Trade" and "Democracy" have been elevated to the status of false gods before whom humanity itself is sacrificed, a return to Vitoria's method of defining the law of nations from the standpoint of natural law is urgent. His notion of natural law is not an "anachronism," but rather, it is the notions that flow from British liberalism that are the anachronisms for mankind today.

—William F. Wertz, Jr.

A Limes To Separate Rich and Poor?

The Empire and the New Barbarians: North-South Rupture is the translated title of Jean-Christophe Rufin's book, which first appeared in 1991, and has recently been translated into German. The French author speaks out in a brutal and shocking manner about things which for years have only been discussed in whispers at meetings of the Trilateral Commission and the Ditchley Foundation under such rubrics as mass migration, emigration, and overpopulation: namely, that a new "*Limes*" is being constructed between North and South. Following the model of the ancient Roman *Limes*, whose ruins dot the landscape of southern Germany today, this "protective wall" is supposed to protect the North against barbarians "flooding in" from the poor regions of the South.

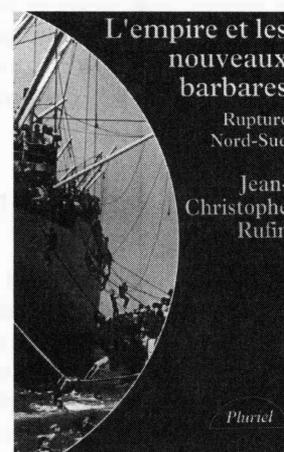
"For the first time, the myth of development has been burst apart, revealing a long-hidden reality: The North and South are developing in diametrically opposite directions. . . . These differences make it possible to draw the ideological line which separates the North from the new barbarians. . . . Today's new *Limes* between North and South marks the beginning of a new type of worldwide apartheid.

The idea of the *Limes* more or less explicitly contains the intent of delineating, and then protecting the North. But this will occur by means of forcing an abandonment of the South, which will be considered barbarians. This [abandonment] is already evident today in many regions. In demographic terms: The effort to keep the size of the world's population within bounds, will be supplanted by a hope that at least the masses in the South can be curbed; people will set their hopes on malthusian catastrophes which can regulate it."

- Under Malthusianism, Rufin includes its totalitarian forms, such as are practiced in China, as well as "natural" Malthusianism. He considers famines and plagues, such as cholera and AIDS, to be essential "correctives against population growth."

- As for economics: The universal idea of development will be supplanted by a selective policy according to which aid will only be granted to the buffer states located along the perimeter of the *Limes*, in order to guarantee their stability.

- As for politics: The universal foundation of democracy will be replaced by a new coming to terms with the totalitarian states of the Third World (China, Iran), insofar as they prove themselves



L'Empire et Les Nouveaux Barbares: Rupture Nord-Sud
by Jean-Christophe Rufin
Hachette-Pluriel, Paris, 1992
280 pages, paperbound, FF45

capable of contributing to regional stability, especially in regard to preventing massive flows of refugees.

- As for the military side: The direct and excessive influence of the big powers in wars in the Third World will be replaced by a more differentiated treatment which will depend on the conflict's local specifics. Conflicts breaking out directly on the *Limes*'s perimeter will provoke massive retaliation from the North, while the other conflicts will merely be a matter of indifference.

As far as the North is concerned, most of the developing countries are no

longer “strategically relevant.” The North will withdraw into itself. And the deeper the South descends into misery, the more blank areas will show up on the world map. Rufin speaks of *terrae incognitae*—strife-torn areas which will remain in a permanent state of turmoil, fragmentation, and diverse forms of despotic rule.

Along with the North’s withdrawal will come the erection of the new North-South *Limes*. It will extend from Mexico, over the Mediterranean trench, Central Asia, and the Mideast up to the Amur River, which forms the border between China and Siberia. According to the author, the first definite demarcation line is the border between Mexico and the United States.

