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The 'Light' Of Cognitive Discovery

The quality which separates Classical from Romantic and other vulgar art, is the difference in the quality of emotion which is essential, respectively, to each. In vulgar art, the relevant emotion is, predominantly, sensual effects. In Classical art, it is the cognitive sensation of a 'light turning on in the mind.' So, in the Passions of J.S. Bach, Christ's Gethsemane decision, is the pivotal feature. In the *St. John Passion*, Bach underscores this by the musical apposition of the hateful cry for Christ's Crucifixion. In the famous Negro Spiritual, 'He Never Said a Mumblin' Word,' it is that 'light turning on in the mind' which is the typical referent, in Classical art, for the use of 'light,' whether in word, or painting. As in Shakespeare's *Othello*, *There is light, and, then, there is light.*

That 'light' of the act of cognitive discovery, or of recognition, is a special quality of passion. That passion is the quality of *movement* in Classical art, and in physical science. This quality of passion, associated with cognitive, rather than deductive-reductionist thinking, is the basis for the emotions described, in thinking about man's physical



Rembrandt van Rijn, 'Self-Portrait,' 1669.

Erich Lessing/Art Resource, NY

relationships to the universe, as *motion* and *force* in the universe. In all Classical artistic composition and related thought, this is apprehended as Classical inspiration, and, as the quality of Classical-artistic *action*. These notions of *inspiration for action*, are the basis for the idea of intention, as Kepler employs precisely that method of Analysis Situs which I have repeatedly referenced, to focus his own mind's cognitive powers on the matter of intention in the behavior of the orbiting planet and its solar system.

The 'sense-organ,' with which the sovereign powers of the individual mind perceive the manifestation of principle in that physical universe within which the individual person exists, is the 'organ' of sovereign powers of the individual's cognition. Just as we represent the sense-experience of sight or hearing with the organ by means of which such perceptions are made, we know the manifestations of principle with a different kind of 'sense-organ,' that of cognition. So, the images of universal physical principle are crafted by the mind according to the requirements of the organ through which such qualities of principle are perceived: the organ of sovereign powers of cognition.

So, for cognition of principle, the notions of 'light,' 'inspiration for action,' and 'sense of motion,' are the qualities expressed by our power to sense the actual universe which has prompted the mere shadows on the dimly-lit cavern wall of sense-perception.

—Lyndon H. LaRouche, Jr.
from 'A Philosophy for Victory: Can
We Change the Universe?'
February 11, 2001

FIDELIO

*"It is through beauty that one proceeds to freedom."
—Friedrich Schiller*

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Fidelio is dedicated to the promotion of a new Golden Renaissance based upon the concept of *agapē* or charity, as that is reflected in the creation of artistic beauty, the scientific mastery of the laws of the physical universe, and the practice of republican statecraft for the benefit of our fellow man.

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On the Cover

Leonardo da Vinci and Andrea del Verrocchio, detail, *The Baptism of Christ* (c.1470). The light of the mind, the intention of the curve. (Erich Lessing/Art Resource, NY)

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Revive the American Intellectual Tradition! Fight for the General Welfare!

Friedrich Schiller’s poem, “Longing,” so beautifully captures the world’s present predicament: We are oppressed in a gloomy hollow, and long to fly to a land eternally green and young. Our vision of that distant land refreshes us, but a raging torrent keeps us from it. A small skiff offers the means of escape, but it lacks a helmsman. No external gods are here to guarantee our rescue—salvation depends entirely upon our having sufficient faith and daring to take decisive action immediately, to seize the opportunity to rescue ourselves. Nor is Schiller advocating a faith which is blind and irrational. Rather, as for St. Augustine before him, Schiller’s faith, is to “think with assent,” to “consent to the truth.” Only a miracle of our own making can bear us to the longed-for wonderland.

As this issue of *Fidelio* goes to print, the collapse of the world financial system, uniquely forecast by Lyndon LaRouche, is in process. We face, not merely a recession, but rather a systemic breakdown crisis, worse than anything that has occurred in three centuries, or perhaps since the Fourteenth-century New Dark Ages.

As in Schiller’s poem, no helmsman is present. Two of the “Three Musketeers” (Greenspan, Rubin, and Summers) who allegedly saved civilization during the 1998 LTCM hedge-fund collapse, have retired, and the third, Fed Chairman Greenspan himself, has clearly lost his “magic” touch. In fact, Greenspan will forever be known as the architect of the biggest, burst speculative financial bubble in history.

The question is, Will we have the faith, and the daring, to join Lyndon LaRouche, to take decisive action, while the opportunity presents itself, to construct a new, just world economic order? Or, will the raging currents so daunt us, the rising torrents so horrify us, that we are rendered impotent?

We have arrived at a critical turning point in world history, where only a miracle based on reasoned action can save humanity from accelerating destruction. On a global scale, only three nations or national cultures are capable of taking responsibility for the condition of the world as a whole: the United States, the British Empire, and Russia. Given that the British are committed to the very free-trade and globalization policies responsible for the financial crisis to begin with, the only possibility for

overcoming the current collapse, is to forge an alliance between the U.S. and Russia—in partnership with Europe and the nations

EDITORIAL

of Asia—centered on the creation of a New Bretton Woods system, and the construction of the Eurasian Land-Bridge.

Were such a community of principle established, long-term agreements among the U.S., Russia, Western Europe, China, Japan, Korea, and Southeast Asia would be possible, which would offer the prospect of genuine economic growth in a post-financial-collapse world. What we require, in essence, is to emulate on a global scale, the intent of the policies implemented in the U.S. by President Franklin D. Roosevelt during 1933-45, and to finally put in place internationally the anti-colonialist policies which he intended at the end of World War II.

To accomplish this, however, means developing a political movement in the U.S. under LaRouche’s leadership, with sufficient political bite to force the Bush administration to abandon the policies it has so far adopted. U.S. citizens must stop acting like slaves, fighting for a few pitiful concessions from the slave master. They must fight instead for their lives, their children’s lives, their future, and for the dignity of all humanity.

Key to this fight, is the fundamental principle expressed in the Preamble to the U.S. Constitution, the commitment “to promote the General Welfare,” otherwise known as the common good. As you will read in the News Department of this issue, the two action issues around which the fight for the General Welfare is now being waged in the U.S. by the LaRouche movement, are the fight to prevent the shutdown of D.C. General Hospital in the nation’s capital, and the fight to re-regulate the energy industry. Both are life-and-death issues.

In this light, we conclude with remarks made by Lyndon LaRouche at a Washington, D.C. seminar on March 21.

* * *

“The United States cannot live with Enron. It cannot live with that kind of deregulation of energy. We cannot live with the destruction of our health-care system. We cannot live with the destruction of our infrastructure. We must put it back into order. And, the present administration must simply give up its lunatic ideas.

“Our job is to get people to do what they must do: To think and act like citizens, who have the right given to them, by the Constitution, to act in their own vital interests, for the best interests of the nation.

“We have to have a sense of *national mission*. The idea of the United States cooperating with Western Europe, with Eurasia as a whole, to restart the world economy; the idea of taking that on, as a 25-year, long-term credit mission, rebuilding a new financial system, like the old Bretton Woods system.

“If we can get that concept across, among enough Americans and others, I think the citizens of the United States will return to the American intellectual tradition which Franklin Roosevelt invoked, in his election campaign of 1932. Let’s revive the American intellectual tradition, in which our nation was

Longing

Ah! from out this gloomy hollow,
By the chilling mists oppressed,
Could I find a path to follow,
Ah! I’d feel myself so bless’d!
Yonder glimpse I hilled dominions,
Young and green eternally!
Had I wings, oh, had I pinions,
Thither to the hills I’d fly.

Dulcet concords hear I ringing,
Strains of sweet celestial calm,
And the tranquil breeze is bringing
Me its sweetly fragrant balm,
Golden fruits I see there glowing,
Bobbing ’midst the leaf and root,
And the flowers yonder growing
Will not be the winter’s loot.

Ah, it must be fine to wander
In eternal sunshine free,
And the air in highlands yonder,
How refreshing must it be!
Yet the current’s raging daunts me,
Which between doth madly roll,
And the torrent rises sharply,
To the horror of my soul.

I perceive a small boat swaying,
Ah! but look! no helmsman’s there.
Quickly in and no delaying,
For her sails are live with air.
Now you must have faith and daring,
For the gods accord no bond,
Only a wonder can you carry
To the lovely wonderland.

—Friedrich Schiller

founded, in cooperation with other nations of the world, and let’s rebuild this planet. And, let the American citizens stop thinking of themselves as a poor person, here or there, and think of themselves instead as citizens of a nation which is doing that; let him or her take pride in being a citizen of such a nation with such a commitment. If we can mobilize that, we can save this nation, we can save this world, from one horrible mess.”

The Cult of Artificial Intelligence vs. The Creativity of The Human Mind

by Gabriele Liebig



The “information society” has engulfed us, and the exaggerated promises of its proponents have given way to a gloomy reality full of contradictions. No one will seriously argue against the advantages of ever-more-powerful computer, communications, and multimedia technologies. But, for most people, the two basic features of the information society—globalization, with its attendant destruction of jobs and lowering of living standards, as well as global financial speculation—have disastrous effects. On one level, the Internet is useful; but, it is also an indigestible mountain of garbage. A flood of virtual-reality titillation and simulation clouds perceptions of reality, and the epidemic of video games comes on top of the other plagues.

Reactions have been reported here and there to such problems: in Germany, *Maschinenstürmerei*, or “club the machines to smithereens.” The perpetrators unjustifiably unleashed against home computers, their rage over some of the effects of the information society. But, the computers are certainly not to blame, when the much-lauded information society proves to be a flawed construct. The information society is *not* the same thing as the prevalence of computers. Computers are useful machines, which relieve human beings of having to do many tasks, or make the tasks easier to do, so that people can clear their heads for other, more important, work. The information society, however, is nothing but an ideology—or, in the computer age, one might say it

is a “program,” and a flawed one at that. In the interest of human beings, we ought to find out quickly where the bugs really are in this ideology.

One particularly big bug is the cult of “Artificial Intelligence,” abbreviated AI, which bases itself on the claim that the human mind functions basically no differently than a computer. Massachusetts Institute of Technology Professor Marvin Minsky, one of the fathers of AI, does not see its purpose as developing “larger, more useful, but less profound practical systems”¹—he leaves that up to the “computer sciences”—but in the proliferation of the AI ideology itself, which may be summarized in the following thesis: Since the human mind functions basically like a computer, it is possible not only to simulate human thinking to an ever greater degree of approximation by means of increasingly improved programs, but also ultimately to replace the human brain entirely with artificial, very complicated networked systems. But, since the demonstration models of so-called “neuronal networks” available today are not very impressive, Minsky and his followers fall back increasingly on science fiction to make their ideas seem plausible.

In 1992, Minsky published *The Turing Option* with Harry Harrison.² The action of this out-of-print novel is described in an Internet review:

‘What is science for, if not for people?’



Illustrations by Alan Yue

sage, which Minsky obviously thinks is most appropriate for his purposes (and his target audience). It is only a science fiction cloak for what the author otherwise writes in objective publications. In the 1994 paper, “Will Robots Inherit the Earth?,” under the subheading “Replacement of the Brain,” Minsky wrote:

In 2023, Brian Delaney, under contract to Megalobe, has just achieved a breakthrough in AI when someone engineers the theft of his research and murders all involved. Brian alone survives, but a bullet has destroyed much of his brain. Using Brian’s own research, neurosurgeon Erin Snaresbrook grafts an advanced computer into his brain, reintegrating neural pathways, allowing access to memories to the age of 14. Brian learns to interface with the CPU, and downloaded databases become part of his memory. While the army keeps him a virtual prisoner for security and searches for the perps, the new, improved Brian creates a new, improved AI, named Sven. Meanwhile, a criminological AI named Dick Tracy begins to uncover clues to the raid and, once integrated with Sven, sports a new product—a robot gardener—that’s programmed with Brian’s AI code. Brian finds a clue to his would-be murderer’s whereabouts in the programming and engineers his and Sven’s escape. Travelling to his native Ireland, Brian then discovers that he can interface directly with Sven. Having found the criminal mastermind, he reveals Sven’s existence to the world—and goes back to work a free man.³

This is by no means an abreaction with ironical intent, but the announcement of his ideological mes-

Suppose that we wanted to copy a machine, such as a brain, that contained a trillion components. Today we could not do such a thing (even were we equipped with the necessary knowledge) if we had to build each component separately. However, if we had a million construction machines that could each build a thousand parts per second, our task would take only minutes. In the decades to come, new fabrication machines will make this possible. Most present-day manufacturing is based on shaping bulk materials. In contrast, the field called “nanotechnology” aims to build materials and machinery by placing each atom and molecule precisely where we want it.⁴

In the same paper, he refers, with praise, to the book *Mind-Children* of his student, Hans P. Moravec, in which the transfer of a human brain into a computer is described as if in a horror film: A person lies with an opened skull and a still-conscious brain on the operating table. A robot-surgeon generates a simulation program of the upper layer of the brain with a sensor hand and loads it into a computer. Then he removes the layer of the brain mechanically and repeats the process for the next layer. When he reaches the stem of the brain, the body dies, the “juice” drained away. The brain is now in the

computer, and the person has become “immortal.”⁵

That is the unappetizing result of an ideology which is as anti-human as it is anti-progress. Just like science-fiction writer and British Intelligence service chief H.G. Wells at the beginning of the Twentieth century, Minsky goes to the extreme to make his point. It is a mad idea: in all seriousness, Minsky proclaims the end of mankind as the goal of science, which then reduces science to absurdity. What is science for, if not for people? Whoever denies that, also denies science.

The reason Minsky does that, becomes clear if we recall what else the Massachusetts Institute of Technology has cooked up. It was at M.I.T. at the beginning of the 1970's that the Meadows and Forrester “First Report of the Club of Rome,” *The Limits of Growth*, took shape—the opening salvo in an anti-development and anti-progress movement which, with its Malthusian cry for “population control,” explicitly aimed to reduce the world's population by several billion people.

Minsky's own writings contain a slew of Malthusian remarks, e.g., in “Alienable Rights,” where two computer-alien in outer-space, an “Apprentice” and a “Surveyor,” talk about human beings. The Surveyor announces that human beings will soon “replace themselves with machines—or destroy themselves completely.” Shocked, the Apprentice says: “What a tragic waste that would be!” But the Surveyor objects: “Not when you consider the alternative. All machine civilizations like ours have learned to know and fear the exponential spread of uncontrolled self-reproduction.”⁶

Minsky drives the absurd logic of the Club of Rome one step further: It is not only the uncontrolled reproduction of human individuals which he sees as a threat, but also the all-too-numerous emergence of genes. In a 1982 paper, Minsky argues at first correctly, that—in principle—every normal human being has the capacity to become a genius. If, instead of playing in a sandbox, children learned better ways to learn, “then that might lead to exponential learning growth! Each better way to learn to learn would lead to better ways to learn—and this could magnify itself into an awesome, qualitative change. Thus, ‘creativity’ of the first order could be simply the consequence of little childhood accidents.”

In 1982, Minsky still thought this logical conclusion was “sad.” His earlier works are far less malicious than the later ones of the 1990's, such as the conversation of the aliens in 1992, where, at the end, the Surveyor admonishes the Apprentice to switch to self-destruction immediately after he is hit by the transfer-beam, “in order not to pollute this world with any redundant intelligence.” If there is a whiff of malicious irony here, it is not directed against the AI ideology.

The alleged threat to mankind represented by—to

invoke Gotthold Lessing's expression for genius—too many “self-thinking minds”? Isn't this the key to answering the question of why our children's education becomes worse after each “reform,” why a youth culture such as the present one is imposed on them, and why, now, even their opportunity for independent play is stolen by video games?

The Inner Life of a Computer

Before we turn to the question of what a computer can or cannot do, we have to understand what it is they do, period. They execute commands: simple or complicated commands, depending on the characteristics of the computer and the program. But, the interesting issue is what all computers and their programs have in common, a general theory of computers. Alan Turing developed such a theory, in fact, and Roger Penrose explained it quite nicely in his book, *The Emperor's New Mind*, in 1989.⁷

Every computer can be reduced to the mathematically idealized original model of a “Turing Machine,” which can be imagined to be an infinitely long band which runs through a button one can press. The band represents the theoretically infinitely large storage capacity of the computer, and then the input. It is divided into square boxes which represent the internal states of the machine. There is a number in each box, either 0 or 1, because a machine only understands “switch-on” or “switch-off.” That is why all numbers have to be translated for the computer into 0 or 1.

Leibniz invented this code for binary numbers:

decimal	binary	powers
0	0	
1	1	
2	10	2 ¹
3	11	
4	100	2 ²
5	101	
6	110	
7	111	
8	1000	2 ³
etc.		

While the decimal numbers only get an additional 0 at the right in the case of an increased power of 10, that happens with binary numbers at each power of 2; for example, in order to translate the number 13 into a binary number, it has to be resolved into powers of 2:

$$13 = 8 + 4 + 1 = 2^3 + 2^2 + 1,$$

and then added in binary form,

$$1000 + 100 + 1 = 1101.$$

So, to write the number 13 in binary code, we say 1101. This sort of “translation” is one of the things that computers are better suited to do than the human mind, since, to do it, the mind has to act as if it were a computer.

Not only do all numbers have to be translated for the computer into 0 and 1. Everything else has to be similarly translated; for example, for the commands which the computer is expected to execute. Every command gets a number, and this number is coded in binary code. Or, in a word processor, each letter of the alphabet is assigned a number, which is expressed in arrays of 0 and 1.

Of course, the Turing Machine needs a program, which can be imagined, for the sake of simplicity, in the form of a second band with boxes, which contain either 0 or 1. The commands which the computer is supposed to carry out, are on the band. Let’s assume that the band stops beneath the button for a certain box (internal state). Then the new command says (a) how many boxes the band (or the head) should move in which direction, and (b) whether it should leave the 0 or 1 which it finds there as it is, or should alter it. Many other commands of the same form may follow, until finally a coded signal is issued which says that the operation is finished.

What would a Turing Machine do, which is programmed to add the number 1 to a given number? The machine should calculate the result of $13 + 1$. The binary code for 13 was 1101. The program for the Turing Machine now has to:

1. Find the end of 1101 (which is marked by a series of 0’s at the end);
2. Look for the last 0 in 1101 (from the right), and replace it with 1; and
3. Replace all of the following 1’s to the right with 0’s.

If we do the work of the Turing Machine, we get the result 1110. Translated back into the decimal system, we have zero 1’s, one 2, one 4, and one 8. So, $0 + 2 + 4 + 8 = 14$. The machine did its work, since $13 + 1 = 14$. Such “machine procedures” seem to be unusually intricate for such simple calculations, and we notice that the human mind is not suited to such formal operations. If we have large numbers, the computer’s procedures come in quite handy. To demonstrate this tangibly, Penrose uses numbers whose binary form extends over several lines, over several pages of the book, which no human mind can digest. But that is no problem for the computer: It stubbornly carries out its commands, and coughs up a logical result.

Computers are not good only for computing. In principle, they can carry out all procedures which can be formulated as a succession of certain rules and numbered steps. The more powerful the hardware of the computer,

and the faster the speed at which the computing operations can be executed, the more complicated and longer the chain of commands in a program can be.

That is where the AI sector makes its move. The first mistake in thinking here, which traces back to Bertrand Russell, and which was to have disastrous consequences for education in mathematics all over the world, was the proclamation that the formulation of any procedure as a logical succession of steps, was the highest intellectual accomplishment, and logical formalism was crowned as a new world religion.⁸ One concrete result was the “New Mathematics” in schools.

It is now passé, and it actually met with a harsh critic in Marvin Minsky. With reference to “set theory” according to Russell and Whitehead, Minsky wrote in the 1982 “Why People Think Computers Can’t,” that this set theory had proven to be “too complicated for practical, common sense, use.” “The basic goal was to find perfect definitions for ordinary words and ideas. . . . Educators once actually tried to make children use this theory of sets, in the ‘New Mathematics’ movement of the 1960’s; it only further set apart those who liked mathematics from those who dreaded it.”⁹

Minsky recognized that Russell’s approach was a dead end, and that formal logic was a very bad model for human thinking. The aim of AI research was ultimately not the reeducation of the population to purely formal thinking (Minsky may have thought), but rather the development of programs which simulate human thinking with a “bag of clever tricks,” so that computers might one day pass the “Turing Test.” That is where the second mistake in thinking comes in.