While the South descends into chaos, and the greatest mass death in history occurs before the North’s unsympathetic eyes, the North (with the help of “compartmentalized deployment

plans”) will devote its military planning to effective “defense” against the masses flooding in from the South.

The South

The North is today issuing a call to arms against the nations of the South which, split up into ever smaller units, are descending into chaos and hopelessness. “A region is marked for descent into total chaos, when first the tourists stay away, and then the journalists pull out, and finally even the humanitarian organizations pull up their stakes,” the author states bluntly. As a consequence of this planned withdrawal and this policy of indifference, “today we are witnessing the extinction of entire cities, such as in Zaire, Angola, and Uganda. Where ten years ago you could find flourishing trade metropolises, now all you see is ghost towns taken over by weeds.”

Meanwhile, the South is seeing the

spread of a counter-ideology, oriented toward the worldview of the bloody Shining Path terrorist organization which takes elements of Marxist syncretism and indigenism, according to Rufin. Rufin speaks of the “archipelagos of poverty,” of the “bread plebeians” who are driven in the millions by hunger from the countryside into the city.

As depressing and shocking as Rufin’s analysis is, the author never once calls into question the basic assumptions underlying Malthusian geopolitics. The only real answer to the current economic and strategic crisis is economic development. If this development goes hand-in-hand with a cultural renaissance that would place man’s dignity, and the right of every person to development, at the center of all future strategic planning, then it will constitute our only hope for a better future.

—*Elisabeth Hellenbroich*

The Iron Lady and The Rustbucket Isle

The Russians, after her 1978 stop-over in Moscow, used to call her “The Iron Lady.” It won’t come as much of a surprise to our readers to find out, from her own account, how pleased she was to have been given such an epithet by the Communist propaganda apparatus. That reported pleasure is typical of the woman’s one-sidedness and vanity. After all, the toughness of iron is off-set by its brittleness. Its solidity, impervious to much, is sapped by exposure to air and the passage of time, and reduced to rusty flakes.

She doesn’t mention what the British intelligence weekly leak-sheet *Private Eye* used to call her “Attila the Hen,” nor how pleased she was to see that vision depicted by the cartoonist Gerald Scarfe. But, what can one expect?

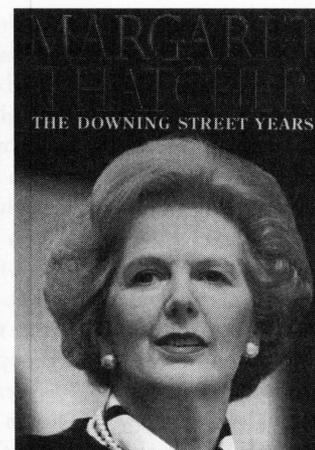
Of the two versions of Thatcher, British intelligence’s “Attila the Hen” does seem much the better, much more straightforward than the paired ambiguities of Iron and Lady. Here, after all, we have the hated Hun in his march against the bastions of Western civilization, and the Hen, pecking, scratching,

flapping, squawking, like the pink rabbit of the battery ad—it just keeps on going, even after it has lost its head.

There are features of the biography (written by Robin Harris, with help from the Heritage Foundation’s John O’Sullivan one gathers) which have been covered elsewhere: namely, Thatcher on Germany (cf. p. 790, “The German Problem And the Balance of Power”), where we find the core of the modern statement of the century-old geopolitical thesis, that Germany cannot dominate central Europe, and must not be permitted to ally with Russia. Here, she lets it all hang out, on behalf of the wretched ideology that brought two World Wars in its wake during the course of this century.

What She Did To Britain

But, let’s turn to what she did to poor, old Britain, out of a certain sadistic perverseness to repay those who hated Harold Wilson’s eerie “New Age” revival of Mussolini corporatism so much, they actually voted back in 1978 to put her into power. After all, hers



The Downing Street Years
by Margaret Thatcher
Harper Collins, New York, 1993
914 pages, hardbound, \$30.00

was the name for the 1980’s, wasn’t it, the decade of “Thatcherism”?

Her legacy is still coming to light. The half-million Britons who were advised to trade in company pension plans for privately funded schemes, and got ripped off by commission-chasing sales people are the latest. The mortgage payers, encouraged to buy houses in the name of wealth creation, ownership,

etc., who ended up with mortgage debts much bigger than the houses they were encouraged to buy were ever worth. That is forty percent of homeowners of a certain age group in south east England.

Results like this don't feature too prominently in *The Downing Street Years*. But what does is an abhorrence of the interrelated concepts on which Western society, in the form of the nation state, has been based since the Golden Renaissance, namely, productive labor and work. What would you expect from a kept Lady?

The abhorrence comes out like this: "public money was poured in, but two problems proved insoluble: over-capacity and union resistance to the closure of uneconomic pits." This is from her introductory remarks, laying the groundwork for the showdown with the mineworkers union in 1984-85, and can be found in the section "Mr. Scargill's Insurrection" on p. 340. Thatcher can't separate economy and money, in any context. They still have official unemployment of over three million, more than ten percent of their workforce, as a result of what she did.

She doesn't know anything about wealth creation. Nor, for the most part, do her countrymen. Although they do specialize in turning wealth created by others into monetized loot.

Think of some of the products most closely identified with the British, what their manufacturing sector produces, or used to produce. They prefer luxury-type goods, made in a relatively labor intensive way, like the "hand-made Rolls Royce," out of absurdly expensive materials, and aimed at the select few. The Concorde is a good example. A terrific plane, beautiful to see and hear, but completely uneconomic as a proposition, dead before it entered commercial service, because the Boeing 747 could carry three times the passengers at less than half the cost.

Quality products, you see, command a higher price. Higher prices mean greater revenues per unit of output, which translates into greater profits, and greater dividends for shareholders. And, economy of scale? Achieved by applying technology to cheapen the cost of production, and improve quality?

That's why the Rolls Royce corporation, as a whole, was nationalized and broken up. And why Jaguar is now part of the Ford Motor Company. And why the combination of companies now called British Aerospace, haven't made a full-size commercial airliner since the Concorde.

The British, you see, make "things"; they don't understand economy. (Like the wreckage they made of the Channel tunnel, or the crazy "tilt-train.") Not capital improvements, investments in new technology to upgrade labor skills, and enhance general productivity, but production of "things," with an eye to the bottom line. Money out against revenue in.

So, in her view, they had to stop wasting "public money" on unviable industries, and force those industries to stand on their own feet. Now, they either don't have them any more, or if they do, they're in such attenuated

shape, they're of no use to anyone.

In large measure this book is an account of battles fought on behalf of the deconstruction of Britain. How I smashed the steel industry and the steel workers union, how I smashed the auto industry and the engineering union, how I smashed the miners and the mine workers union.

Thatcher, however, wouldn't have been possible without her counter-parties in the British Labour Party and Trade Union movement, who, like her, didn't understand economy either.

What was lost in the wash was the existence of a country, which saw its institutions of government, at all levels, taken apart, its national political life reduced to a joke, and effective political power passed into the hands of the faceless crew called the "market."

And now she steps forward to say "I did it," me, Attila the Hen!

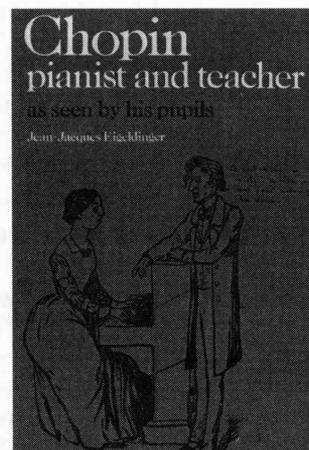
—Christopher White

Words of an Anti-Romantic Composer

Mr. Eigeldinger has limited the main text of his book, originally published in French in 1971, to direct quotations from Chopin's students and contemporaries. Those familiar with Lyndon LaRouche's breakthroughs in musical science, as elaborated in the Schiller Institute's *Manual on Tuning and Registration*, will find tremendous riches in them.