The Trick with the Turing Test

The “Turing Test” is a hypothetical situation in which a jury consisting of human beings poses questions to a computer or several humans, for purposes of comparison, over an unlimited time and about an unlimited spectrum of subjects. The computer program passes the Turing Test if the jury cannot discern whether the answers were given by a computer or by a human being. If the computer answers all the questions like a human being who has to think about the answers, then the computer can be said to “think,” according to Turing.

Of course, such an unlimited Turing Test has never been carried out, and no computer program has succeeded in passing it, even in approximation. But since it was first proposed, AI researchers have time and again orchestrated severely limited Turing Tests, wherein the attempt is made to persuade control persons of the supposedly human capabilities of their clever computer programs. The art of deception is primary, and the tricks are

largely based on imitations of stereotypical, predictable, or pathological behavior of people.

Joseph Weizenbaum, a sharp critic of AI, developed the program ELIZA, in which the computer simulates a psychiatrist who speaks with human patients. The computer-psychiatrist speaks stereotyped sentences, into which it incorporates segments of the sentences uttered by the patient, and no one would ever want to sit across the table from such a psychiatrist. There also exists a simulation program of a paranoid-schizophrenic, PARRY, which frequently saves itself in tense situations, when it can't answer certain questions, by erupting: "Don't you know the mafia is out to get me?!" The AI people soon saw through this method: The more pathological and reductionist the simulated dialogue behavior, the simpler it was to generate the required program. Students joked that it would be easiest to write a program simulating a catatonic, who would answer each question with a monotone hum.

Nevertheless, similar experiments are constantly being cooked up. Raymond Kurzweil wrote a computer program which can supposedly write poems. In the book, *The Age of Intelligent Machines*,¹⁰ he orchestrates a kind of Turing Test with the reader. The reader is supposed to look at 28 "poem" segments and ascertain which were written by the "Kurzweil Cybernetic Poet" and which by a human poet. It's not that hard to guess at the result: Since the human poems are as incoherent as Kurzweil's word-sequence model poems, it turns out to be impossible to distinguish the computer-poems from the human ones. Try it yourself! Which of the following "poems" came out of a computer?

1. "At six I cannot pray:
pray for the lover
through narrow streets!
and pray to fly
apart from the virgin in her winter-dark bed."
2. "What for ocean coasts granite islands before my ribs
And forest thrushes, which call my daughter
Through the fog."

You may find the solution in the notes.¹¹

Instead of having computers approximating the potentials of human thinking, the level of the human activity which the computer is to simulate, is kept as low as possible. From the standpoint of AI research which seriously works on intelligence, this is a dead end. Fortunately, there are people who were less fixated on pseudo-Turing Tests, and who wanted to come up with better solutions to certain problems. Minsky himself reports on such a thing—a program by the name of STUDENT from the 1960's, which was able to

solve algebra problems like the following:

Bill's father's uncle is twice as old as Bill's father. Two years from now Bill's father will be three times as old as Bill. The sum of their ages is 92.

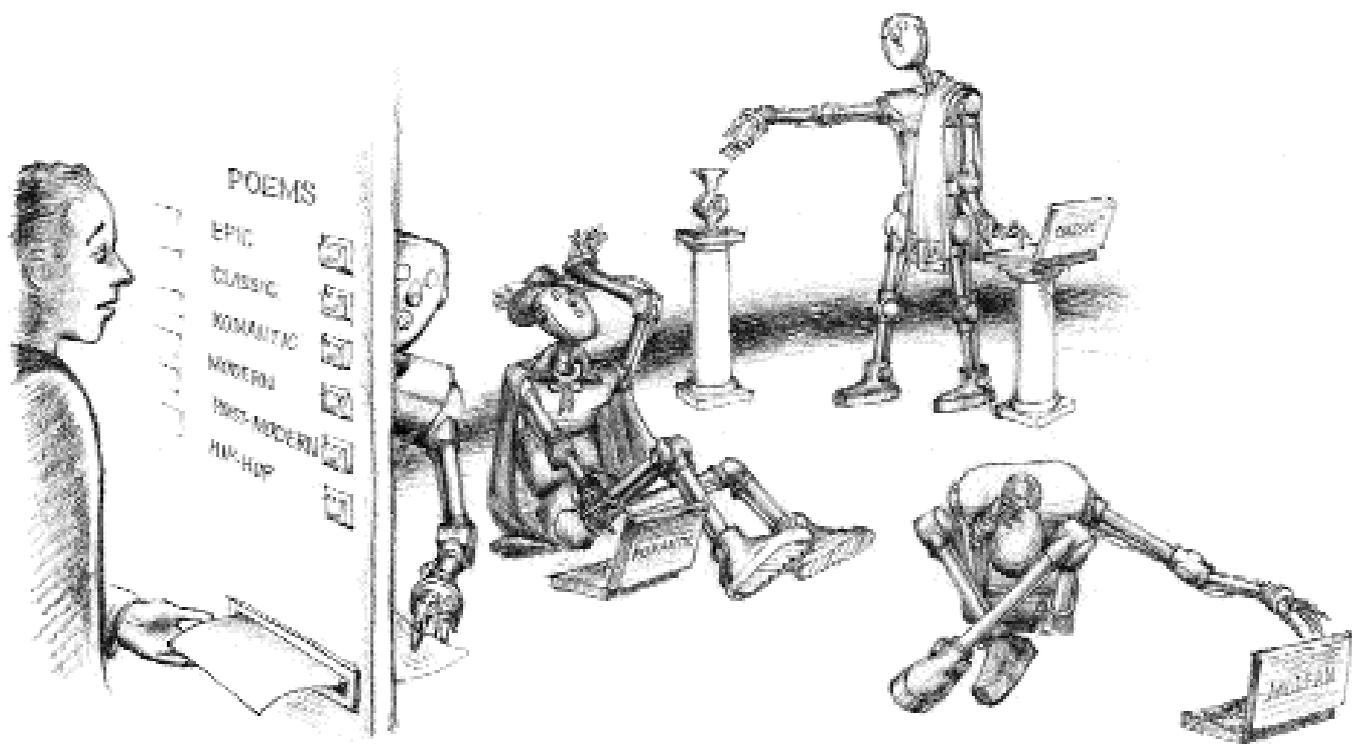
Find Bill's age.

Most students find these problems much harder than just solving the formal equations of high school algebra. That's just cook-book stuff—but to solve the informal word-problems, you have to figure out what equations to solve and, to do that, you must understand what the words and sentences mean. Did STUDENT understand? It used a lot of tricks. It was programmed to guess that "is" usually means "equals." It didn't even try to figure out what "Bill's father's uncle" means—it only noticed that this phrase resembles "Bill's father." It didn't know that "age" and "old" refer to time, but it took them to represent numbers to be put in equations. With a couple of hundred such word-trick facts, STUDENT sometimes managed to get the right answers—if it didn't get caught in misunderstandings, which can easily happen even to a non-computer in the case of the above word-problem.

But it is easy to see that, with the aid of a multiplicity of such programmed "meanings," passably useful computer programs can be developed for certain special purposes. We can try, for example, with translation programs, to exclude the mistakes made by a too-literal translation, by programming in ever more special meanings of certain word-contexts. That makes the programs increasingly specialized, so they are useful only for very specific kinds of texts or authors. Such authors would also have to write a lot, so that it would pay to generate such a program.

But no one would want to question the progress which is possible in this area. Such progress is becoming a daily tool for an increasing number of people. Instead of questioning the progress, the point is to hunt down the fundamental mistake in thinking, which is responsible for the AI cult and its horror-movie form, as described above.

Minsky was not always this nasty old man who wanted to shut off mankind. His writings in 1981-82, available on the Internet, differ significantly from his morbid science-fiction of the '90's, yet the seed of degeneracy, the deliberately fatal error, is evident in the earlier works as well. In the 1980's, however, Minsky was clearly concerned to find young, academic followers for this AI theories, and that concern is reflected in the way he approached the subject. And, although he argues as the counterpole of Lyndon LaRouche, as far as the "science of the human mind" is concerned,¹² he sometimes discusses similar topics, such as the function of humor, or the characteristics of Classical music.



In his 1981 “Jokes and the Logic of the Cognitive Unconscious,”¹³ Minsky argues the view that jokes have a very serious function in exposing the absurdity of wrong ways of thinking. The absurdity of formal-logical thinking is one of these, including the inherent paradoxes. You only need say, “The proposition I now utter, is a lie,” and an unsolvable paradox arises. If the proposition is a lie, you are telling the truth. But if it is true, it is a lie, etc.

Formal logic, as is well known, gets into severe problems with statements that are self-referential, or what are called, technically, “sets which contain themselves.” Penrose cites the Russellean paradox of the “set of all sets which does not contain itself as an element,” which can be illustrated with the following example. There are two catalogues in a library: one lists all books which refer to themselves in some way, and the other list contains all books with do not mention themselves. In which catalogue should the second catalogue be listed?¹⁴ In every case, this leads to an insoluble paradox.

That is why Minsky correctly doubts “that anything very closely resembling formal logic could be a good model for human reasoning. . . . In particular, I doubt that any logic that prohibits self-reference can be adequate for psychology: No mind can have enough power—without the power to think about Thinking itself.”

Minsky correctly takes the Aristotelian syllogism as an example of the flaw of deductive logic, where a conclusion is derived from two premises with a common mid-

dle term. It works if $A = B$, and $B = C$, so that $A = C$; but it no longer works if the middle term is “almost the same,” and the series of comparisons becomes “too long”: 10 is almost 11, 11 is almost 12, . . . 99 is almost 100. We could impose the rule on the computer (and on ourselves), that the series must not be “too long,” in such syllogistic statements, but even Minsky thinks this is not a very elegant solution.¹⁵

The main problem with the syllogism, the reason it so often leads to absurd results, is the middle term, which only *apparently connects* the premises A and B, and the fact that it takes the place of a real causal connection between them. But Turing’s thesis of a Turing Test is just such a syllogism: The human being solves certain problems by thinking. If a computer solves the same problems, then it is thinking. The middle term is “solve the problem.” Just what it is which a human being or a computer *does* when it solves a problem, is not an issue for Turing, nor an issue when Minsky claims that the tricks we can train a computer to perform are not fundamentally different from the tricks of the human mind.

The fundamental mistake of the AI cult lies in this syllogistic absurdity. It is the sort of mistake to which LaRouche repeatedly refers, and which is to be met with not only in the AI cult, but also in the prevalent methods of science on the whole. Nicolaus of Cusa long ago criticized the mistake of claiming that a circle is the same as a polygon with an ever larger number of corners inscribed

in a circle, and then denying that underlying a circle (as a product of rotation) is a *generative principle* fundamentally different from what gives rise to a similar-looking polygon (an array of triangles). We can use the calculation of the surface area of the polygon for the practical purpose of measuring the surface area of the circle, but we cannot then pretend that there is no ontological difference, and that the circle is not a form which belongs to a higher mathematical species. A plastic flower differs from a real one for the same reason; so too a virtual car design from a real prototype, or Minsky's "nanotechnical" computer system from a living human mind.

Denial of the Idea

What is initially intriguing about Minsky, at least in his early writings, is his interest in human thinking. Much too little is known to science about how ideas come about in the human mind. AI research is necessary to gain clarity about the processes of thought, Minsky claims. He does appeal for a thorough study of human creative thinking in order to derive new approaches for new program-tricks. We might object that such knowledge about creative thinking processes would best be used by applying the knowledge to the better education of as many people as possible. It is interesting, nevertheless, (a) that Minsky makes creative thinking a subject of investigation at all, and (b) that, and how, he fails to understand the fundamental issue. This leads us to the basic contradiction in the AI ideology, its implicit bug, which is the basis of its distasteful anti-human attitude.

In 1981, Minsky wrote a paper on "Music, Mind, and Meaning," which provides some clinical material for examination.¹⁶ First of all, there is the usual mistake, and one made not only by AI people: that is, he grabs onto the products of creative processes and thinks that their "pattern" constitutes an explanation of the mental processes out of which they emerged. The pattern of Classical music which Minsky praises as worthy of imitation, e.g., for pedagogical purposes, is that of the sonata form—exposition, development, recapitulation—, and he speaks of the sonata as a learning machine. Or he derives the conclusion, from the correct observation that a person has not understood something, if it is understood only in one way, and that it is already creative if one looks at the same concept in different areas, drawing analogies and the like. So he wants to build that into computer programs.¹⁷

But that is not all there is to it. It is necessary to know that Minsky plays the piano, and loves the music of Bach, Mozart, and Beethoven—and he is credible when he makes such claims. When he was young, he also made technical inventions, and so he has certain insights into

his own creative activity. For our purposes, what is especially interesting are his observations on the great works of Classical music, such as Beethoven's Fifth Symphony. In contrast to banal background music, which just diverts the listener from the effort of thinking and which is intended to transpose a person into a state as far removed as possible from reality, Minsky sees in great Classical compositions a process of successive, but unexpected changes. The human mind is so formed, that it perceives what has changed and does not attend to what remains self-identical. Up to that point, we can agree with him. The mistake arises with Minsky's desire to see the composition only from the standpoint of the listener, and not from the standpoint of the composer.

The mistake becomes especially clear in the following passage, although it sounds promising at the beginning:

Music, too, immerses us in seemingly stable worlds! How can this be, when there is so little of it present at each moment? I will try to explain this by (1) arguing that hearing music is like viewing scenery and (2) by asserting that when we hear good music our minds react in very much the same way they do when we see things. And make no mistake: I meant to say "good" music! This little theory is not meant to work for any senseless bag of musical tricks, but only for those certain kinds of music that, in their cultural times and places, command attention and approval. . . . To see the problem in a slightly different way, consider cinema. Contrast a novice's clumsy patched and pasted reels of film with those that transport us to other worlds so artfully composed that our own worlds seem shoddy and malformed. What "hides the seams" to make great films so much less than the sum of their parts—so that we do not see them as mere sequences of scenes? What makes us feel that we are there and part of it, when we are in fact immobile in our chairs, helpless to deflect an atom of the projected pattern's predetermined destiny? I will follow this idea a little further, then try to explain why good music is both more and less than sequences of notes.

That's the decisive issue, so one might think: At the moment that one hears only a tiny part of a composition, and then a whole composition arises in the mind? The only answer to that is what one reads frequently in LaRouche's writing: A successful performance of a musical work of art has the effect which Minsky describes, if the performer plays what is "between the notes," and if the performer has the *unitary* idea of the composition as a whole present to his mind before playing the first note, which idea then encompasses the entire succession of ideas into one.

This is precisely where Minsky breaks apart, because this is just what he does not want to see, and so he there-

fore vehemently rejects it: no, the seamless, undivided whole of composition or film, is only an “illusion” according to him, and the film really just consists of sequences of flickering particular pictures; music consists of assemblies of notes (which means he nullifies, by sleight of hand, the difference he emphasized between good and bad films). And, one’s own soul is just as much an illusion, Minsky adds:

We are all convinced that somewhere in each person struts a single, central self: atomic and indivisible. (And secretly we hope that it is also indestructible.)

I believe, instead, that inside each mind work many different agents.¹⁸

This is the thesis that Minsky developed in his 1992 book, *The Society of Mind*.¹⁹ Many different agents are also at work in people who listen to music, and each of them analyzes different aspects of the music, he claims.

Why Minsky wants to know nothing of the soul, any more than he wants to concede a uniting, creative idea, is something he betrays in “Why People Think Computers Can’t”:

Our standard concept of the self is that deep inside each mind resides a special, central “self” that does the real mental work for us. . . . The trouble is, we cannot build good theories of the mind that way. In every field, as Scientists we’re always forced to recognize that what we see as single things—like rocks or clouds, or even minds—must sometimes be described as made of other kinds of things. We’ll have to understand that Self, itself, is not a single thing.

In other words, no computer program can be derived from the unity of the soul and the unity of the creative idea, and *therefore* Minsky must deny both so vehemently. But whoever denies the basic characteristic of creative human thinking, cannot understand it. The AI cult will inhibit, and not advance, the science of the human mind—to put it politely.

What Is an Invention?

According to Minsky in his “Jokes and the Logic of the Cognitive Unconscious,” a general theory of unique discoveries is utterly superfluous, because the barest minimum of such discoveries have been made by a single human being. It is much more important, he claims, to find out how new ideas come about in “common sense” thinking. Of course, in all of the mentioned Internet papers, he mentions only one single concrete example of such a “new idea.”

For contrast, I want to provide an example of such an idea; it is simple and, although it is taken from mathe-

matics, everyone can understand how its “common sense” includes operations with natural numbers. I am talking about the well-known anecdote about Carl Friedrich Gauss. Gauss’s teacher set up a problem to keep the class calm and busy for a while, by telling them to add up the numbers from 1 to 100. Before the other students had even begun to attack the boring task (today, even a pocket-calculator would not be of much help, because as soon as you type a wrong number, you have to begin all over again), the little Gauss was already finished. He brought his teacher a slip of paper upon which he had written just one number, the solution.

Did the little boy have a computer in his head? How did he figure it out so fast? That is an exciting question, especially for people who are not familiar with the problem, because they should think about it themselves before just grabbing onto Gauss’s solution. The solution begins with what is initially a vague idea: What would happen if, instead of beginning by adding $1 + 2 + 3 + \dots +$, we begin with the two numbers at the extremes of the series, 1 and 100? And what happens if we then move, on each end of the series, one number inward, i.e., to 2 and 99? Aha! Both add up to 101, so that there is a continuing symmetry. Fine: so let’s move to the center: $50 + 51$. Now we are almost done. We only have to calculate 101 fifty times, i.e., 5,050.

That was the number Gauss wrote on the slip of paper, and nothing else. While the other students laboriously added one number to another like little computers, Gauss had found the solution by generating a new idea. His teacher was speechless. We can use the same example to show how we can generate a general rule for calculation, an algorithm for the addition of all natural numbers from 1 to n . We simply describe what we have already done in the concrete example: multiplication of half of n with the sum of $1+n$, or $(n/2) \times (1+n)$.

We could, of course, program this formula into a computer, and thus make an improvement in the computer’s programming. Some people make the objection, “The computer can carry out the calculation $1 + 2 + 3 + \dots + n$ so fast that it makes no sense to generate a new program.” That may be, but could it also be that the calculating power of the computer is sometimes an argument not to improve its programming under certain circumstances?

The Psychology of Discovery

Roger Penrose refers to the book, *An Essay on the Psychology of Invention in the Mathematical Field* (1945), by the Frenchman Jacques Hadamard, who cites Henri Poincaré’s description of an important discovery, in addition to other examples.²⁰ The crucial idea came when he was

boarding a bus and thinking about something completely different:

At the moment that I set my foot on the step of the bus, the idea came to me—apparently nothing having paved the way for it in my previous thinking—, that the transformation I had used to define the Fuchs function, was identical with those [transformations] of non-Euclidean geometry. I did not verify the idea; I had no time to do so, either, because I continued a discussion I had already begun once I was seated in the bus, but I was completely sure of my idea. For the sake of comfort, I verified the idea only when I had returned to Caen, and had the time to do it calmly.

Penrose emphasizes that the idea which came to Poincaré, and which proved to be right, “apparently came like a blitz while his conscious thinking was somewhere else entirely, and that this is not the case of a simple idea, which might be expressed in a few words.” Instead, Poincaré would

have needed a lecture of about one hour’s length for experts . . . , to communicate the idea. Obviously, the idea could come to consciousness so fully only because he had become familiar with various aspects of the problem at hand in many long hours of focussed conscious activity. Nevertheless, the idea that occurred to Poincaré as he was boarding the bus was a “single” idea in a certain sense, which was comprehensible in a single moment and completely! More astonishing was Poincaré’s conviction that the idea was true, so that it almost seemed superfluous to him to verify it in detail later.²¹

In this connection, Penrose recalls another similar experience of his own. He had been pondering over a physical problem for some time, and the idea for a solution came to him while he was escorting a guest across a street. As the conversation continued, he forgot the idea. What remained was simply

a strange feeling of joyous excitement . . . which I could not explain to myself. I passed review over the various events of the day, and attempted to find the reason for this mood of elation in them. After excluding a number of inappropriate possibilities, I recalled the idea consciously, which I had had when I was crossing the street: It had excited me for a short moment because it provided the solution to the problem which had been running through my head the whole time!²²

These are two examples of the psychological phenomenon of a flash of insight, that singular moment when an idea is transformed from the pre-consciousness into conscious thinking. LaRouche has repeatedly emphasized the importance of this singularity as characteristic of human creative thinking since his “Beyond Psychoanalysis” (1973).²³

The great Classical poets have sung of the creative

idea, the “Götterfunken” (Godly sparks), and Friedrich Schiller writes in his poem “The Favor of the Moment”²⁴:

...