However, Mr. Eigeldinger's greatest weakness is revealed in his typical musicologist's ideology of a "Romantic Period," and subsequent "Modern Period." In fact, there never was a "Romantic Period." There was instead a battle between those who sought to uphold the Classical tradition of Bach, Mozart, and Beethoven, led by Schumann, Mendelssohn, Chopin, and Brahms; and the "Romantics" who sought to destroy it, led by Liszt, Wagner, and Berlioz.

Thus, the great promise of the book's cover (a cartoon of Chopin lecturing a student: "That's the style of playing of Liszt [sic]; one must never play that way when accompanying the voice!"), is never delivered.



Chopin: Pianist and Teacher, As Seen by His Pupils

by Jean-Jacques Eigeldinger
Cambridge University Press,
New York, 1986
324 pages, hardbound, \$89.95;
paperbound, \$24.95

Much of the book is devoted to biographies of the students, and their utilization of Chopin's unorthodox fingerings for his own pieces, that are of great, but specialized interest to pianists. Although the quotations are organized

according to subject matter, we will proceed according to the different levels of ideas presented.

Technique and Musical Ideas as One

People have tried out all kinds of methods of learning to play the piano, methods that are tedious and useless and have nothing to do with the study of the instrument. It's like learning for example, to walk on one's hands in order to go for a stroll. . . . It doesn't teach us how to play the *music* itself. . . . It's an abstract difficulty, a new genre of *acrobatics*.

—Frederic Chopin,
Projet de Méthode

Chopin forbade his students to practice more than three hours per day, and even then recommended they stop and read a book if ever they found themselves not thinking. Scales were to be performed slowly, emphasizing production of a beautiful singing tone rather than velocity.

Chopin strove to eliminate all stiffness and tension, to obtain a quality he termed "souplesse" in not only the hand and wrist, but "right to the tips of the toes."

Chopin himself wrote, in his unfinished *Projet de Méthode*: "For a long time we have been acting against nature by training our fingers to be all equally pow-

erful. As each finger is differently formed, it's better not to attempt to destroy the particular charm of each one's touch but on the contrary to develop it."

Bel Canto Vocalization of Poetry

Under his fingers each musical phrase sounded like song, and with such clarity that each note took the meaning of a syllable, each bar that of a word, each phrase that of a thought.

—Karol Mikuli,
pupil of Chopin

All the theory which Chopin taught to his pupils rested on this analogy between music and language. . . . In a musical phrase of something like eight measures the end of the eighth will generally mark the termination of the thought, that which, in language written or spoken, we should indicate by a full point; here we should make a slight pause and lower the voice. The secondary divisions of this phrase of eight measures . . . after each two or four measures, require shorter pauses . . . commas or semi-colons.

—Jan Kleczynski,
pupil of Chopin

Chopin himself shows the same insight into the origin of poetry as Lyndon LaRouche, and the poet Friedrich Schiller: "Thought is expressed through sounds. The indeter-

minate language of men is sound. Word is born of sound—sound before word." (from *Projet de Méthode*)

Chopin's usually banalized concept of *rubato* ("robbed time") as the left hand keeping strict time while the right hand may lengthen or shorten notes is clarified by himself: "The left hand is the conductor, it must not relent or bend."

Jan Kleczynski reports that Chopin's ideas on declamation were grounded on rules that guide vocalists, and that he exhorted his students to hear specific *bel canto* singers singing specific works. He constantly cited the tenor, Rubini, as a model for pianistic declamation and prized his autograph copy of Bellini's cavatina "Casta Diva."