But if Heaven’s spark appear, it
Strikes a flame of lightning-dart,
For the fire-drunken spirit,
And the overflowing heart.

From the gods, like summer showers,
Blessing falls from cloudless sky,
And the greatest of all powers
Is—the twinkling of an eye.

From the first of all endeavor,
When the universe was wrought,
The Divine on earth has ever
Been a lightning-flash of thought.

Stone by stone the work arises;
Slow the hours pass on earth.
Swift the work’s *design* surprises;
Swift the spirit gave it birth. . . .

So the Beautiful must vanish
Like a sudden bolt of light,
Which the stormy vapors banish
To the darkling grave of night.

The poet here allows an idea to emerge in the mind of the listener with the device of poetry, but it is not only a beautiful metaphor, but rather—as Penrose and Poincaré attest—a feeling, a physiological phenomenon. I would make the claim that it is an electrical phenomenon which could be observed with modern methods today, Positron Emission Tomography (PET), on condition that a human being comes up with a creative idea while he or she is being tested!

Minsky and the AI cult—and this is no surprise—reject the idea of a flash of thought as an illusion:

Many thinkers firmly maintain that machines will never have thoughts like ours, because no matter how we build them, they’ll always lack some vital ingredient. They call this essence by various names—like sentience, consciousness, spirit, or soul. Philosophers write entire books to prove that, because of this deficiency, machines can never feel or understand the sorts of things that people do. However, every proof in each of those books is flawed by assuming, in one way or another, the thing that it purports to prove—the existence of *some magical spark* that has no detectable properties. I have no patience with such arguments.

We have seen that the creative spark does indeed have “detectable properties.” But Minsky has to cast it aside as “magical,” because it is unfit for representation in a com-

puter model of thinking. For his computer model, Minsky needs a myriad of little, expert agents of the mind, each of which does its work like a screw in a clockwork of the mind, and without any suspicion of having insight into any overall context and coherence. Allegedly—and *this is what actually ought to be called “magical”*—the little agents are nevertheless supposed to generate an overall coherence. Myriad pieces of information are supposed to be added up to “knowledge.” That is the credo of the information society, which may people call the “knowledge society” for that reason. Now, we have the Internet, this heap of information—and it is rather clear that we can only find something there, if we have an idea of what we are looking for.

The human mind does, after all, function on the basis of ideas—human thinking does, and not only that, but also human perception. In contrast to a camera or a tape-recorder, the human mind see and hears only things of which it has an idea, and this is something which the mind somehow expects. That is why it is so important for the scientist to keep his eyes open for unexpected anomalies, for phenomena which are *not* explainable with the available theories. Otherwise, the scientist could never discover anything new. A paradox results from the contradiction between these “unexplained” phenomena and existing theories, an interesting scientific problem of the kind that “went around in the back of the mind” of Poincaré and Penrose.

The solution to the paradox comes with a new idea, often in the form of a flash of insight, a brainstorm, when a chain of pre-conscious thought processes suddenly come together. The new idea by no means arises out of nothing, but its emergence is a *singularity!* Such singularities are, as LaRouche emphasizes, the decisive character-

istic of all non-linear processes. These include evolution as well as creative human thinking. Nicolaus of Cusa and Leibniz took account of this, but their adversaries, who dominate scientific ideology down to our own time, insist on *linearizing* the representation of all processes, subdividing everything into common elements, so that they can be calculated or generated by a computer model. That is something we should indeed do, say Leibniz and LaRouche, but, for all the *many* elements, we must not let what is more important fall by the wayside: the *one*, the singular, unifying idea, which makes it possible to think and to feel the most complicated coherence, hardly expressible in words, in a single moment!

It is out of the source of this flash of insight that the other ideas flow, so that the original idea can be articulated—not like the electronic transfer of information, but with certain hints, words, metaphors, and the like, which are sufficient to allow the idea to emerge in the minds of others as well.

This, which the AI cult fights against and denies, is the object of art, and ought to be the main aim of education. LaRouche recommends the re-living of the most important scientific discoveries, and the reconceptualization of the ideas and *Motivführung* in compositions of Classical music or poetry.²⁵ This training can begin with the discovery of the “idea” in a short poem or fable.

In his *Abhandlung über die Fabel (Discussion of the Fable)*, Gotthold Lessing—who, in contrast to Minsky, did not fear that a growing number of geniuses would have negative social effects—wrote:

Why is there such a lack in all sciences and arts of discoveries and self-thinking minds? The question is best answered

The Donkeys

The donkeys complained to Zeus that human beings treated them cruelly. Our strong backs, they said, carry their burdens, under which they and any weaker animal would be crushed. And yet they want to drive us with merciless blows, to move at a speed which would make it impossible for us to carry our burdens—if Nature herself had not made it impossible for us to move so fast. So prohibit them, Zeus, from being so cruel, if it is possible to forbid human beings from doing other cruel things. We want to serve them because it seems you have created us for that purpose; but we do not want to be beaten without cause.

My creatures, Zeus replied to their spokesman, the request is not unjust; but I see no possibility of persuading human beings that your natural slowness is not laziness. And as long as they believe that it is, you will be beaten.—But I shall think up a way to lighten your fate: From now on you will be blessed with insensitivity; your skin will be hardened against the blows, and it will tire the arm of the driver.

Zeus, cried the donkeys, you are ever wise and merciful!—They went joyously from his throne as if it were the throne of universal love.

—Gotthold Ephraim Lessing,
version of Aesop’s Fable 112

with another question: Why are we not educated better? God gives us the soul, but we have to get *genius* from education. A boy, all of whose powers of soul one educates and expands continuously in all kinds of situations; whom one accustoms to rapidly compare everything he adds to his small knowledge, on a daily basis, with what he knew yesterday, and to pay attention to whether, by means of these comparisons, he does not himself come upon things which no one yet told him; which can be continuously transferred from one context to another; whom one teaches to elevate himself from the particular to the general as easily as he descends from the general to the particular: This boy will become a *genius*, or in this world it is impossible to *become* anything at all.

Among the exercises, now, which must be made according to this plan, I believe that the discovery of Aesop's fables is one of these which is most suited to the age of the student; not that I would attempt by this means to make all students into poets, but because it is undeniable that the means by which the fables were invented, is the same as that which one will most frequently encounter among all inventors.²⁶

According to Lessing, the first step is to listen to the fable and to understand the underlying idea. As the example of the fable "The Donkeys" shows [SEE Box, page 13], the idea is not so easily expressible in words. What is Lessing getting at? Did old Aesop have the same intention? Here a whole universe of historical, political, and ironical relationships opens up. But this little fable encompasses them and makes them articulate, so that the mind of the listener is excited to grasp the idea which is intended.

The second step would be to let the children invent fables themselves, so they would practice giving their own general ideas—for example, about human character traits such as jealousy, greed, power, and opportunism, or about the fine line between being clever and sly, between arrogance and pride, between being honest and being a denouncer of others—in a fable they compose themselves, to give these ideas concrete shape.

The purpose of this elementary training, the way Lessing recommended it and the way Wilhelm von Humboldt later introduced it in his educational reform in Germany, is the practice of the capacity to discover the underlying idea in everything, the hidden assumptions and axioms, and never to be satisfied with the surface of particular pieces of information. The human being is best equipped to that naturally, but can forget. But if this capacity is trained from the time when students are young, then it is possible to develop it.

The human mind is not constituted to perceive merely simple differences, but differences of higher orders of simple differences. Cantor's transfinite numbers are the

best illustration of this idea; they generate an infinity of other ideas as ordinal types, or "guiding ideas," which then constitute their "essential idea" (Inbegriff). Cantor showed that these infinite manifolds ("*Mengen*") can have different "powers" ("*Mächtigkeiten*").²⁷ Cantor was bitterly maligned by his adversaries for these ideas, and Bertrand Russell was one of the most vehement, long after Cantor's death.

But Cantor's concept of an ascending ordering of infinite idea-*Mengen* of increasing power remains, as especially LaRouche has shown, the most promising approach for a realistic "science of the human mind." For it brings in the old paradox of the One and the Many, which Plato made the subject of his *Parmenides* dialogue (among others), and which appears again and again in poetry and philosophy when creativity is at stake. Leibniz addressed the issue of the One and the Many in his *Monadology*, and LaRouche presented the most rigorous representation of his solution in his work, *In Defense of Common Sense*.²⁸ The fundamental characteristic of Leibniz's "monads" and LaRouche's "singularity," is that the unity of the creative idea, or the unity of the individual human mind, demonstrably does not stand in insoluble contradiction to the multiplicity of particular, more-or-less conscious thoughts, or physiological processes of the brain, as Minsky claims (and not only he). It is only necessary to understand that this one idea, out of which a scientific discovery or a great composition is born, has a *higher quality* than the many ideas which flow from it as from a wellspring.

That is nothing for a fundamentally linear computer program, where everything has to be reducible to the basic elements of 0 and 1, and in which such singularities really do not exist. But they do exist in the human mind, and if AI research prefers to ignore this fact, it has no one to blame but itself. AI researchers can no longer credibly claim that AI methods are the only way to achieve insights into human thinking processes. The avoidance of the singularity of creative ideas will inevitably prove to be the constraint against further progress in the computer sciences, if AI ideology does not get rid of this bug.

What is the goal of progress in science and society? According to Minsky, it is "artificial intelligence," the super-fast, all-encompassing network, which is crammed full of all the information in the world, and is far superior to human beings in its speed, storage memory, memory capacity, etc.—and which will ultimately consign human beings to Hell. Or, is the primary goal not, the education of the largest number of universally educated human beings, who—as real universal geniuses—supported by better computers—can keep their overview

over the immense and growing knowledge of humanity, and develop it further in a way which serves mankind? To the degree that this is successful, people can be called wise. This wisdom, or the emotion which accompanies it, *agapē*, has the characteristic of singularity: It cannot be encompassed in dogmas or positive laws; it must even be reexamined from one moment to the next, asking what is right and what is wrong—but it is knowable in principle for human beings.

The context for this wisdom can only be the general welfare of mankind, which includes those who lived

before us, those who live now with us, and those who will come after us. Since Minsky's AI cult leaves this framework behind, he reduces himself to absurdity. Nevertheless, the Platonic-Christian *agapē* is oriented to something higher than mankind, for it is also the love of God—an idea which Minsky thinks is utterly absurd. This is our final argument against the anti-progress mindset of the AI cult: How is anyone supposed to understand what creativity is, if the idea of the Creator and everything similar to this idea, is rejected axiomatically?



1. Marvin Minsky, "Why People Think Computers Can't," (1992), in *The Computer Culture*, ed. by Dennis P. Donnelly (Rutherford: Fairleigh Dickenson University Press, 1985); Internet: www.ai.mit.edu/people/minsky/papers/ComputersCantThink.txt.
2. Harry Harrison and Marvin Minsky, *The Turing Option* (New York: Warner Books, 1992).
3. Kirkus Reviews: Harry Harrison, Marvin Minsky, *The Turing Option*, Internet: www.amazon.com.
4. Marvin Minsky, "Will Robots Inherit the Earth?," *Scientific American*, October 1994; Internet: www.ai.mit.edu/people/minsky/papers/sciam.inherit.html
5. "Denn sie wissen nicht was sie tun" ("For they know not what they do") *GEO Wissen*, No. 3, 1992, p. 144. As reported in Hans P. Moravec, *Mind Children: The Future of Robot and Human Intelligence* (Cambridge, Mass.: Harvard University Press, 1990).
6. Marvin Minsky, "Alienable Rights," Internet: www.ai.mit.edu/people/minsky/papers/AlienableRights.html
7. Roger Penrose, *The Emperor's New Mind: Concerning Computers, Minds, and the Laws of Physics* (Oxford, New York: Oxford University Press, 1989); German edition: *Computerdenken* (Heidelberg: Verlag Spektrum der Wissenschaft, 1991).
8. Russell's "crowning achievement," the 1910-1913 *Principia Mathematica* he wrote with Alfred North Whitehead, was proven a hopeless failure by mathematician Kurt Gödel's 1931 "On formally undecidable propositions of *Principia Mathematica* and related systems I."
9. M. Minsky, "Why People Think Computers Can't," *op. cit.*
10. Raymond Kurzweil, *The Age of Intelligent Machines* (Cambridge, Mass: MIT Press, 1990) German edition: *Das Zeitalter der Künstlichen Intelligenz*, (München-Wien: Carl Hanser Verlag, 1993).
11. *Ibid.* "Poem" No. 1 by Kurzweil's Cybernetic Poet; "Poem" No. 2 by T.S. Eliot. German edition, p. 375.
12. Lyndon H. LaRouche, Jr. "The Science of the Human Mind: A Treatise on Fundamentals," *The Campaigner*, Special Supplement, February 1984.
13. Marvin Minsky, "Jokes and the Logic of the Cognitive Unconscious," in *Cognitive Constraints on Communication*, ed. by Lucia Vaina and Jaakko Hintikka (Dordrecht, Boston: D. Reidel Pub. Co., 1981); Internet: www.ai.mit.edu/people/minsky/papers/jokes.cognitive.txt
14. Quoted in Penrose, *op. cit.*, German edition, p. 98.
15. Minsky, "Jokes," *op. cit.*
16. Marvin Minsky, "Music, Mind, and Meaning," *Computer Music Journal*, Fall 1981 (Vol. 5, No. 3); Internet: www.ai.mit.edu/people/minsky/papers/MusicMindMeaning.html
17. Minsky, "Will Robots Inherit the Earth?," *op. cit.*
18. *Ibid.*
19. Marvin Minsky, *The Society of Mind* (New York: Simon and Schuster, 1986).
20. Quoted in Penrose, *op. cit.*, German edition, p. 408.
21. *Ibid.*, p. 208ff.
22. *Ibid.*, p. 410.
23. See Lyndon H. LaRouche, Jr., "Beyond Psychoanalysis," *The Campaigner*, Sept.-Oct. 1973; also "The Science of the Human Mind," *op. cit.*
24. Trans. by D.P. Goldman, in *Friedrich Schiller, Poet of Freedom*, Vol. I, ed. by William F. Wertz, Jr. (New York: New Benjamin Franklin House, 1985). The original text of this excerpt reads as follows:

Die Gunst des Augenblicks
...
Zücht vom Himmel nicht der Funken,
Der den Herd in Flammen setzt,
Ist der Geist nicht feuertrunken,
Und das Herz bleibt unergetzt.

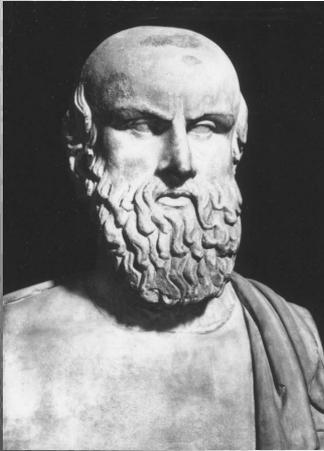
Aus den Wolken muss es fallen,
Aus der Götter Schoss das Glück,
Und der mächtigste von allen
Herrschern ist der Augenblick.

Von dem allerersten Werden
Der unendlichen Natur,
Alles Göttliche auf Erden
Ist ein Lichtgedanke nur.

Langsam in dem Land der Horen,
Füget sich der Stein zum Stein,
Schnell wie es der Geist geboren
Will das Werk empfunden sein. . . .

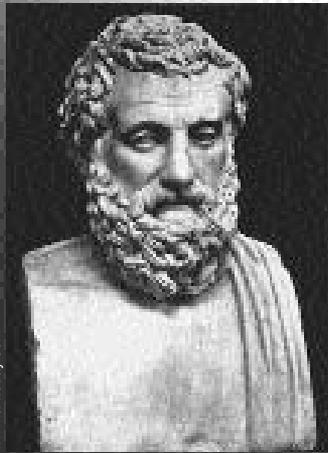
So ist jede schöne Gabe
Flüchtig wie des Blitzes Schein,
Schnell in ihrem düstern Grabe
Schliesst die Nacht sie wieder ein.
25. See, for example, Lyndon H. LaRouche, Jr., "On the Subject of Education," *Executive Intelligence Review*, Dec. 17, 1999 (Vol. 26, No. 50).
26. Translated from Gotthold Ephraim Lessing, *Abhandlung über die Fabel*, in *Lessings Werke*, Vol. 2 (Frankfurt: Insel Verlag, 1967).
27. See Dino de Paoli, "Georg Cantor's Contribution to the Study of the Human Mind," *21st Century Science & Technology*, Summer 1991 (Vol. 4, No. 2).
28. Lyndon H. LaRouche, Jr., *In Defense of Common Sense* (1989), in *The Science of Christian Economy and Other Prison Writings* (Washington, D.C.: Schiller Institute, 1991).

Classical tragedians (counter-clockwise from top left).
 Ancient Greece: Aeschylus, Sophocles, Plato. Modern:
 Christopher Marlowe, William Shakespeare, Gotthold
 Ephraim Lessing, Friedrich Schiller.



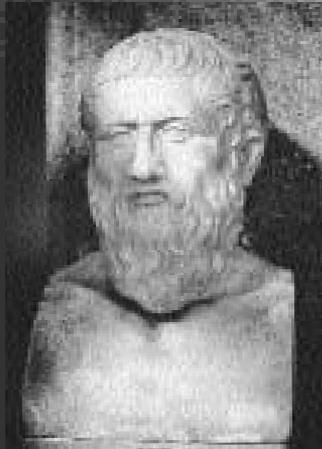
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Aeschylus



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Sophocles



EIRNS/Philip Ujanovsky

Plato



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Marlowe

‘Truthfulness is a quality of ideas, as Plato’s Socratic method demonstrates the reality of ideas. Classical art’s source of authority for statecraft, is that it is specifically the medium most appropriate for adducing the relative truthfulness of the ideas by which a nation or culture chooses to rule its affairs.’

Some winced or giggled, when the amiable and gifted Senator Eugene McCarthy conducted political campaigning as poetry-reading sessions. I laugh happily at what he did. Senator McCarthy’s critics did not remember, as I do, that President Lincoln had won a terrible, justified, and absolutely necessary war on behalf of all humanity, by aid of lessons adduced from Shakespeare, which he had taught, as directives, to the members of his Cabinet. No one, friend or foe, laughed at the awesome result of that instruction.

Real politics, as Plato and the recently elevated, great, and martyred English statesman Thomas More rightly understood,¹ is properly practiced as a form of Classical art, practiced according to the same principles which the greatest tragedians, Shakespeare and his successor Schiller, most notably, subsequently expressed as Classical modes of composition and performance of poetry and tragedy. To become efficiently literate in history and politics, you must recognize the tragedies composed by those two latter, greatest masters of that art, as no mere fiction, but, like the greatest operatic staging of the tragedies

On the eve of the Presidential election of the year 2000, a philosopher-statesman evaluates the role of Classical artistic practice in the creation of citizens, and the cognitive dialogue required to restore America to the promise of its revolutionary founding.

Politics as Art

by Lyndon H. LaRouche, Jr.

from Shakespeare² and Schiller, by Giuseppe Verdi, or, earlier, the relevant operas of Wolfgang Mozart, and Beethoven's *Fidelio*,³ the authentic, and inspiring representation of the essence of the specific crises in real history to which those compositions refer.

Tomorrow, U.S. election-day, November 7, 2000, we shall witness an awful real-life tragedy on the world stage, the threat, if not yet the actuality of a new dark age. That threat is today's outgrowth of a long-standing, widespread violation of those Classical principles of statecraft which every citizen should have been given the right to

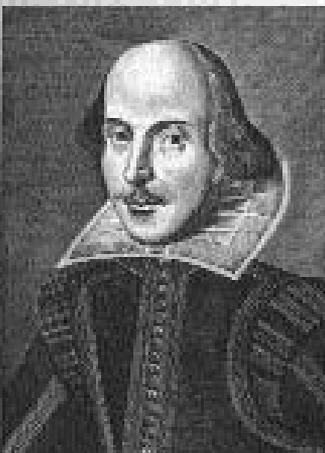
know, something that citizen should have known by no later than the time he or she had completed a secondary education.

My life's professional work, during more than fifty years to date, has been focussed on precisely that subject-matter so urgently needed under today's conditions of global crisis: the interdependency of the history of politics and economics with those Classical methods which underlie

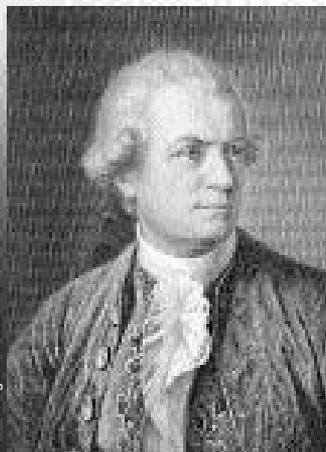
1. "Apostolic Letter of Pope John Paul II, Proclaiming St. Thomas More as Patron of Statesmen and Politicians." This was issued, and presented by the Pope, to the Nov. 4-5, 2000 "Jubilee" Conference of Parliamentarians, which drew 5,000 elected officials from 96 nations to Rome.

2. Shakespeare's *Richard III* is premised on the in-depth account of that turning-point in English history, supplied by Thomas More's guardian's first-hand and related accounts of the actual history of those events. It was through the work of Sir Thomas More himself that Shakespeare acquired the relevant knowledge of that part of English history.

3. Based on the true-life account of the imprisonment and freeing of that Marquis de Lafayette who had been endunged at Olmütz on the orders of British Prime Minister Pitt (Beethoven's "Pizzaro"), by courtesy of the Austro-Hungarian Chancellor, and Mozart adversary, von Kaunitz.



Shakespeare



Lessing



Schiller

competence in both art and science.

Lately, I had been prompted by a number of developments, especially because of the increasingly acute quality of the onrushing world crisis, to place much heavier emphasis on my students' and co-workers' rigorous mastery of that function of Classical art. Here, I consolidate and recapitulate what I have said in the content of unpublished manuscripts which were recently written for those collaborators' private use. I do this here, in as popular a form as competent exposition permits. I do this for the benefit of you as a member of an, unfortunately, still largely unwitting population, a population which the aftermath of this election would tend to overwhelm with despair, unless you are informed of those certain means of remedial action which I outline for you here.

I offer you thus a method for action, which contains the much-needed Classical alternative to today's real-life tragedy of our nation. I present that to you here, with the intent to afford you a guide to the means by which we may escape from the awful consequences, into which the immediate aftermath of a brutish electoral farce, now threatens to plunge our nation, and also the world at large.

For you, if you are a typical adolescent or adult who has good intentions toward mankind in general, I emphasize, that the beginning of the practice of those kinds of real politics which are consistent with your intentions, is to be found in the proper, truthful, but too rarely used form for conducting ordinary discussion. By ordinary discussion, I mean the practical use of that elementary knowledge of the principles of Classical art, which should inform and guide the way in which two acquaintances might converse about anything but trivial housekeeping subjects, on a street-corner, or under almost any other ordinary, or exceptional auspices.

The model you must come to know, to be able to rise to that higher level of deliberation on the subjects of our nation's policy-making issues, is the model to be found in re-enacting the Socratic dialogues of Plato, viewing those dialogues for what they are: Classical dramas portraying exchanges among characters typifying notable actual figures from the living history of the Greece of that age. It is by re-enacting those dialogues as dramas, that ordinary people, may be pleasantly surprised to touch something of that quality of mind which makes for genius, as they become, through experience, increasingly efficient, even as ordinary citizens, in use of the most important principles for rational selection of political choices. From that standpoint, you will also come to know, that every form of important Classical artistic composition, functions

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according to exactly the same principle as Plato's Socratic method.

Classical composition so defined, includes the greatest works in Classical sculpture and Classical Renaissance painting, such as that of Leonardo da Vinci, Raphael Sanzio, and Rembrandt. It includes all of the greatest Classical poetry and drama. It includes all great musical compositions, which are either Classical from the outset, or rendered fully expressive of Classical principles of composition, by aid of the kind of polish supplied to the Negro Spiritual by the collaboration of Antonín Dvořák and Harry Burleigh, and by the continuation of that process of perfection by the great Classical artist Roland Hayes and his collaborators and followers.

That latter choice of example, the case of the Negro Spiritual, has special importance for all among our people, of African descent or not, who are oppressed by the sense that life has reduced the common folk to the treatment intended for underdogs, or people degraded even to the social status of virtual human cattle.

If you once come to know the way in which the Classical principle of composition is expressed in such an excellent and profound way by those Spirituals, you should recall that these originated as works of art composed by, and shared among successive generations of cruelly oppressed slaves who were each, at least partially, of African descent. The power of these compositions, which Dvořák, Burleigh, Hayes, and others, have honed to a state of relative perfection, expressed, among those slaves, the same genius inherent in all human beings. Those Spirituals, so honed, have a special power for all, on that account; they should inspire us to recognize, that there is no oppression so efficient, that it can obliterate the fact of the noble quality of humanity, as man and woman made in the image of the Creator, a quality innate to each newborn child.

Typical of the same universal principle, is the celebrated "Prisoners' Chorus" of Ludwig Beethoven's *Fidelio*, or the chorus of the slaves, "Va Pensiero," from Giuseppe Verdi's *Nabucco*. The latter chorus became the unofficial national anthem of modern Italy, out of popular recognition of the specific quality of patriotic passion, which that chorus conveys by Classical artistic means. As the case of "Little Boy" illustrates this point best to me, the performances of the repertoire of the Spiritual by Roland Hayes, as by Marian Anderson, set a standard of comparison among those who worked with and followed them, for conveying the Negro Spiritual as a part of the body of mankind's treasure of true Classical art. No respectable musician or Classical actor would disagree.

The underlying principles expressed by the most successful expressions of great Classical artistic composition, are those expressed in the most concentrated form in Pla-

to's dialogues, and in those forms of modern Classical artistic composition which I have broadly identified above.

For reasons which I shall clarify in the pages which follow, the achievements of the Negro Spiritual to such effect, reveal to us today the profound, uniquely human creative power, that power which touches the quality of genius, inhering in each new-born slave of those many generations, who suffered such cruelty at the hands of those who express that same contempt for humanity, which was exhibited by what the followers of Richard M. Nixon launched, in collaboration with the Ku Klux Klan, as that legacy of the old Confederacy called the "Southern Strategy" of 1966-1968. That wicked, inhuman legacy of the Nixon campaign, is the same cultural corruption running rampant in the Congress, in our national electoral processes, and in practiced U.S. foreign policy today. It is the same evil, as revived so today, which the voice of the slave indicts, as if by a voice speaking from across the centuries, through the Classical form of the Negro Spiritual. When we participate in such music, or other Classical art, we are similarly inspired, and strengthened in our commitment to wage the battle for all humanity, as all true followers of Jesus Christ have done.

The successful composition and performance of such Classical artistry, depends upon a certain method, that Socratic method most efficiently illustrated by Plato's dialogues. This is a method for locating, cultivating, and applying that noble authority which is embedded in human nature from birth, our innate authority sometimes identified as creative reason. It is when we communicate with one another in this way, on matters which the poet Shelley described as "profound and impassioned conceptions respecting man and nature," that that power of reason born within us, may be willfully aroused, and shared with others. So, were our citizens not so often foolish, we would always rely on that method, for assembling with others to shape the policies and future destiny of our nation, and its relations with other nations.

It is that potential power for Classical artistic communication, which you must summon from within yourself, for your deliberations with your fellow-citizens on those policy-issues. That is the method you should choose, which will presently determine the present moments' choice between recovery, and a living nightmare for not only our nation, but for most of the world.

My central objective in writing his report, is to make that point clear to you in particular. If you understand that point, we shall succeed, together, in bringing the class of those who continue to occupy the role of politicians, up to that higher moral level, too.

1. Why Americans Usually Lie

Begin by asking yourself: What should the word "truth" be understood as signifying? To answer that question, begin by peeking into typical scenes of relevant misbehavior, those prevalent among both leading political figures and ordinary citizens, as we have seen these echoed, yet once again, during the now concluding national election-campaign.

As all of us who are adults, and who are honest about what we know, recall, that, with the most extremely rare individual exceptions, virtually every American, including those who claim to be devoutly religious, is an impulsive liar. He, or she will lie, almost instinctively, as the typically depraved members of "debaters' clubs" do, and as certain popular political candidates do, "to win the argument," "to get my way." Of these, those hypocrites who call themselves Christians, are not the worst cases, but, all too frequently, only the most disgusting ones.

In families in which households still exist these perilous days, children continue to witness their parents politely lying to the guests, the guests lying similarly in return, and both parents and guests hailing each other at the close of the visit, "We must do this soon again!" Then, according to popular custom, follows the epilogue, in which the children may overhear their parents' ridicule and even calumnies, directed against the guests they had just, a moment before, escorted so amiably to the door.

Similarly, as we nearly all recall, children learn to lie to each other as they lie to their teachers, by conditioning themselves to tell teachers, what they guess that teachers wish to hear. Pupils, thus, set as goals of their own present and future education and careers, being careful to say what is likely to be accepted and rewarded, to speak as free from the encumbrance of truthfulness, as such ambitions might appear to demand of them. So, above the doorway to the room where the students' qualifying examinations are held, there often might be emblazoned the motto: "Abandon truth, all ye who enter here!"

In keeping with that motto, teachers, like others, lie in the course of their preying upon those over whom they exert reign. Such teachers would defend their actions by statements of the genre "I was just doing my job," or "Sorry, but that is policy," "That is what is in the textbook," "That is what you have to learn, if you are to pass the examination," "When you finish school, you can make up your own mind, but, for now . . .," or, simply, "That is the way we teach it here." I recall it all, from all those years, with a certain embittering, and knowledgeable recollection of the fact of fraudulent stuff thrown at

me in most of that experience—but, for some rare, blessed exceptions which I cherish to the present day.

Probably, many of you who are adolescents or adults, could report a similar kind of experience, if you were not one of the Americans who usually lie about such matters.

Many common social practices are a reflection of popular acknowledgment of the commonplace fact of such popular habits of customary lying.

For example, few employers assess a job-applicant's resume for the quality of truthfulness, but rather for the desirable or undesirable amount of cleverness to which it attests, and the wish that the applicant, if hired, were likely to be as corrupt in serving the employer's indicated interest, as he or she had been in composing the fiction which the resume contains. "Yes," the hiring officer might confide, "the degree from that university is real, but the education it represents is nearly worthless. Still, the fact that he actually has those degrees covers our backs with the stockholders, in case the fellow turns out to be the bum we suspect he might be. We could say, 'He had the qualifications, but he just didn't work out.' "

Similarly, when an executive is being maneuvered out of the firm, he will be damned with such expressions of faint praise as, "John is to be praised for having done an excellent job, which now prepares the way for obvious improvements."

Similarly, many of the laws which you believe were enacted by our Congress, are lies, in effect. For example, are you so credulous as to believe, that the passage of a law necessarily represents the "intent of Congress"? Do you not know the frequency with which the essential motive for the passing of a particular law was, predominantly, the Congress's intent to recess?

That is not the end of that fraud in law-making practice. Since the so-called "democratic reform" of the Committee structures of the U.S. Congress during the 1970's, there was a directly resulting increase of technical incompetence in the kinds of pieces of legislation emitted from the committees. The conflicts in interpretation of outstanding statute and related policy so clumsily generated, relinquished the responsibility for sorting out those legal conflicts to committees in the Executive Branch's bureaucracy, with the effect that the enforced intent of the legislation, was transformed into what the latter bureaucrats had concocted. So, with the complicity of the courts, intentions which were contrary to the conscious intent of the relevant legislators, became enforced, by authority of the compliant Federal Court, as the official version of "the intent of Congress."

You should be even more shocked by the related kinds of recent trends in decisions respecting the intent of the U.S. Constitution itself, by majorities of the U.S. Supreme Court. Any literate adult who reads the constitutional law upon which our Federal Republic's legal

existence depends, the 1776 Declaration of Independence and the 1789 Preamble of the Federal Constitution, can know with certainty that the current, Rehnquist-Scalia majority of the Supreme Court has plainly and solemnly lied, repeatedly and outrageously, against the most crucial point of law in both the Declaration of Independence and the Constitution.

Up to now, I had not mentioned the worst habitual liars of all, the popular mass news media.

"I know that the Moon is made of green cheese."

"That's not true!"

"Are you questioning my sincerity?!"

In everyday life, it is often worse than that.

For example, credulous or simply illiterate citizens attribute great authority to so-called "eyewitness testimony."

Often, good study of circumstantial evidence proves that the eyewitness has either lied, or was simply incompetent to state, as eyewitness, evidence which was, in reality, the kind of conclusion which he, or she had asserted to be the sworn truth of the matter. Or, often, the witness has lied outrightly, but the onlookers declare, still today, that that testimony must be respected, because the witness claimed to have observed with his or her senses, and because foolish onlookers, still today, choose to believe that the witness appears to be, or was described by the judge as sincere. After all, why should typical jurors not tend to sympathize with the species of such liars; are they not often brought up, at home, in schools, and elsewhere, to be the same kinds of liars themselves?

For example, "Experience teaches us!" were, in effect, often the last words of the legendary lemming who then plunged to his death off the cliff.

In each general election, majorities of voters display impassioned confidence in the clown they will come to despise by the time the next election comes around. The lout they choose next, to replace the one they have come to despise, is often as bad or worse than the donkey they are about to kick out of office. Worse, often, especially of late, the effect of the citizens' voting, is to chuck out a decent political figure, in momentary preference for someone whom they will have good reason to hate soon enough. Indeed, these days, the majority among those who choose to vote, must be seen, on performance, as never to have learned much worth knowing from their own past experience in voting.

To sum up these points of illustration, add the following.

The typical American will swallow one kind of poison, or another, compulsively, daily, if he, or she believes that experience has taught confidence in that particular brand-name. Indeed, today, we have entered a schizophrenic age of popular illiteracy, in which people wear

brand names, in that very large print best suited to the needs of illiterates, on their backs and shirt-fronts, and they mouth brand-names and slogans as if their attention were focussed upon the sensation of fondling those mere phrases with their wet mouths.

In point of fact, in these lunatic times of such mean-spirited pranks as rampant mergers and acquisitions, privatization, and out-sourcing, today's product bearing yesterday's name, may turn out to be, not a horse of a different color, but perhaps an object better suited for use by some yet unknown species, a product selected not for what it is, but for the way the mere brand-name it bears, tastes in the sucker's mouth.

That brings us directly into the provinces of Classical artistic composition. Given the evidence of how widespread the popular forms of lying have become, how do we know what the truth is, and where the evidence may be found on which truthful knowledge depends? Knowledge of how to vote, for example.

Having thus illustrated a point, let me present you now with a generalization whose accuracy I shall unveil to you, step by step, as we proceed together with the following sections of this present report.

Unmaking the World's Worst Mistakes

The principle underlying all competent composition and performance of what is known as Classical tragedy, is based upon the historical evidence it reflects. That principle is, that, in real life off stage, entire cultures, excepting those destroyed by natural causes beyond man's present ability to control, have been usually destroyed by the fatal defects inhering within that prevailing popular culture itself, as the U.S., as a nation, is being destroyed, like the ancient pagan Rome of the popular arena games, by no single factor as weighty as the effect of what is called "popular entertainment" today.

One of the most important lessons of the history of European civilization, is that, throughout that history, the entertainment associated with the theater, has been among the most influential forces, for good, or for evil, in shaping the evolution and consequent fate of that culture as a whole. In this report, I show why that is the case.

In all great Classical tragedy, for example, from Aeschylus and Sophocles, through Shakespeare and Schiller, the tragic failure of the relevant leading figure, such as Shakespeare's Hamlet, or the notorious Oedipus, has been his or her failure to change, willfully and radically, that destiny of a people which custom and related existing institutions of popular influence have brought upon it. So speaks the voice of Shakespeare, through one of his surviving characters, in the closing moments of Hamlet.

The greatest crimes of political leaders, and compara-

ble figures, are usually not their violation of custom, but their failure to violate custom in the manner specifically needed to prevent a people from plunging themselves, and their posterity alike, into some terrible calamity. Thus, the chief cause of the tragedy of nations and cultures, is not that they violated custom or popular opinion, but that they continued to bow to the authority of these precedents and other habits much too long.

So, the United States today, is being destroyed politically from within, chiefly by a trend in custom and popular opinion which has been induced by the impact of the combined introduction of the Nixon "Southern Strategy," and Nixon's embrace of the dogma of simple-minded Professor Milton Friedman, about three and a half decades ago.

All great Classical tragedy is based on a case either from actual history, or from popular mythology, in which the destruction of a nation or culture has been brought about by its own accustomed ways.⁴ To address this danger from within, the European civilization which emerged in Greece about 2,500 or more years ago, adopted the theatrical performances of the Classical form of tragedy, as an indispensable instrument for examining the dangers inhering in currently accepted customs. Thus, the Homeric epics supplied themes for what emerged as the Classical Greek tragedy of such as Aeschylus and Sophocles. The Classical Greek theater emerged as a more effective way of uplifting the conscience of the citizenry of Athens for this purpose.

The modern Classical tragedy, as it evolved upwards through the efficiently connected work of Marlowe, Shakespeare, Lessing, and Schiller, was a higher form than modern Europe found in those precedents, as from ancient Athens, upon whose foundation the modern form was built.

The method, developed for that purpose, as expressed, and required by the composition and performance of Classical tragedy, is a very definite, readily described, and fairly readily demonstrated one. If the principle could not be demonstrated so, then the theater-goer would never have been moved by well-performed Classical tragedy, as Schiller, for example, the central intellectual figure of the Prussian reformers' national liberation insurgency, moved the German people of his time in a more powerful and revolutionary way than any nation's audiences then or later, through, chiefly, his poetry and plays. Every successful performance of a great Classical tragedy, moves an audience, not because that audience has been deceived, as by a tempting illusion, but, rather, precisely because the audience is led to recognize the efficient prin-

4. In other words, that dangerous, confessed lunatic, irrational custom, called in German by such Kantian and Hegelian names as *Weltgeist*, *Zeitgeist*, and *Volkgeist*.

Shakespeare's *Henry V*: Prologue on 'Imagination'

"As we might observe by studying the declaration of the actor playing Chorus, directly to the assembled audience, in the opening of Shakespeare's King Henry V, no illusion is intended. Rather, the principle of the stage encountered in the tragedies, for example, of Shakespeare and Schiller, is the Socratic principle of truth, as that principle was first explicitly and rigorously defined for science by Plato, in his dialogues."

CHORUS:

O for a Muse of fire, that would ascend
The brightest heaven of invention,
A kingdom for a stage, princes to act,
And monarchs to behold the swelling scene!
Then should the warlike Harry, like himself,
Assume the port of Mars; and at his heels,
Leash'd in like hounds, should famine, sword,
and fire
Crouch for employment. But pardon, gentles all,
The flat unraised spirits that hath dar'd
On this unworthy scaffold to bring forth
So great an object. Can this cockpit hold
The vasty fields of France? Or may we cram
Within this wooden O the very casques
That did affright the air at Agincourt?
O, pardon! since a crooked figure may
Attest in little place a million;
And let us, ciphers to this great accompt,
On your imaginary forces work.
Suppose within the girdle of these walls
Are now confin'd two mighty monarchies,
Whose high upreared and abutting fronts
The perilous narrow ocean parts asunder;
Piece out our imperfections with your thoughts;
Into a thousand parts divide one man,
And make imaginary puissance;
Think, when we talk of horses, that you see them
Printing their proud hoofs i'th' receiving earth.
For 'tis your thoughts that now must deck our
kings,
Carry them here and there, jumping o'er times,
Turning the accomplishment of many years
Into an hour-glass: for the which supply,
Admit me Chorus to this history;
Who, prologue-like, your humble patience pray
Gently to hear, kindly to judge, our play.

ciple by means of which they are moved.

People who have failed to understand the basic principle of composing and performing Classical drama, nonetheless tend to suffer the delusion, that the secret of that medium's success lies in the creation of illusion. Unfortunately, just such illiterate nonsense, is the basis for most of what is commonly classed as "Hollywood productions" today. As we might observe by studying the declaration of the actor playing Chorus, directly to the assembled audience, in the opening of Shakespeare's *King Henry V*, no illusion is intended. Rather, the principle of the stage encountered in the tragedies, for example, of Shakespeare and Schiller, is the Socratic principle of truth, as that principle was first explicitly and rigorously defined for science by Plato, in his dialogues [see Box, this page].

I explain the difference.

The art of illusion, or "magic," is to play a trick on the audience's senses, to no other immediate purpose, than to make things appear to sense-certainty as what they are not. For example: cheap-shot sensationalism, as typified by such experiences as Hollywood-style "science fiction" nonsense, and some recent campaigns of leading Presidential candidates.