Agapē, Not Eros

A higher level of idea exists which is nowhere organized as a conscious object of thought by the author, but can be found in the quotations.

Much is made of Chopin's supposed "femininity." Even his student Wilhelm von Lentz fell into this trap, when he claimed that Chopin's playing of Beethoven's Sonata, Op. 26 was a total revelation, and beautiful, but "feminine, where Beethoven is always a man."

While Chopin is not the equal of Beethoven, this supposed dichotomy of feminine-masculine is non-existent (the ludicrous Hollywood movie, "A Song To Remember" went so far as to claim that "manly" Polonaises reflect Chopin the Polish revolutionary, and the "feminine" Nocturnes, the admittedly unfortunate influence of Georges Sands). It simply doesn't work that way, and the book's treatment of Chopin's patriotism as something incidental, rather than essential, betrays the Romantic prejudice of locating *eros* as the wellspring of creativity.

Scientific breakthroughs in intelligible musical ideas are the source of the true agapic emotion, not the summoning of soap-opera style "deep feelings" by the performer or composer. On this score, Chopin is in a different universe than Liszt.

—Fred Haight

A MANUAL ON THE RUDIMENTS OF

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BOOK I:

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Human Singing Voice

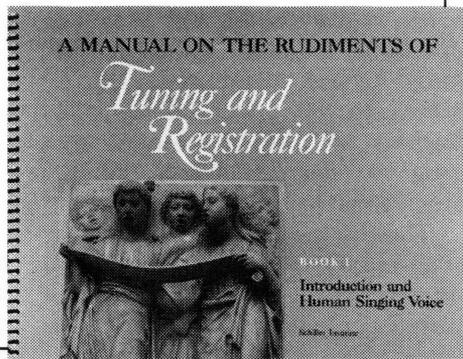
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Raphael's 'Liberation of St. Peter'

Liberation

Raphael's painting of the "Liberation of St. Peter" appears in the Vatican in the Stanza di Eliodoro, which includes three other fresco paintings, the "Expulsion of Heliodorus," the "Mass at Bolsena," and the "Encounter of Attila and Leo the Great." All four frescos were executed between 1512 and 1514, soon after Pope Julius II's return to Rome from his unsuccessful military defense of the papal estates in Romagna in 1511.

The vault above the Stanza di Eliodoro is divided into four triangles, on which are depicted biblical scenes depicting the intervention of God in the crucial moments of the history of the Patriarchs: Noah entering the Ark that will save his family from the Flood; Abraham about to sacrifice his son Isaac; Jacob's dream vision of God atop a ladder on which angels are ascending and descending; and Moses before the Burning Bush, whose vision of God incites him to the liberation of Israel.

All of these scenes show divine intervention in history on behalf of the people of God. In 1511, Julius was afflicted by a grave illness and was a virtual prisoner in the Vatican. He had seen the collapse of all his political initiatives. In the Church itself, cardinals favorable to the ambitions of the King of France had

defected and convened a schismatic Council in Pisa.

Thus, the "Liberation of St. Peter" was a celebration of the divine intervention in which Julius II believed and for which he fervently prayed, in order to give a different direction to the course of history, transforming the disaster surrounding him into victory. And, thus, we celebrate the recent release of Lyndon H. LaRouche, Jr. from prison on parole, and indicate our dedication to achieve not only the liberation of his associates imprisoned in the Commonwealth of Virginia, but also his and their full exoneration from the false, politically-motivated charges leveled against them.

And Discovery

But the "Liberation of St. Peter" is likewise appropriate to an issue of *Fidelio* which features a Socratic dialogue between LaRouche and representatives of the intelligentsia of Russia, culminating in "On LaRouche's Discovery," the author's account of the epistemological history of the scientific breakthrough which underlies his contributions to so many fields of human knowledge.

In the biblical account, Peter had been imprisoned by King Herod, who was persecuting the Christians. The night before Herod was to bring Peter to trial, in response to prayer by the church,

"the angel of the Lord stood by him and a light shone in the cell." And then the angel led Peter past the sleeping guards and out of the prison.