In contrast to that, the Classical stage copies Classical poetry, and the Homeric epics, in crafting an image of what the audience comes to recognize as the efficient factors, intangible to the senses as such, which are shaping the real outcome of the events presented. To accomplish this, the playwright and performers rely on methods on which that ability depends, to reconstruct the image of such factors on a certain kind of stage which is erected only inside the mind of each member of the audience, that done without the aid of any of the tricks consistent with the definition of illusion.

Thus, Chorus tells the audience to use their imagination, as I shall explain, a bit later, what the term "imagination" should be understood to mean. The play does nothing to lure the members of the audience into the grip of illusions.

For example, Chorus explicitly warns them against being lured into illusions not intended by their vision and hearing of the performance of that play. Shakespeare does not pretend to put the actual events on stage, as an illusionist would pretend to do. Shakespeare uses the stage to focus the audience's attention on what is happening to the minds, and in the interactions among, the characters abstracted from the real-life, off-stage reality to which the drama makes reference.

This method of Shakespeare's and Schiller's stage, as implied by Chorus' address to the audience, is derived from the allegory of Plato's Cave. Once this point is made clear to you, you will have overcome the biggest hurdle which you must overcome to understand what your

exposure to entertainment does, or does not do, to and for you. That explanation finds its root, not in the classroom's course in literary criticism, but in the hard reality of physical science.

As all literate adults know, the difference between the relationship to nature by mankind, and that of any lower animal species, lies in the ability, unique to the individual human mind, of discovering experimentally validatable discoveries of universal physical principles. By means of these discoveries, and of the technologies derived from them, the individual human mind is enabled to cause a willful and qualitative increase in the so-called "ecological potential" which is characteristic of the entire human species, something which no animal species can duplicate.

That said, we zero-in on the core of the matter at hand. Now ask yourself the question, can you see a universal physical principle with your eyes? Can you identify such a principle itself as in any way an object of the senses?

By a validated discovery of a universal physical principle, we mean something which can not be seen, heard, smelled, or touched by organs of the senses, but, an idea, as Plato defines ideas, by means of which, man's power to exist, in and over the universe, is measurably increased. Thus, such principles are physically efficient causes of definite, tangible kinds of changes in our relationship to nature. These changes are measurable effects, and, thus, to be regarded as "hard and tangible" realities, but the efficient causes for those changes, the principles themselves, those *ideas*, are not the kinds of objects which, as themselves, can be detected directly by the senses.

This is the leading point made by the allegory of Plato's Cave. That, as I shall make the point clearer below, is the conception of ideas, on which all successful composition and performance of Classical tragedy depends, absolutely, for its successful effect upon the audience. The point to which this report as a whole is addressed, is to show you that that same principle of composition and performance of Classical tragedy, should be the basis for the way in which you organize your mind for your discussion of not only the experimentally validated discovery of universal physical principles, but also any other serious issue of policy-making, with the person with whom you chance to discuss such a matter, even in a relatively brief exchange at a street-corner.

At this point, from this point in the present report, onwards, I shall now walk you, first, through the steps by which a validatable form of discovery of a universal physical principle is made. After that, I shall show you how that same principle of scientific thinking, governs the way in which the relationship between Classical drama and the living audience functions. In either science, or Classical art, what I shall thus describe to you, is exactly what transpires in every case such a validatable discovery

in science has occurred.

This principle I now, once again, set before you, is *the principle of what is known as "geometry of position," as it is not only the fact in known cases; more important, it is the only way in which such a discovery could be made.* Once we have examined the evidence for the case of the discovery of universal physical principles, we shall examine other kinds of universal principles which are generated, as known and provable ideas, by the same kinds of mental activity, and discourse among persons, used for the successful discovery and communication of validated universal physical principles.

Our practical aim in focussing your attention on those principles of mental life which are indispensable, both to scientific progress, and for overcoming the cultural failures of certain cultures, is to demonstrate to you those methods which history has shown to be indispensable for unmaking the present world's worst mistakes.

2.

What Are Ideas?

The relevant, functional relationship between the Classical drama on stage and the individual mind of the member of the audience, is the immediate topic on which to focus attention now. Once that connection is made clear, one might hope that the reader would recognize that the relationship of a speaker to his friend or acquaintance, in the proper art of truthful conversation, as in discussing any serious topic, even on a street-corner, is a replication of the same kind of situation existing between the drama and the audience in a Classical theatrical performance.

In this course of completing this report, I shall come to the point that I am prepared to show, that the person speaking on that street-corner, is adopting the role of the playwright or actor, and, for that instant, the hearer is playing the part of the member of the audience. If the other responds in kind, the ensuing conversation is embarked on the beginning of what we might hope will become a real-life re-enactment of the principle of Plato's Socratic dialogues.

Such a relationship among persons discussing what I have identified as *ideas*—Platonic ideas, and facts pertaining to them, is the method of discourse indispensable for reaching those forms of agreement which may be rightly regarded and used *as being truthful*. It is in that specific sense, that we may rightly speak of truth as a quality most naturally specific to the media of Classical art-forms. Granted, there is truthfulness required of physical science, but that quality of truthfulness, when it is found there, as the opposite is met in the currently prevalent popular practice of lying in the U.S. today, is a

matter of social relations. The quality of truthfulness shared with scientific knowledge, is realized through those same social processes which are the immediate subject-matter of Classical art-forms as such.

Truthfulness is a quality of *ideas*, as Plato's Socratic method demonstrates the reality of *ideas*. Classical art's source of authority for statecraft, is that it is specifically the medium most appropriate for adducing the relative truthfulness of the ideas by which a nation or culture chooses to rule its affairs.

In the alternative, there is no truthfulness in any other place than the domain of *ideas* so defined. Any literal interpretation of mere sense-impressions as such, is, by nature, an illusion, a deception, and therefore a lie. The question of truthfulness, is not a matter of sense-certainty; it lies entirely within the bounds of the value we place upon ideas, as the allegory of Plato's Cave distinguishes between the falseness of the mere shadows cast upon the wall of a firelit cave, and the beings and actions which are naturally misrepresented by a literal reading of those mere shadows which we call sense-certainties.

Once that equivalence of Classical theater and ordinary modes of serious discussion of ideas, is recognized, then, I expect the reader to recognize the fact, that we should regard Classical theater as Friedrich Schiller did, as the medium through which a people can understand the way in which audiences can learn to discuss important issues in the course of everyday life. This kind of attitude and practice within the population as a citizenry, is what we must now establish as the method of deliberation on which the citizens of our republic must rely, more and more, in choosing the ideas and related policies by which that republic shall be self-governed.

On that account, the pivot of the pertinent argument which I must summarize for you at this point, is also supplied in a somewhat different context, in a just recently published report, "The Lesson of the Cole Incident," published in the November 10, 2000 edition of the English-language, political intelligence news-weekly, the *Executive Intelligence Review*. The argument is presented there in the portion of that feature located on pages 43-48, under the included subheadings of "The Scientific Basis for Recovery" and "Geometry of Position."

My purpose here and now, is to identify a principle, a principle called by such names as "*Analysis Situs*" or "geometry of position," as the common basis for all scientific discovery and for the relationship between the Classical tragedy on stage and the mind of the audience. The object of that clarification, is to point out to you how the presently almost unknown, virtually lost art of competent practice of politics, actually works. My purpose in that, is to make clear to you that this is something which you as a citizen, can master with a reasonable amount of effort, as aided by the acquired

habit of practice of relevant discussion among selected representatives of your circles of friends and acquaintances.

The matter to be addressed, is introduced most readily by reference to the characteristic folly of that classroom, in which today's still conventional view of so-called Euclidean geometry is accepted, wrongly, as a standard of truthfulness.

The specific lie which permeates blind faith in such a classroom geometry, is the assumption, premised on always deceptive sense-certainty, both that space, in three assumed directions of forward-backward, sideways, and up-down, is simply extended infinitely, and that time is simply extended, similarly, in a forward-backward sense of direction. This lie is expressed typically by the notion that relations of matter in space and time are to be defined, in their most elementary terms, by the notion of action at a distance, as that fraudulent view is associated with such names as Galileo, Descartes, and Newton.

The system traditionally taught in classrooms as "Euclidean geometry," expressed these ivory-tower delusions of infantile sense-certainty. It thus insisted, respecting space, time, and matter, on mimicking an Aristotelian form, and interpretation of definitions, axioms, and postulates. These assumptions, which I have just broadly described, respecting space, time, and matter, were falsely asserted to be the standpoint from which the apparent physical evidence of our senses was to be described, and interpreted. Such is what is fairly described as "the ivory-tower mentality" commonly polluting, still today, the generally accepted, classroom teaching of, and credulous students' underlying beliefs concerning mathematical physics.

This was the issue on which the founder of modern astrophysics, Johannes Kepler, demonstrated the intrinsic incompetence of the methods previously employed for astronomy, by Claudius Ptolemy, Copernicus, and Tycho Brahe—and, later, by Galileo. Two discoveries dated chiefly to the beginning of the Seventeenth Century, illustrate a point which is of crucial importance for knowing how the Classical theater's relationship to the audience functions.

The first such example, is the case of Kepler's tracking the evidence that the Mars orbit is elliptical, to define a universal lawfulness of the organization of the Solar System as a whole.⁵ The second, is the demonstration, first by the great Fermat, of the evidence showing that least time, rather than shortest distance, was the efficient principle governing the propagation of light.⁶

5. Jonathan Tennenbaum and Bruce Director, "How Gauss Determined the Orbit of Ceres," *Fidelio*, Summer 1998 (Vol. VII, No. 2).

6. The reference is to two letters in which Pierre Fermat announced (in 1662) his discovery that light always propagates itself by a principle of least time. The letters, to de la Chambre, are found in French in *Oeuvres de Fermat*, Vol. II, p. 354 and 457.

In both of the latter instances, the method employed was typical of most of the so-called crucial demonstrations of a discovered scientific principle of physical science. It is the implications of that method of demonstration, on which I ask you to focus your attention in connection with the matter of Classical drama.

The way in which these discoveries were defined, was, in the first approximation, by showing that the interpretation of the observed phenomena led to an obvious absurdity, as long as the attempt persisted, to represent these patterns according to what today's generally accepted classroom teaching of elementary mathematical physics, insists is the required method of representation of the evidence.

In other words, imagine a case, in which mathematical statement "A," is both a truthful representation of the apparent empirical evidence, and also one consistent with such "Euclidean" mathematical schemes. Then, compare that with a case, in which the same collection of empirical evidence produces a second statement, "B," also in the same form, which, in effect, is violently in contradiction with the conclusions implied by the first statement, "A." The result is, that since both statements are consistent, in origin, with the system, and, yet, both imply results which violate that system, the conjunction of the two statements creates a condition which is a *negation* of the system from which the two statements are ostensibly derived. In other words, what is called an *ontological paradox*. Hereinafter, I employ the term "negation" in no different sense than that.

In the case of situating the added evidence, respecting the elliptical form of the Mars orbit, Kepler recognized that this led to contradictions within the previously interpreted empirical evidence. These contradictions warned Kepler, that we must step outside the attempt to explain orbits by simply connecting the dots among observed positions, and seek out a physical principle, outside the assumptions of Euclidean geometry. The evidence today, shows that Kepler was right, and that all of those upholding the commonly accepted empiricist and related views, are false to reality.

The same kind of approach was employed by Fermat, to show that the refraction of light was governed by a principle described, in first approximation, as "least time," rather than "shortest distance." The continuation of that investigation by Huyghens, Leibniz, *et al.*, led into the modern, relativistic hyper-geometries of Carl Gauss and Bernhard Riemann, from which all "Euclidean" and other "ivory tower" sets of definitions, axioms, and postulates are excluded, and only, as Riemann was first to specify publicly, experimentally validated discoveries of universal physical principles are accepted as having the authority formerly, wrongfully, attributed to arbitrary, *aprioristic* axioms.

This method in modern physical science can be shown, conclusively, to be anticipated in the work of Plato and others. It is also inherent in the method of modern experimental science, as that body of science was founded by Cardinal Nicolaus of Cusa during the mid-Fifteenth century, and by such prominent students and followers of Cusa as Leonardo da Vinci. Kepler, for example, relied heavily, and explicitly, upon such aspects of the work of Cusa and Leonardo, and also Plato, in his discovery and initial development of modern astrophysics. However, it is from the starting-point of the crisis in the Seventeenth and Eighteenth centuries' physical science, which crisis Kepler's work introduced to those centuries, that the sweep of development of modern physical science has unfolded to date.

The differences between the ancient Greek forms of Classical tragedy, and the development by Marlowe, Shakespeare, Lessing, and Schiller, has a specific quality of distinction which belongs to the period of crisis, erupting during the Sixteenth century, following the revolution in ideas which had erupted during the previous, Fifteenth-century Renaissance. The specific form in which modern Classical art, and modern science developed, have that common history, and correspondingly distinct, common characteristics.

However, those references to scientific matters, are introduced here for the limited purpose of showing how the same principles of discovery, function as the essentially determining characteristic of Classical art-forms in general, and the Classical tragedy's relationship to its audiences, in particular.

The common feature of science and art, on which our attention is focussed, is the implications of the notion called "geometry of position." To bridge that relationship between science and art, I turn to the case of Classical musical composition, which, as I shall show, is based on exactly those principles which connect the Classical drama to the mind of the member of the audience.

The Art of the Fugue

In his *The Art of the Fugue*, the founder of the method of modern Classical musical composition, Johann Sebastian Bach, presented an ordered series of pedagogical exercises, which, in fact, summarize the process of development visibly traceable in his life's work up to the close of his life in 1750. This principle so presented there, is otherwise typified earlier by his *A Musical Offering*.⁷ It was the latter

7. See *Fidelio*, Summer-Fall 2000 (Vol. IX, Nos. 2-3), pp. 4-109, for two-days' presentations of this principle of Bach's *A Musical Offering* and related works, at the international conference of the Schiller Institute in Bad Schwalbach, Germany, May 27-28, 2000.

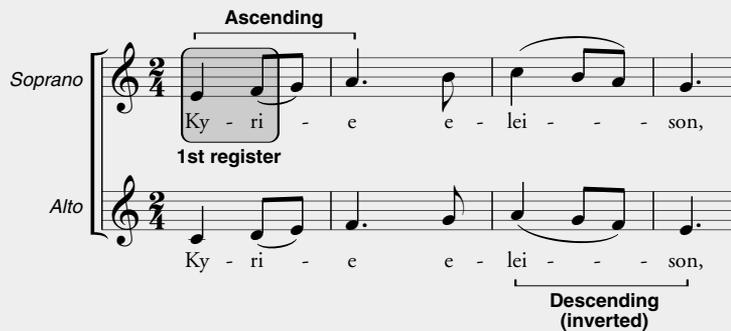
FIGURE 1. Beethoven's application of the Bach-Haydn-Mozart principle of thorough-composition.

Ludwig van Beethoven's *Mass in C, Op. 86* is a masterpiece in the use of inversion of complementary statements, each of which appear nominally in the same mode, but whose juxtaposition, as LaRouche puts it, "leads inevitably, through development through a series of quasi-dissonances of a type associated with the notion of Lydian intervals."

In the opening "Kyrie" movement, Beethoven states the single interval of a rising fourth. In the complementary statement which immediately follows, he then inverts this into a descending fourth:

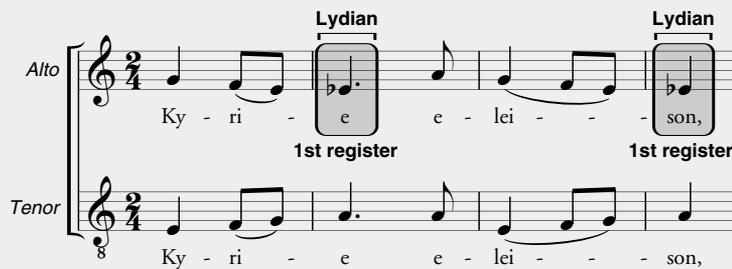


These two intervals are stated in two different voices, each with its own characteristic vocal register-shift. In the first statement, the soprano voice shifts vocal registers across the interval, from the low "chest" register, to the middle register; whereas the second interval is stated by the alto section, composed of contraltos and mezzosopranos, all of whom remain in the middle register throughout. The lack of a register-shift in the alto voice sets up a creative tension that is only resolved at the movement's conclusion.



Throughout the movement, these two intervals are repeatedly juxtaposed and altered, generating multiple quasi-dissonances, especially with counterpositions of the nominal C-Major scale, to the major scale that is based on the lowest note of the opening interval—E Major—thereby implying a complex of Lydian-type relationships to the original C Major.

The movement culminates in the jarring, simultaneous juxtaposition of both the rising interval, this time in the tenor voice, and an altered version of the falling interval, sung by the altos, but this time descending into the mezzosoprano's chest register, thereby satisfying the tension created at the outset.



—John Sigerson

composition, intensively studied, ostensibly from a time beginning about 1782, by Wolfgang Mozart, which led Mozart to combine what he had learned from both Josef Haydn⁸ and Bach, to effect that revolution in the method of composing Classical polyphony, which became known by such names as the *Classical thorough-composition* of such composers as Mozart, the later Haydn, Beethoven, Schubert, Mendelssohn, Schumann, and Brahms. It is that notion of thorough-composition, which I reference here, to demonstrate the relationship between an adequate performance of Classical tragedy and the audience.

This principle, as identified explicitly by Bach in his *The Art of the Fugue*, is a direct reflection of the method exhibited by the referenced work of Kepler and Fermat, *et al.* Accordingly, to compose such Classical music, or to derive a corresponding quality of song from such a musical idea, the following elementary steps must be completed.

State an interval, or a series of intervals of three tones in a well-tempered ordering of the musical scale, referenced at virtually C=256. Next, add a complementary statement, inverting some of the order in the series of intervals of the first statement. Do this in such a way, that, in an example of first approximation, each statement is derived from the same implied key, but the juxtaposition of this leads inevitably, through development, through a series of quasi-dissonances of a type associated with the notion of Lydian intervals [SEE Figure 1]. Bach's *A Musical Offering* is a model example of this. Mozart's recapitulation of that work of Bach, in his K. 475 keyboard *Fantasy*, summarily identifies that revolutionary step by Mozart, on which all Classical thorough-composition thereafter depended for its precedent [SEE Figure 2].

See this as echoing the examples of the previously referenced, similar conception by Kepler and Fermat earlier. The generation of a musical dissonance, in that fashion, pro-

8. Compare Haydn's "Russian Quartets," Opus 33, with Mozart's "Haydn Quartets," K. 387, 421, 428, 458, 464, and 465. See Lyndon H. LaRouche, Jr., "Mozart's 1782-1786 Revolution in Music," *Fidelio*, Winter 1992 (Vol. I, No. 4).

FIGURE 2. Mozart's K. 475 recapitulation of Bach's "A Musical Offering."

Opening statement of J.S. Bach's "A Musical Offering," showing the Lydian interval evoked between the C of the first half of the statement, and the F#, on the first stressed beat of the second half.

The image shows two staves of musical notation in G major (one sharp). The top staff is labeled "First half" and "Second half" with brackets. The bottom staff is labeled "Lydian" and has a bracket under the first half. The notation shows a melodic line with a Lydian interval (C to F#) highlighted between the first half and the second half.

In his Fantasy for Piano K. 475, Mozart condenses Bach's conception into a brief, but extremely intense statement, incorporating the Lydian interval into the very first measure.

The image shows the first few measures of Mozart's Fantasy for Piano K. 475. It is marked "Adagio" and "Lydian". The notation is in G major and shows a piano introduction with dynamic markings *f*, *p*, and *pp*. A Lydian interval is highlighted in the first measure.

duces an effect which is identical in form and implication to the cases of the paradoxes posed by Kepler and Fermat, respectively, in the physical-science examples. In musical terms, inversions crafted to produce that effect, are recognized as dissonances, because, on the condition that the dissonances are resolved within the completed composition, they create transcendental qualities of musical keys, beyond the 24-key major-minor domain, just as discovered universal physical principles lie beyond and above the bounds of the axiomatic system into which such paradoxes are introduced.

In that sense, such paradoxical juxtapositions, such as those generated by musical, contrapuntal inversion, negate the system into which they are introduced, just as Kepler's and Fermat's discoveries *negate* the system of assumptions into which they are introduced. It is in this sense, and only this sense, that, as I have said above, I employ the term *negation* hereinafter. Negation signifies a paradox which obliges us to find reality in principles which exist outside a referenced system of axiomatic-like assumptions. Such paradoxes thus *negate* the referenced system of axiomatic-like assumptions.

Now, turn directly, to view the famous Act III soliloquy of the character Hamlet from the standpoint of negation. The statement and its inversion, for this case, are "To be," conjoined to "or, not to be." Try hearing someone recite that soliloquy, even some celebrated recorded performance by a famous actor, and then explain to the person next to you, exactly, why the usual actor who

delivered that recitation does not know what he is talking about! [SEE Box, page 28]

Read the soliloquy. Identify the way in which the actor Shakespeare would have intended to play Hamlet, and would have delivered that soliloquy. I shall give you a hint as to how to discover what that would be. Turn to the closing scene of that entire play, and contrast the lines spoken by Fortinbras, to the alternative: the proposed prompt re-enactment of the tragedy before taking further action, posed in the same location [SEE Box, page 29].

For an easy comparison, reference the dialogue on principles of law, among Socrates, Thrasymachus, and Glaucon, in Plato's *Republic*.⁹ There, Socrates' use of the same principle of *agapē* set forth in Paul's I Corinthians 13, appears as a higher standpoint from which the negation posed among Socrates, Thrasymachus, and Glaucon, is overcome through the discovery of a relevant higher principle. In Shakespeare's *Hamlet*, by contrast, it is the negation of Hamlet's folly, as Hamlet states his intent to doom both himself and the Kingdom of Denmark, by his refusal to abandon his customary, "machos" mode of swashbuckling conduct, which is the higher principle adduced by the audience. In Classical thorough-composition, as in the conclusion of the fourth song of Brahms' *Four Serious Songs*, it is Brahms' concluding treatment of the *agapē* of I

9. See Plato's *The Republic*, Book 1, Loeb Classical Library series (Cambridge, Mass.: Harvard University Press, 1975).

Shakespeare's *Hamlet*: Paradox in Act III Soliloquy

"Negation signifies a paradox which obliges us to find reality in principles which exist outside a referenced system of axiomatic-like assumptions. . . . View the famous Act III soliloquy of the character Hamlet from the standpoint of negation. The statement and its inversion, for this case, are 'To be,' conjoined to 'or, not to be.'"

HAMLET:

To be, or not to be,—that is the question:
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or, to take arms against a sea of troubles,
And by opposing end them? To die;—to sleep;
No more; and by a sleep, to say we end
The heartaches and the thousand natural shocks
That flesh is heir to: 'tis a consummation
Devoutly to be wished. To die;—to sleep;
To sleep! Perchance to dream! Ay, there's the rub;
For in that sleep of death, what dreams may come,
When we have shuffled off this mortal coil,
Must give us pause. There's the respect
That makes calamity of so long life;
For who would bear the whips and scorns of time,
The oppressor's wrong, the proud man's contumely,
The pangs of despised love, the law's delay,
The insolence of office, and the spurns
That patient merit of the unworthy takes,
When he himself might his quietus make
With a bare bodkin? Who would fardels bear,
To grunt and sweat under a weary life,
But that the dread of something after death,—
The undiscover'd country, from whose bourn
No traveller returns,—puzzles the will,
And makes us rather bear those ills we have
Than fly to others that we know not of?
Thus conscience does make cowards of us all,
And thus the native hue of resolution
Is sicklied o'er with the pale cast of thought,
And enterprises of great pith and moment,
With this regard, their currents turn awry,
And lose the name of action.—Soft you now!
The fair Ophelia! Nymph, in thy orisons
Be all my sins remembered.

Corinthians 13, which is the subject of the kind of higher resolution typical of the poetic settings typical of Mozart, Beethoven, Schubert, Brahms, *et al.*

So, we have thus now touched here upon the essence of the subject of the modern Classical tragedy. However, there is a second principle to be examined, without which the art of successful forms of composition and performance of Classical music, poetry, and tragedy, could not be competently accomplished, or understood. The issue is typified by considering the function of musicality in composing that poem without words, otherwise called a "song without words," on which the greatest writings in poetry, are to be understood, as Friedrich Schiller insisted to a Goethe who was reluctant to acknowledge that higher plane of musicality in poetry, shown in the song compositions of Mozart, Beethoven, Schubert, and, implicitly, also, the later cases of Schumann and Brahms.

3.

Songs Without Words

Relatively illiterate people, who have yet to gain a competent sense of artistry, usually make the terrible blunder, of assuming, falsely, that the meaning of a Classical poem is to be found primarily, and originally, in the literal text of the poem. Unfortunately, such misguided fellows often recite and threaten to ruin the reputation of such poetry, in just that awful, putting-off, unbeautiful, often bombastic way.

On this account, I find most useful a statement by the now famous baritone, Dietrich Fischer-Dieskau, sometime youthful collaborator of the famous director Wilhelm Furtwängler, and early hailed by some, including me, during the early 1950's, as the prospective successor to Heinrich Schlusnus. I refer to a statement which Fischer-Dieskau has made in a recently broadcast observation on the subject of language, music, and poetry, to which I attach extraordinary importance on account of the issue which I have just posed.¹⁰ It were a proper undertaking of our best musical artists today, the Classical singers most notably, to look at Fischer-Dieskau's observation as I do. The same quality is exhibited in the related work, in the German repertoire in particular, of a recently deceased dear friend, Gertrude Pitzinger,¹¹ as in

10. Baritone Fischer-Dieskau's remarks on language, poetry, and Lied were seen originally on German and French television, in a documentary film entitled, "Dietrich Fischer-Dieskau: La Voix de l'âme. Geburtstag" ("Birthday Tribute to Dietrich Fischer-Dieskau: The Voice of the Soul").

11. Her performance of the Schumann *Frauenliebe* and of the Brahms *Vier Ernste Gesänge*, are notable examples.

the best among others. There is, for reasons I shall indicate, a great profit for art specifically, and for humanity in general, in pursuing that line of investigation.

As I shall now indicate, this matter of musicality of a Classical poem, as that principle of poetry must, contrary to the awful mannerisms of the late Sir Laurence Olivier, inform the playwright and performing artist, is crucial for recognizing the manner in which a successful performance of Shakespeare, for example, reaches into the deepest, most intimate region of both the cognitive powers and passions of the mind of the audience. It is also, in the same way, the key to recognition of the principle underlying the composition of the greatest Classical instrumental compositions, and to the relationship between the singers and the chorus of instrumental voices in Classical musical compositions generally.

Return to the observations which I made, above, on the function of the principle of inversion expressed in the referenced compositions by Bach and Mozart.

Among the rules for development of a long-lasting and beautiful development of the human singing voice, is obedience to the combined, and, actually, interdependent standards set by both the Florentine species of so-called *bel canto* development and use of the human singing voice, and the strictly well-tempered set of singing-voice (Keplerian, astrophysical-like) *orbits* (tonalities) defined by J.S. Bach's method in polyphonic counterpoint. Although such capabilities of the best singers require a cultivation of natural gifts, the gifts so cultivated, are a pre-existing disposition of not only the human singing-voice, and, also, speaking voice, apparatus, but are, as is often, most unfortunately, overlooked, also innate qualities of the human mental processes, the impassioned attributes of cognition most notably.

It is upon these considerations that the principles of Classical forms of poetic composition depend, both for their expression, and for the comprehension of the hearer.

The consequence of those considerations which has the most direct bearing upon the subject-matter of this report as a whole, is the following.

In the case of the Classical song, as in the musical setting of Classical poem, we are confronted with two functionally distinct kinds of musical orderings. One ordering, is that determined by the *bel canto*-specific vocalization of the poetry itself. The other ordering, is that determined according to the principles of composition defined by well-tempered contrapuntal thorough-composition.

That is to say, on the first account, that, in each language, or its dialectal variant, a distinct relative intonation is associated with the distinction of one vowel from another. This is coupled with the impact of the conso-

Shakespeare's *Hamlet*: Alternatives in Closing Scene

"Turn to the closing scene of that entire play, and contrast the lines spoken by Fortinbras to the alternative, the proposed prompt reenactment of the tragedy before taking further action, posed in the same location."

HORATIO:

Give order that these bodies
High on a stage be placed to the view;
And let me speak to the yet unknowing world
How these things came about: so shall you hear
Of carnal, bloody, and unnatural acts;
Of accidental judgments, casual slaughters;
Of deaths put on by cunning and forc'd cause;
And in this upshot, purposes mistook
Fall'n on the inventors' heads: all this can I
Truly deliver.

FORTINBRAS:

Let us haste to hear it,
And call the noblest to the audience.
For me, with sorrow I embrace my fortune:
I have some rights of memory in this kingdom
Which now to claim my vantage doth invite me.

HORATIO:

Of that I shall have also cause to speak,
And from his mouth, whose voice will draw
on more:
But let this same be presently performed,
Even while men's minds are wild, lest more
mischance
On plots and errors happen.

FORTINBRAS:

Let four captains
Bear Hamlet like a soldier to the stage . . .
The soldier's music and the rites of war
Speak loudly for him. . . .

nants. And, so on and so forth. In the attempt at a literal rendering of a poem by a speaker, the tendency of literate speakers, of which admittedly few emerge from our secondary and university education of recent decades, is to follow the musical line of the language's or dialect's so-called natural prosody, its seemingly natural musical expression. That is to say, the poem is read by the literate speaker of that language, as a musical score.

This was, speaking in relative terms, the view expressed by Goethe and his factional ally Reichardt, respecting the musical setting of Goethe's own poetry. Hearing the settings of poetry by Reichardt, illustrates Goethe's standpoint in this matter. Schiller disagreed, as did Wolfgang Mozart, Beethoven, and Franz Schubert. The differences between the treatment of Goethe's poetry, the one by Reichardt, the other by Mozart, Beethoven, and Schubert, confronts us with the relevant illustration of the issue to be considered here.

Simply stated, the correct approach to the musicality of Classical poetry, is that of Schiller, as Schiller's argument against Goethe and Reichardt is demonstrated so elegantly in practice by the Goethe settings, and other songs, of Mozart, Beethoven, and Schubert, as also by the songs composed by Schumann and Brahms later. In the examples provided by such composers, it is the standpoint of Bach's well-tempered contrapuntal polyphony which dominates the musical reading of the prosody. *The difference in result, is that the latter approach produces a work in the mode of well-tempered thorough-composition.*

The difference imposed by the application of the contrapuntal idea upon the relatively naive prosodic reading of the poem, is that the musical departures from the simply prosodic reading of the poetic line, must never be arbitrary impositions of the speakers' or singers' opinion, but must have a lawful reason. The point is, that in art, nothing must ever be arbitrary, never as the Romantics and so forth insist upon arbitrary, irrational whims, whims whose claims to art are limited to the presumption that that which is utterly irrational, such as the works of Richard Wagner, is unfathomably mysterious, and therefore incredibly artistic and sexy as well. There must be governing necessity, as there is in science. That governing principle of reason, must be supplied by the governing, underlying role of contrapuntal development, the contrapuntal development derived from the spark of well-tempered thorough-composition.

This latter view of the challenge posed by the musical settings of poetry, forces us to recognize, in the relatively clearest possible way, the kernel of the method by which the noblest compositions and performances in Classical tragedy, such as those of Shakespeare and Schiller, impart a cognitive passion within the audience, like no other works of similar kinds.

This takes us directly to the highest level of the art of politics. It focusses our attention on the way in which a well-performed Classical tragedy generates a certain condition within the mind of the sensitive members of the audience. This effect is essentially of the same character as the effect upon a musically literate audience of a well-delivered Classical musical song, or, for example, a Verdi aria such as

the famous monologue from *Simon Boccanegra*, or the aria of the dying Posa in *Don Carlo*, or a well-performed delivery of the hateful soliloquy of Iago, which Verdi added to his earlier setting of Shakespeare's *Othello*. The best singers love such parts from the repertoire, because of the way in which appropriate performance enables the singer to reach deeply into the mind of the individual member of the audience. The audiences love such performances, and regard them as beautiful, on the same account. This is the crucial consideration, thorough-compositional musicality and all, in the effective performance of a great Classical tragedy, such as those of Shakespeare and Schiller.

My intention here, is that you, the reader, should develop at least the rudiments of the ability to touch the inside of the mind of your conversation-partners, in ways consistent with that same principle. This is the quality you should recognize as underlying Plato's composition of his dialogues. This is the principle expressed in practice by the greatest poets, and by, yet once again, the Classical tragedies of Shakespeare and Schiller.

Classical beauty, is not an object at which to look in admiration, or, perhaps, lust. Such beauty is a relationship among persons, a relationship between the cognitive processes of the artist, on the one side, and the cognitive process of the audience, on the other. Only in what humanity has developed as Classical modes of artistry, is such communication efficiently accomplished.

Such art never descends to the banality of mere entertainment. It has a sacred spiritual quality, expressing a quality of the human cognitive processes, by means of which they celebrate and impose that law, that each man and woman is made in the image of the Creator of this universe. Here lies the superior moral authority of great Classical artistic composition and its performance. Here lies the wellspring of that moral authority which, as Shelley has reported, presents poets to us as the true legislators of mankind. Here lies that power in Classical artistic composition, which is never equalled in social authority by any other form of communication.

That said, now focus upon what might be described as the mechanisms, by means of which the Classical tragedy reaches deep into the cognitive processes of the mind of the member of the audience. How is the apparent stress between the two notions of musicality, those of prosody and well-tempering, to be resolved?

How To Compose a Poem

At this point, I must confess. I once did compose Classical poetry, many decades ago. It was a passable product, but that nasty *Zeitgeist* whose satanic grip had claimed to grip my times, forbade such products from disturbing

the complacency of rampant current custom. I consoled myself, that I had done enough to grasp the rudiments of such composition, and had gained thereby some of the essential insight which fed into the possibility of the discoveries which I have contributed to the science of physical economy. Among the benefits of that experience, as combined with my apprentice's insight into some of the greatest Classical compositions, I present you now, with what is a reliable summary of the method by which a modern piece of Classical poetry is to be composed. This is an approximation of course, but it is exact and accurate as to matter of the most elementary principles involved.

To compose a Classical poem, one should put the matter of text to one side, at least for a while, and concentrate fully on the most elementary principles of Bach's counterpoint.

On that account, let us assume that you have developed a fertile musical mind, at least to the degree that your thoughts are haunted by an ever-proliferating abundance of those kinds of musical ideas to which I have referred above: statement and inversion, as in the kind of counterpoint which leads potentially to Classical thorough-composition. It is out of what the printer calls the "hell box" of such stereotypical musical elements, that the proper poet, such as a John Keats for English, chooses a musical idea which he or she decides has an ingenious potential relationship to the musicality of a certain fragment of prosodic text.

If that poet has grasped the lesson which my references to the poetic musicality of Schiller, Mozart, and so on, imply, then the contrapuntal idea so chosen, serves as a driving force for the developmental elaboration and resolution of the prosodic element in question. This principle is demonstrated by such an example as Mozart's setting of "Das Veilchen," "Abend," and by the alterations in a Goethe poem typical of the musical settings of Mozart, Beethoven, and Schubert, and the sundry song-compositions of Schumann and Brahms. A most intriguing and fruitful connection, is shown by comparing the Heine settings by Schubert with the Heine settings of Schumann.

Under the governance of that kind of partnership between counterpoint and prosody, a good poet, whether adequately aware of this connection or not, will find himself, or herself carried, as on empyreal waves, to the full exposition of the germ-idea of his composition, unfolding as what becomes a satisfactory, completed development of the poem as a whole. To understand this most efficiently, it were sufficient to focus upon the role of a series of Lydian intervals in a short composition such as the Mozart *Ave Verum Corpus*, or his earlier

"Abendempfindung." In effect, the song-setting as performed, is driven by the energy, the passion, of the contrapuntal process, toward its goal of the completion of a perfectly coherent single idea, an idea whose expression requires neither more nor less than what has been composed and performed.

So far, up to this point, I have described the most essential formalities of the business. That much said, turn to the kernel of the matter. How does this all work within the mind of the member of the audience?

Perhaps more than routine familiarity with the Classical song-form is required for this, but, with work, the principle involved can be adduced in an empirical way. In the case of songs in the form of Classical thorough-composition, the idea of "songs without words" comes to the fore in a manner and degree which is, at first, not only astonishing, but stunningly so. Without words, such music, indeed, all Classical thorough-composition, represents a distinct idea, an idea without words. On this account, it seems at least as sensible to put words to music, as music to words. Every truly gifted Classical instrumental performer readily recognizes this certain quality which lies between the notes, the quality which guides the artistically successful performer, and which dooms some technically well-trained others.

The success of such performing between the notes, should be treated as a form of empirical evidence, showing that those qualities of the composer's and performer's minds which enable the Classical performance to reach into the virtual soul of the mind of the audience, are successful precisely because there is a resonance between those aspects of the creative, cognitive processes of both parties.

This should suggest to us, and it can be shown conclusively on solid ground, that the musicality which underlies well-tempered thorough-composition, and such uses of prosody as poetry and the great compositions of Classical tragedy, are essential, or, in other words, indispensable qualities of the power of individual human cognition itself.

In that sense and degree, the person who is unresponsive to Classical modes of composition and performance of poetry, music generally, and tragedy, is an emotional and cognitive illiterate, lacking in the development of an otherwise inborn, natural ability of the human individual, to think and communicate in cognitive, rather than merely deductive modes. Thus, these overtones of such principles of musicality, are inextricably linked to the arts of irony function, metaphor most emphatically. Without a certain literacy of the cognitive powers, on this account, the ability of the individual to see a remedy for a seemingly insoluble paradox, such as that of the Hamlet solilo-

quy, were impossible. On that account, and exactly that account, an entire people, an entire nation, an entire culture might be doomed to a catastrophe inflicted by its own hand.

The object of the leading personalities of society, must therefore be to awaken and to address those cognitive qualities of the individual mind, in which the passion required to induce cognitive solutions to paradoxes is aroused by musicality. To make this point transparent, return to the matter of geometry of position.

Closing In on Ideas

In Classical art, ideas have the same geometry as those ideas generated as validated discoveries of universal physical principle. As the case of the elementary idea in well-tempered contrapuntal statement and inversion illustrates the connection, all ideas arise within the human mind, solely by Socratic forms of *negation*.

That is to emphasize, that the type of idea posed by negation does not exist in the explicit elements of the respective parts of the conjunction. It exists, apparently, solely in the gap, the discontinuity which the contradictory feature of the conjunction situates. The idea occurs as a demonstrably efficient solution, existing outside either of the conjoined elements, for the paradox posed by the conjunction. The discovery of an empirically validated universal physical principle, is the archetype of such solutions to such forms of paradox. The point to be emphasized, is that all artistic ideas are of exactly the same form as the discovery of an experimentally validated universal physical principle.

Thus, the conjunction which I have made in the opening paragraph of this report, typifies the way in which a writer or speaker seeks to break through formalities to address the cognitive processes of the mind of the member of the audience. It is right to laugh *together with* Senator Eugene McCarthy in the matter of his readings of poetry. It is right *not to laugh at* Lincoln's readings of Shakespeare to the members of his cabinet. It is therefore silly, to deprecate the role of Classical art in shaping history. Why is this so? That poses a paradox. What is the answer to that paradox?

The purpose of all serious communication, even an exchange on a street-corner, is to bring into play the inner, cognitive processes of the person to whom one is speaking. It is only through the provocation of those cognitive processes, that real paradoxes of real life practice, can be transformed into cognitively generated knowledge of solutions to those problems. No other kinds of solutions to genuine, real-life paradoxes, exist.

The function of the Classical tragedy is to capture the

audience's attention from the start, by posing a paradoxical situation, a dramatic form of geometry of position, which admits of no discoverable solution except the generation of a cognitive form of discovery within the mind of the individual member of the audience.

If this address to the audience is successful in achieving that immediate goal, the result is to put the unfolding drama onto the stage of the imagination of the individual member of the audience. The object is to circumvent the potentially fatal error, of the empiricist's or materialist's blundering misapprehension of the shadows projected upon the wall of Plato's fire-lit Cave. The problem so defined by the theater, is the need to get the mind of the audience to shift its focus from a literal interpretation of the physical stage as such, the walls of the cave, to see, with the mind's eye, the figures and actions which have generated the images on the wall of that cavern which is the stage.

Once the mind of the audience's member has accepted that shift of the drama, from the stage as a cavern wall, to the stage to be found within the imaginative, cognitive processes of the mind of the individual member of the audience, a performance of a work of Classical art has begun.

To bring this effect about, that by itself is not sufficient. Deductive solutions as such, do not exist in such matters. There must be passion. It is the musicality of the drama which supplies the indispensable medium of passion. For this purpose, the modern Classical stage must learn to sing. It must proceed from emphasis on the principles of Classical prosody. To achieve the effects of thorough-composition, it must condition its musicality through the influence of education in the art of Classical thorough-composition.