In Raphael's painting, we see in the incandescent light piercing the darkness of Peter's cell, a metaphor for the light of creative reason, which leads man out of darkness and toward true freedom. For, as LaRouche describes the development of the human race from its "bestial, baboon-like" beginnings to its technologically-determined potential of today, "this change is owed entirely to a quality which the Christian's Latin terms *imago Dei* and *capax Dei*, the Mosaic tradition of Genesis 1, that man, male and female alike, is cast in the image of God. This likeness is by virtue of that power of *creative reason* which is most simply illustrated by a revolutionary-axiomatic superseding of inferior by superior principles of scientific practice. In effect, mankind is the only super-species, the only species which can willfully self-develop itself to the physical-economic equivalent of a succession of successively higher species." Thus are the challenges of Liberation and Discovery united—through our struggle with history to bring ourselves, and the world, into coherence with the Love given us by God.

—Kenneth Kronberg,
William F. Wertz, Jr.



The Metropolitan Museum of Art, Robert Lehman Collection

Jewels of the Bruges Renaissance

This spring, Americans will be treated to three exhibits of "Northern Renaissance" artists Jan Van Eyck, Petrus Christus, and Hans Memling, between the nation's two foremost art museums—the Metropolitan Museum of Art in New York and the National Gallery in Washington. All three worked in Bruges, the economic hub of The Netherlands, with its many ties to Florence, both in commerce and banking, and in art and ideas. Their loving depiction of particular details goes hand in hand with an attitude toward the material world which saw the hand of the Creator everywhere at work, and hidden layers of meaning in the most ephemeral phenomena.

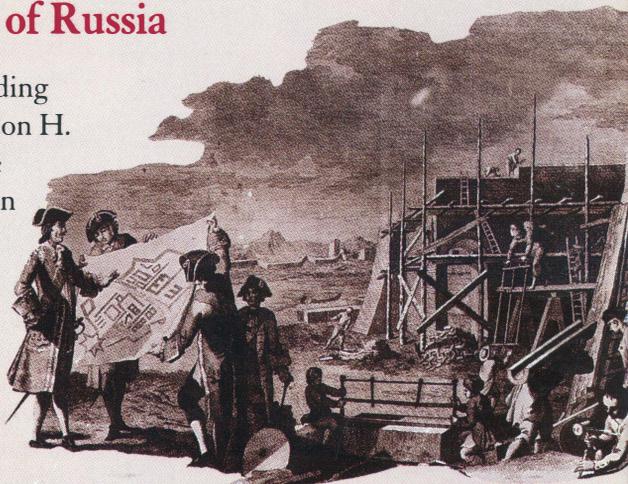
Left: "St. Eligius," oil painting by Petrus Christus (1449).

LaRouche in Dialogue with The Intelligentsia of Russia

In interviews with two leading Russian intellectuals, Lyndon H. LaRouche, Jr. discusses the crisis in Russia, its origins in Russian culture, its aggravation by the disastrous post-1989

Western policies of 'democracy' and 'free trade,' and its solution based on a policy of industrial and technological development. And in honor of his election as a corresponding member of the Moscow-based International Ecological Academy, LaRouche has authored a new essay,

'On LaRouche's Discovery,' written for immediate circulation amongst the intelligentsia of Russia, which makes explicit the philosophic genesis of his unique contribution to advancing the Leibnizian science of physical economy.



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Reuters/Bettmann



For a Dialogue Among the Great Monotheistic Religions

Schiller Institute founder Helga Zepp-LaRouche proposes that Christians, Muslims, and Jews focus on the principles which they hold in common, as these are expressed in the need to join forces to fight for the continued existence of all peoples. Nowhere is this more urgent than in today's Mideast peace process.

EIRNS/Philip Ulanovsky