In such matters, what you think you are saying, and the manner in which you say it, may not agree. That should worry you. Therefore, you should refresh yourself, bathe your soul in Classical poetry and song, that your mind might become better attuned and habituated to communicating in that relatively well-performed mode which Classical art-forms exemplify for your guidance. On this account, there is a precious lesson to be learned by all citizens and other residents of the United States, especially those oppressed by the ruinous policy-trends of the past thirty-five years, from, among relevant other sources, the polished form of what is called the Negro Spiritual.

"A Dialogue on the African-American Spiritual, with William Warfield and Sylvia Olden Lee," a report on the Spiritual as a Classical artistic form within the American tradition, appears on page 69 of this issue.

Leonardo da Vinci and the Perspective of Light

by D. Stephen Pepper

The remark has been attributed to Napoleon, that, when it comes to generals and prostitutes, sometimes amateurs do better than professionals. And, I believe that's true of historians. I'm using the term "amateur historian" in the Labor Committee* sense of the term; that is, someone who pursues truth for the love of it. Whereas, professional historians are more inclined to dilute the truth, in order to make a living. So, we have a kind of simple definition of an amateur, and a professional, in this field.

Now, I speak with some authority, because I am both. I have been, and to a certain extent, still am an amateur in the love of truth, in the sense that we have used that in the Labor Committees. I also make a living as a professional art historian, and so I know something about diluting the truth, or doing whatever one does in the course of making a living. And, this evening, I'm going to try to use both experiences, so to speak, to try to set up an argument which has the validity of the pursuit of truth, but which also has a certain amount of what we used to call in the bad old days of the 1960's, "bourgeois historian professionalism." That is to say, I'm actually going to try to quote directly from the sources, so that you can see that I'm not making it all up.

The first thing that I want to show you, is this famous image, the "Baptism of Christ"—and, for those of you who've had



FIGURE 1. *Andrea del Verrocchio, "Baptism of Christ" (with Leonardo da Vinci), c. 1470.*

the good fortune to be in the Uffizi in Florence, you will recognize this as Leonardo da Vinci's earliest contribution to the history of the visual arts [SEE Figure 1]. He

* The International Caucus of Labor Committees, the philosophical association founded by Lyndon LaRouche.

This article has been edited from a lecture presented in Leesburg, Virginia, in September 2000. A biographical note appears on page 53.

painted this figure here, the angel on the left, and this landscape here above the angels, in a painting that was otherwise done by his master, Verrocchio. And, what I'm going to try to show you, is that these are indeed two different universes, side by side, one by Verrocchio, and one by Leonardo, which operate on fundamentally different principles. And this was so striking, that when Verrocchio saw Leonardo's contribution to this painting, he decided to quit painting. He realized that if this young man, who was less than twenty years of age when he did this, was so far ahead of him, there was no point in pursuing the *métier* of painting. So, he devoted himself for the rest of his life, to being one of the greatest sculptors who ever lived.

Verrocchio was no fool, however. He was no second-rate man. But, the incredible effect of this contribution of Leonardo's, staggered Verrocchio, and staggered the world. So, let's try to look at it in greater detail if we can [SEE detail, front cover, this issue].

The point is, that compared to Verrocchio's work, and to everyone else's at the time, Leonardo's figure was bathed in atmosphere. It was bathed in a luminous atmosphere, and therefore, it appeared to be much more natural, and breathing, and much more complete, than anything that Verrocchio did, or anybody else did. And you can see all of that in the various flickering ways that the light plays, and so on. This is not just a technique, or an approach to art. This was a fundamental understanding of the physical universe. Which is, for Leonardo, that the fundamental, the primary character of the physical universe, is *light*, and its correlate, shade. Light and shade, from which all objects emerge.

Pascal has said, that we understand more than we know; that is, our grasp of what is true, or what is real, or what is existent, is greater than our level of knowledge at given any time. And this is exactly the situation with Leonardo. It fits Leonardo perfectly, because Leonardo was, I think, nineteen years old, when he did this. He did not know, as yet, the principles on which he based this image, but he under-

stood them. He understood that this is a physical universe. That it was not an abstract universe, made up of lines, or contours; but, actually, it is *phenomena* that he was dealing with. And from this time forward, from the very beginning of his activity, Leonardo was interested in only one thing: the exploration and understanding of these phenomena. Only later did his knowledge grow, as to what he was already actually comprehending, and acting upon, in this image.

And that's what we will try, in very brief fashion, to recognize tonight.

Leonardo: Father of Physics

What I'm saying, to put it very simply, is that Leonardo is really the father of physics. For him, this was not abstract, but physical in nature. And I want to try to document that, beginning with this passage from his Notebooks, which I want to read to you:

Among the studies of natural causes and reasons, light chiefly delights the observer. And among the great features of mathematics, the certainty of its demonstrations, is what preeminently elevates the mind of the investigator. Perspective, therefore, must be preferred to all the discourses and systems of human learning. In this field, the radiating line of light is explained by those methods of demonstration which form the glory, not so much of mathematics, as of physics, and are graced with the flowers of both. But, its axioms being laid down at great length, I shall abridge them to a conclusive brevity, arranging them by the method both of their natural order and mathematical demonstration. Sometimes by deduction of the effects from the causes, and sometimes arguing the causes from the effects, adding also to my own conclusions, some of which, though not included in them, may nevertheless be inferred from them.

Thus, if the Lord, who is the light of all things, vouchsafed to enlighten me, I will treat of light, wherefore, I will divide the present work into three parts, being a treatise on light.

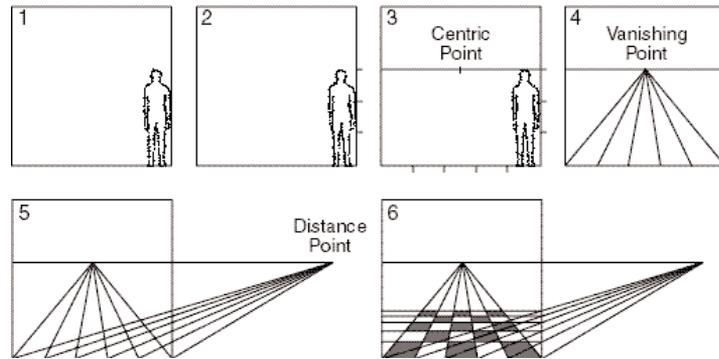
Now, this is a beautiful statement, and certainly puts to rest the claim that

Leonardo was an atheist, which is advanced by many people, because he didn't spend all of his time talking about God. But he had it very clear here: "The Lord is the light of all things," which I think is a very adequate statement. From that light, we are enlightened, and he pursued the study of light. Perspective, is the study of light. Now, this was a radical departure.

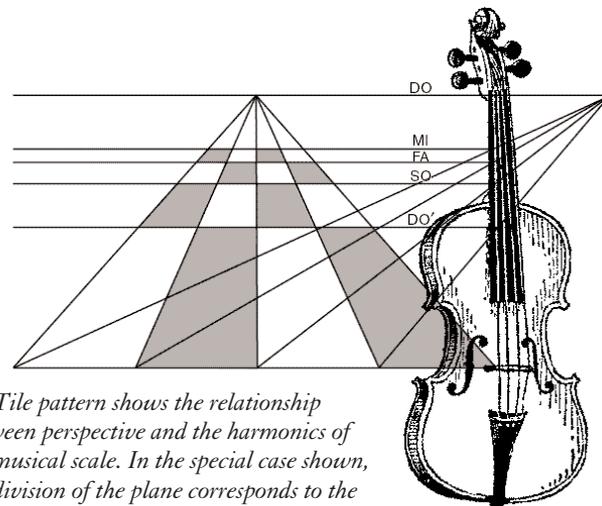
First of all, we see how important perspective is, that this is what we're dealing with in the Fifteenth and early Sixteenth centuries, in what we call the Renaissance. Perspective was a fundamental issue in the Renaissance.

I brought along a couple of charts that some Labor Committee members and I did many years ago [SEE Figure 2]. I want to just show you the background, briefly, of perspective. Figure 2(a) is what is called a "*costruzione legittima*." The great architect, Filippo Brunelleschi, this great genius, was also a political office-holder in Florence, he was in charge of the Maritime Commission of Florence, he was everything, a multi-faceted character. Now, Brunelleschi *demonstrated* perspective: He did not prove it. He did not argue it. He demonstrated it. He made what we would call a "camera obscura," a little box, which was pointed at the Baptistery of Florence. He put in a mirror, and he made a perspective drawing, and in the perspective drawing, he made a small hole, which is the key thing in the story of the camera obscura. So, when the light rays came through that hole, he had drawn on the back of this screen, the Baptistery, so when people looked through it, they could see, on the mirror, reflected, an absolute construction of the Baptistery, done by a perspective drawing. And they were absolutely astounded. They couldn't believe it. They didn't know what they were seeing, whether they were seeing somehow the Baptistery transformed, or whatever. Then, he did it again, with a two-point perspective, for the Palazzo Signoria, the seat of government. I've always believed that it was important for Brunelleschi to show that perspective worked both for the Church and for the State. It wasn't just something that worked for one part of the society, and not for the other. Because, that's the way his mind worked.

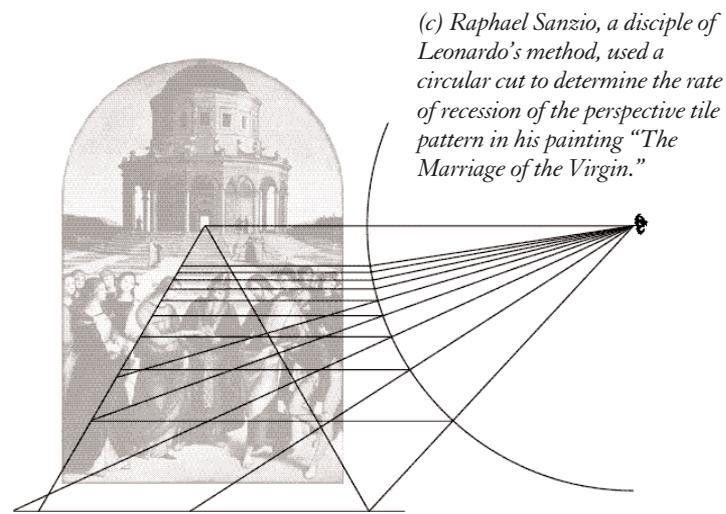
FIGURE 2. *Development of perspective in the Renaissance.*



(a) Construction of perspective "tile floor" by Leon Battista Alberti, using "*costruzione legittima*."



(b) Tile pattern shows the relationship between perspective and the harmonics of the musical scale. In the special case shown, the division of the plane corresponds to the diatonic scale.



(c) Raphael Sanzio, a disciple of Leonardo's method, used a circular cut to determine the rate of recession of the perspective tile pattern in his painting "The Marriage of the Virgin."

In any case, along came Leon Battista Alberti, a dozen years later, and he wrote a small book called, *On Painting*, originally in Latin, and then translated into Italian, and there he showed how you could construct a perspective drawing, which is shown right here [Figure 2(a)]. Basically, what Alberti did, is he applied principles that were used in surveying, to create the *costruzione legittima*. You have the horizon line, which is placed here at the height of a man; then, you have orthogonals, lines which are receding into space, which meet at a central point; and then, by extending the horizon line to a certain point, you then create a series of diagonals, which cut the orthogonals in such a way, that when the drawing is completed, they give you the tiles of recession, corresponding to visual perspective, linear perspective.

And, it's further shown in the diagrams, that these lines would cut a string, in such a way as to give you the major scale [SEE Figure 2(b)]. And, Leonardo commented on that in a page of the *Codex Atlanticus*. There's a wonderful book by Rudolph Wittkower on the *Architectural Principles in The Age of Humanism*, which shows how the entire system of Renaissance architecture, applying Platonic principles, and this discovery, was developed, whether we're talking about Brunelleschi, or Alberti, or Michelozzi, or any of the great architects.

This is why perspective was such a cen-

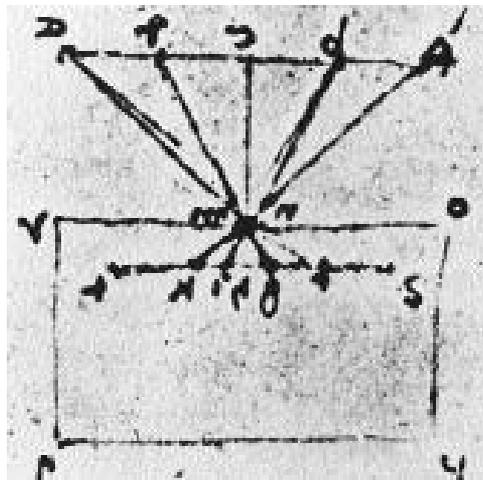


FIGURE 3. *Leonardo da Vinci, Notebooks, drawing of camera obscura, Manuscript D, fol. 8a.*

tral issue in the Renaissance: Because it showed very clearly, and very precisely, mathematically, that the Universe was harmonic, and ordered by harmonic principles. After all, before Brunelleschi, people *did* see things in depth, they didn't just bump into chairs, and go around like blind people. In fact, if you look at paintings by Giotto, or you look at antique art, and so on, there is an approximate perspective, which is called "natural perspective," based upon the similarity of angles. You can get a relatively visually satisfying image on a flat wall, by using these techniques. But it was not mathematical, it was not harmonic, and it was not demonstrable that it worked universally. Therefore, it could not be said to have the authority of law.

That was the situation when Leonardo appeared.

One more diagram: This was the perspective system supposedly used by Raphael in the "Marriage of the Virgin" [SEE Figure 2(c)], where, instead of using straight lines, he's using curved lines to create the intersection; that's how to interpret the funny way that this recedes. And of course, that represents a very significant development internally in the history of perspective.

Now, I'll just take a moment here to show you a one of Leonardo's scientific diagrams: it's a *camera obscura* [SEE Figure 3]. And if you look at this, and at his use of orthogonals, as in the drawings from the *Codex Huygens* I'm going to show you later, it's perfectly clear that Leonardo was thoroughly familiar with the previous history of perspective.

The Revolution in Perspective

Some of you may remember discussions of this that I made many years ago. This is a diagram that appears several times in Leonardo's Notebooks [SEE Figure 4], and it shows three equal spheres, or balls, and then it shows two intersections, and then a curvilinear intersection. What he shows is, that, according to linear perspective, the further an object is from the eye, the smaller it should appear, and the great advantage in linear perspective is, that it gives you a very

precise, mathematical system for establishing the ratios of distance to size and to height. But here, you can see that if this intersection is very close, the further two objects on the periphery, would project a broader, that is, a larger image, than the one in the center, which is closest to the eye—contrary to the presumption, and contrary to Nature. However, if the intersection is curved (line *gf*), then that distortion would disappear. What is debated very much is this line *ed* here, this intersection. The person who wrote the text I have here, claims that what this line is, is Leonardo re-projecting onto a linear surface, the new intersection, which would permit him to render a curvilinear or spherical perspective back onto a flat surface. It's the problem that John Mercator faced, in making a map of the globe. Well, it's not so clear, and also, it doesn't seem to work.

What is absolutely certain, however, is Leonardo's analysis that shows that there are devastating flaws in the way linear perspective was understood. Because, if you come very close, or you extend the angle of vision, and you approach the margins, you get phenomena, you get anomalies, which don't correspond to Nature. Now, since the principle of perspective, which was universally accepted by the leading thinkers of the Renaissance, is, that it is universal and true under all conditions, this left a gaping hole. And Leonardo, in his usual way, determined to solve the problem.

We see in one of the drawings that Leonardo made, that, in great measure, he was concerned with correcting this problem geometrically, with curved intersection. In fact, that became later on a great preoccupation of the school of Leonardo in the North of Italy. But, I think that Leonardo's primary solution went in another direction.

Let me, first, just read to you. Leonardo writes, in Manuscript E—I'm going to make a comment about the manuscripts in just a moment, after I finish this point—Manuscript E is dated 1513-14; he died in 1519. The earlier manuscripts are 1490-92, so this is a relatively late comment.

"The practice of perspective may be divided into"—and then he leaves blank how many parts; he hasn't decided—"of

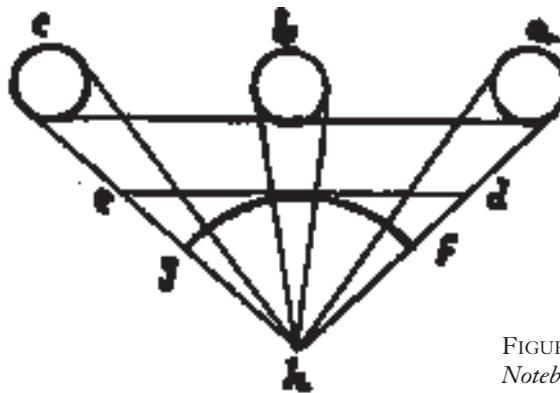


FIGURE 4. *Leonardo da Vinci, Notebooks, diagram showing flaws in linear perspective, redrawn from Manuscript E, fol. 16a.*

which the first treats of objects seen by the eye at any distance. And it shows all these objects just as the eye sees them diminished, without obliging the man to stand in one place rather than another, so long as the wall does not produce a second foreshortening." Well, that's a very obscure phrase, and I can't interpret it, so I'll just leave it. You know, he uses the term "*pariete*," which can mean a lot of things. "But the second practice is a combination of perspective, derived partly from art, and partly from Nature, and the work done by its rules, is in every portion of it, influenced by natural perspective, and artificial perspective." Now, that word "artificial" in the translation, is a modern word; I don't remember what appears in his Italian, but we can look it up. "By natural perspective, I mean that the plane intersection on which this perspective is represented as a flat surface, and this intersection, although it is parallel, both in length and height, is forced to diminish the remoter parts more than its nearer parts. And this is proved by the first of what had been said above, and its diminution is natural. But artificial perspective, that is, that which is derived by art, does the contrary."

And that's exactly the point we've just seen, in the three-sphere diagram: It operates *contrary* to natural vision. "For objects equal in size increase on the intersection, where they are foreshortened in proportion, as the eye is more natural and nearer to the intersection, and as the part of the intersection on which it is figured, is further from the eye."

Leonardo's Notebooks

I am now going to intrude upon this argument, a comment about the Notebooks. There are about 7,000 pages of notes by Leonardo. He probably made 20,000 in all, of which two-thirds are lost. So, you can see that the problem of dealing with Leonardo's thought is complicated by the fact, that we have only about a third of what he wrote down. I don't believe that this is devastating, as most writers do, because it seems to me, that he went over problems, he returned to them. The main issue is, for us, to establish the chronological sequence, so that we know where his thought finally arrived. Because it's very clear, from even my relatively simple and superficial consideration of these problems, that what Leonardo thought about perspective in 1492, he certainly did not think in 1513 or 1514, and so on. What is really interesting, is to try to sort out the progression of his thought. Because, in regard to perspective, he went from believing in the linear, geometric abstraction, to believing in the physical principles of the phenomena of light, as defining perspective, as we have just heard.

Now, this is completely different from all the famous Renaissance characters that we know so well: Brunelleschi, Alberti, up to that beloved personality, Piero della Francesca. Piero della Francesca, for instance, was not interested in anomalies. He was interested in the immutable, unchanging laws of Nature. If there was a problem at the periphery of vision, or when you got close, or this or that, it didn't concern him. He wanted to represent, and to demonstrate, the immutable structure, given by geometry, of the Universe. As you know, Piero's most important work was devoted to the ordering of the five Platonic solids. He was the culmination, you might say, of a long tradition of research, going back to Leonardo Fibonacci, on this problem. And his work was taken over by Luca Pacioli, and Pacioli joined Leonardo in Milan, and elsewhere, to produce the *Divina Proporzione* (*Divine Proportion*), which is a special case, the Golden Section, based on the ratio of the side, to

the long diagonal of the pentagon.

However, Leonardo was not interested in the *immutable* laws of Nature. Leonardo was interested in the fact, that the immutable laws of Nature *appear to us in a mutable, transient* Nature. And therefore, we have to discover the relationship, using our senses, and using our experimental method, we have to *establish* the relationship, between the transient Nature, and the immutable laws. This became *physics*. This became the systematic study of physical phenomena which *reveal*—which cannot be assumed, but reveal—immutable laws. He was not about to throw out immutable laws and introduce a chaos theory, or something. But—just like God: God does not appear to us. He is *communicated* to us *through* the visible universe. And we *discover* God in the visible universe. And by so doing, we come, as Cusa and other people have studied, we come to know the nature of God *indirectly*.—*Vero, no?* We don't know Him—wake up in the morning, and there He is sitting at the end of the bed! We have to *discover* all of this.

And that is the character of Leonardo. He is going to examine the phenomena of Nature, to discover, in these transient forms, the true character of the Universe. And this, to my mind, is the birth of modern physics, and is one of the great changes in the history of culture. Certainly, the period of Brunelleschi to Piero is a great change, but the change from Leonardo to Raphael to eventually Kepler, and so on, is an even greater one, in my view. And this is the nature of it. And I will hope that we can all stay awake long enough, that we can get to Rembrandt, and see that Rembrandt is part of this process, that he is fundamental to this process.

The Role of Light

Now, as I said, one of the principal things that Leonardo came to recognize, which makes the difference between his view of 1492 and his later view, is the role of light. Let me quote:

Every body in light and shade fills the sur-

rounding air with infinite images of itself, and these, by infinite pyramids, infused in the air, represent this body, all in all, and all in each part. Each pyramid that is composed of a long converging course of rays, includes within itself, an infinite number of pyramids, and each has the same power as all, and all as each. The equidistant circle of converging rays of the pyramid gives to their object, angles of equal size. And, the eye will receive the thing from the object, as of equal size. The body of the air is full of infinite pyramids, composed of radiating straight lines, which are caused by the boundaries of the surfaces of the body, in light and shade, placed in the air. And the further they are from their cause, the more acute are the pyramids. And although in their concourse, they intersect and interweave, nevertheless, they never blend, but pass through all the surrounding air independently, converging, diverging, diffused. And they are all of equal power, all equal to each other, and each equal to all. By these images of bodies, are carried all in all, and all in each part, and each pyramid, by itself, receives, in each minutest part, the whole form of the body, which is the cause.

Now, this is really one of the most beautiful statements of physics that you can ever come across. You can see, that what he is saying is, that, it is as if this luminous air, which we occupy, has the *potential for all images*. Everything that we see, is potentially there in this luminous air, as a consequence of light and shade. Now, when you think about it, you can see that that's what we saw, in the difference between Verrocchio and Leonardo. In Verrocchio, as in all other artists of the Fifteenth century, the images are all closed and bounded, as if they were sealed into themselves. With Leonardo, none of these images are sealed or bounded. They are all interacting with the atmosphere. And that interaction, the active ingredient of that interaction, is light and shade.

Now, I'll show you a stunning drawing by Leonardo, which gives you the idea [SEE Figure 5]. He has drawn the light, so that it strikes this object. Just grasp the incredible precision of his eye and of his rendering. You see, he shows how the light on the surface turned to the light, how it gradually turns into shadow, and

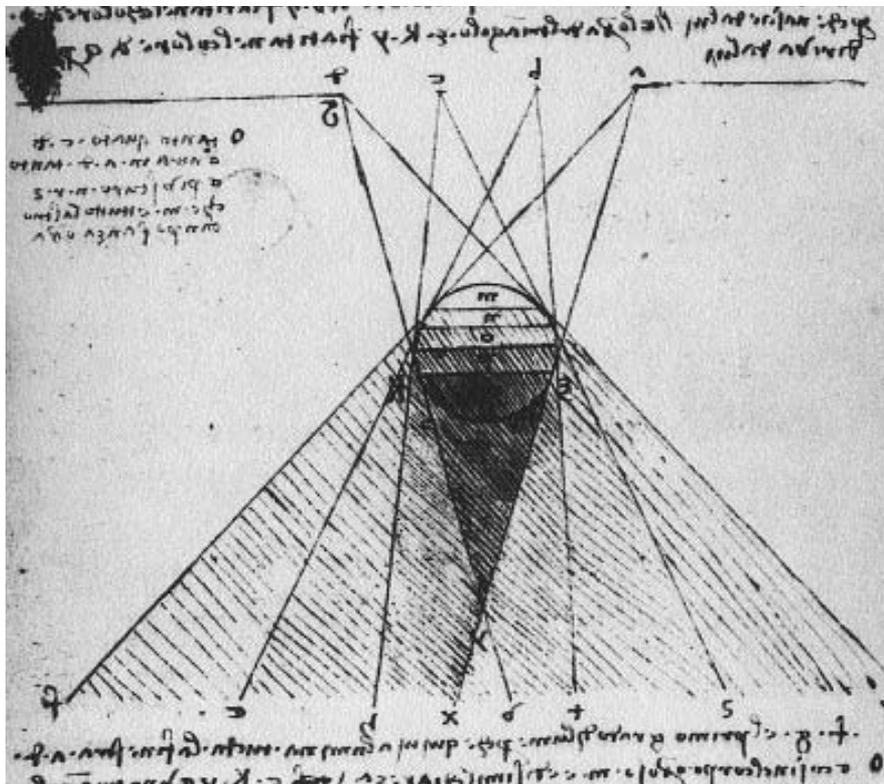


FIGURE 5. Leonardo da Vinci, *Notebooks*, drawing of gradation of light and shadow, Manuscript B.N. 2038, fol. 13v.

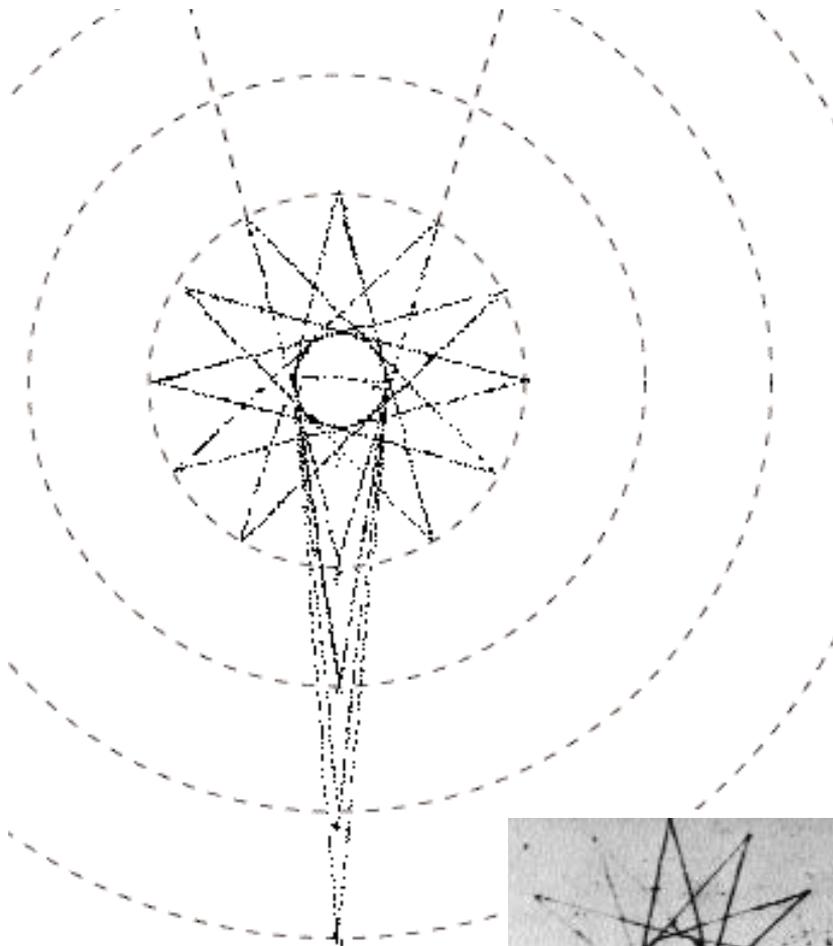


FIGURE 6. *Leonardo da Vinci, Notebooks, diagram of spherical radiation of light, redrawn from Manuscript A, fol. 86v.*

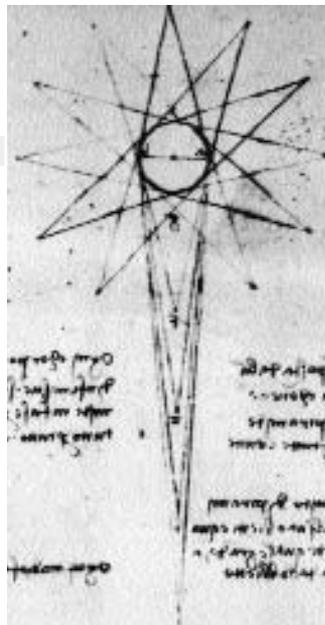


FIGURE 6(a). *Detail, Leonardo da Vinci, Manuscript A, fol. 86v.*

therefore, the area where no light reaches, has become perfectly dark. Where there are all of these gradients, this is where there is a mixture of light and shade. In other words, contrary to what most people believe, light and shade are continuous in nature. They don't cut off. They don't have boundaries. Of course, this is the

basis for his famous rendering of drawings in the method of *sfumato*, "smokiness." And he shows you that all of this can be measured, by degrees, not numerically, but by degrees of shading.

So, you see, that where the lines in Alberti diagram were simply abstract, geometric lines, here, they represent the phenomena of light rays, which is a totally different idea.

I'm going to show you another remarkable drawing [SEE Figure 6]. You see here, his drawing of how these cones, these pyramids—and in the center, this is the object that is radiating, and these cones show you the directions of radiation, radiating out in all directions; and also, these are the concentric circles, in which, as the light diminishes, you can see by degree, and also, you can see that the angle becomes more acute. The inset corresponds more closely to the original Leonardo drawing [Figure 6(a)].

I'll now turn to some written material again. Remember, what I'm pointing out here, is the progression of Leonardo's thought about these matters.

The Treatise on Painting

We come now to Leonardo's preparation for what has come to be known as the *Treatise on Painting*. He prepared a treatise on painting that was not published—actually, he left the notes; what is known as the *Treatise on Painting* is a codex in the Vatican Library, which was prepared by his student Melzi, based upon Leonardo's notes, and presumably, his instructions—it was not published until 1561, and a modern edition only came out in 1894 by the grandfather, or the great-grandfather, of a scientist who collaborated with us, named Winterberg. So, like most of Leonardo's material, it did not see the light of publication in his lifetime. It was published in France in 1561, and the definitive edition was done by Winterberg in, I think, 1882, in Vienna, as part of a history of treatises, including, eventually, *The Divine Proportion*. In fact, Winterberg may have done the edition of *The Divine Proportion*, and

somebody else did the *Trattato (Treatise on Painting)*. I don't remember now; I may have confused them.

However, the fact is, that, in his preparation for the *Treatise on Painting*, he wrote these things:

There are three branches of perspective. The first deals with the diminution of objects as they recede from the eye, and is known as diminishing perspective.

That is, basically, linear perspective, or Albertian perspective, or some form of geometric perspective.

The second contains the way in which colors vary, as they recede from the eye.

The third and last, is concerned with the explanation of how the objects ought to be less-finished in proportion, as they are remote, and the names are: linear perspective, the perspective of color, and the perspective of disappearance.

You see, the further away, the objects become fuzzy. They lose whatever apparent definition they have. Let me read you something from a book I'm working on writing now: "Leonardo attributes the causes of these three perspectives, in the first instance, to the structure of the eye, and in the latter two, to the atmosphere which intervenes between the eye and object seen. The causes all concern physical effects. The role of the atmosphere in transforming boundaries and colors, or the structure of the eye, in seeing diminution. In this, Leonardo differs from all of his predecessors," etc.

So, this is where Leonardo arrives. He is concerned with the physical principles of perspective. He uses the language of geometry, of abstraction, indeed as Cusa does, as a language, but he does not believe that this geometric language renders the reality. For example, as you know, there is, as you approach the horizon, at long distances, there is a transformation in the color scale towards the blue or the ultraviolet. We all see that in a airplane or at long distances. We all see the diminution of clarity or precision in objects seen at a distance.



FIGURE 7. Piero della Francesca, "Montefeltro Altarpiece," 1469-74.

I want to just briefly show you Piero della Francesca, dearly beloved Piero della Francesca. This is his altarpiece in the Brera [SEE Figure 7]. You can see precisely what I am talking about here, in regard to the point that Piero della Francesca is not interested in anomalies. He's interested in the immutable character of visual reality, and he believes that it's on that basis that we encounter, or recognize, divinity. You can see, just as in his teacher Domenico Veneziano, a half-century earlier, all of the colors remain of the same intensity, wherever they're placed.

I'm going to show you another example



Alinari/Art Resource, NY

FIGURE 8. Piero della Francesca, "Birth of Christ" ("Adoration"), 1480.



Alinari/Art Resource, NY

FIGURE 8(a). Detail, "Birth of Christ."

of this from Piero, just because it's so much fun to see it [SEE Figure 8]. Here's something which adorns many of your walls, the "Adoration" in the National Gallery in London, and I'll just show you a detail [Figure 8(a)], which undoubtedly reminds you of Luca della Robbia's "Singing Cantoria," now in the Opera del Duomo of Florence. You can see that Piero has not changed his system at all over the fifty intervening years, and you can see the per-

spective maintains its clarity; so that one of the things that appeals to us, in Piero, is the purity and the assertiveness of the geometric forms, and the way they hold their clarity and precision throughout. That's exactly what Leonardo set out to overthrow! Not in a mean-spirited way, but in a developmental way.

The Last Supper

I want to introduce something else into the argument now. You all know this, all the world knows this, Leonardo's "Last Supper," in the refectory of the church of Santa Maria delle Grazie in Milan [SEE Figure 9]. I want to make a rather surprising comment: As you know, this painting is a failure. Leonardo tried to use a new technique, and by any account, in its limited sense, it was a failure. The picture is a ruin. It became a ruin almost immediately, and it caused Leonardo considerable embarrassment. But, on another scale, it is the greatest success in history, because it's the most famous painting in history, and it has had an enormous influence, and so on.

So, what's going on here?

First of all, was Leonardo so stupid that he just went ahead and did something, tried a new technique, for no reason at all? No, he *had* to do something. I don't know if you know what fresco is, but fresco is a method of applying paint on a wet, prepared surface, a plaster wall surface. That surface is called *intonaco*, and it's very unforgiving. You can only cover a certain area at a time, because, as the surface dries, the paint will not adhere. So, you have to paint very quickly, you usually have to prepare everything with, what in Italian are called *sinopie*, underdrawings, and then, you have to fill in the paint, the lines of the drawings on the wet wall. You can only do a certain amount each day, what is called, not surprisingly, *giornata*, a day's work. And one of the things we study in art history, is we can now discover all of the *giornate*, so we know exactly how a wall has been painted.

But you can obviously see, from this

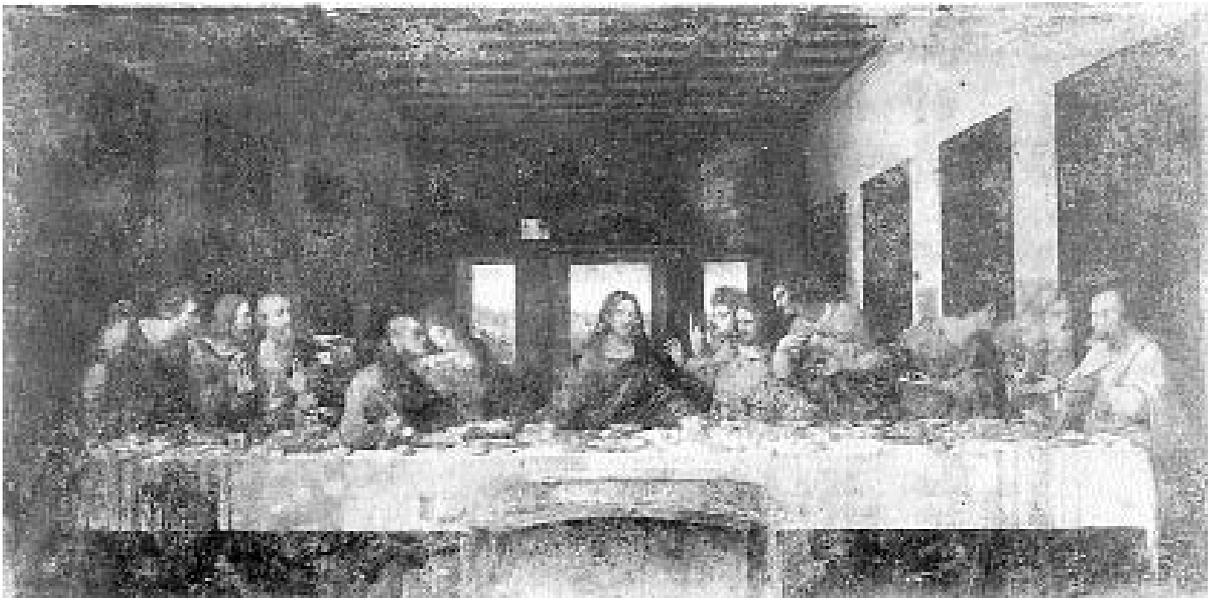


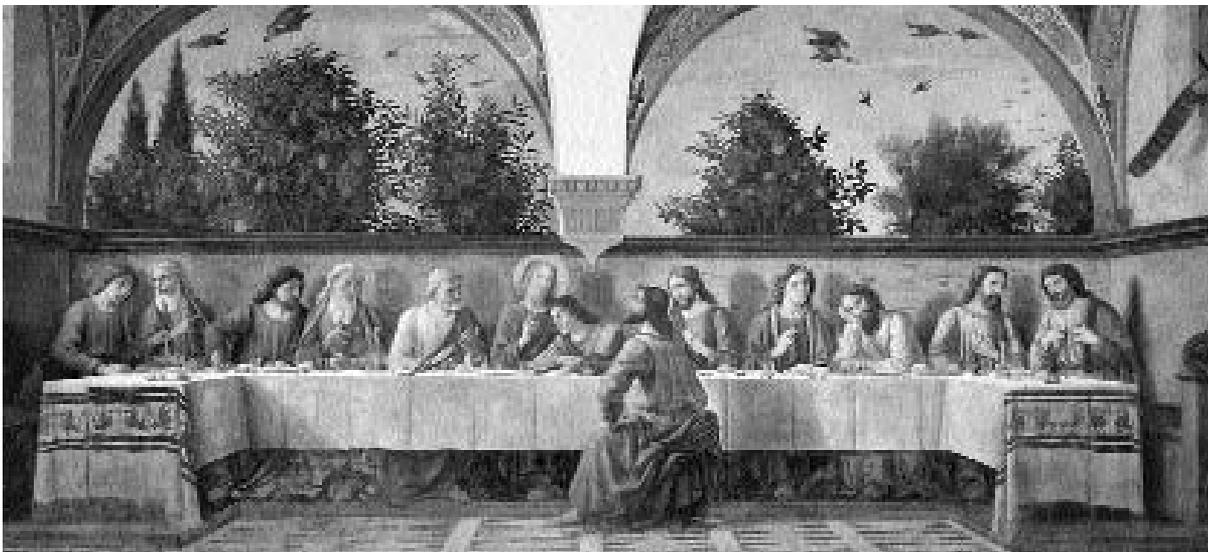
FIGURE 9. *Leonardo da Vinci, "Last Supper," 1495-98.*

method, that you have no opportunity to change your mind, or to do something instinctive, or intuitive, or to capture something fleeting. Everything is prepared in advance, and then you have to put it on, put it on, put it on. So, what was Leonardo attempting to do? He was attempting to free himself. He tried to develop a method by which you could paint directly into the wall, in a method similar to oil painting—but different from oil painting—so you could make changes, you could change things around, and you could enlarge upon what you were trying to do, if you changed your mind here and there.

What Leonardo was trying to do, was to make the whole thing *expressive*. He was trying to show what the response of the Apostles was when Jesus announced, "One of you will betray me." Which is indeed a thunderclap observation, and is worthy of being demonstrated.

Let me show you the traditional way this was presented, before Leonardo. This is a "Last Supper," painted by a contemporary, or near contemporary of Leonardo, a contemporary of his teacher Verrocchio, named Domenico Ghirlandaio, and a very great painter, indeed, a wonderful painter [SEE Figure 10]. But, he always has to play

FIGURE 10. *Domenico del Ghirlandaio, "Last Supper," 1480.*



the foil to Leonardo, because he makes such a good foil. This is Ghirlandaio's fresco, which exists in the refectory of the church, I believe it's the church of the Ognissanti, located exactly between the two luxury hotels, the Excelsior and the Grand, in Florence. There's the Piazza Ognissanti, and that's where this is. I could just as well show you Andrea Castagno, or any number of other people who painted a "Last Supper." But after Leonardo, no artist who wanted to be thought of in any way as modern, ever painted a "Last Supper" looking like these: static, without drama, without emotion, without movement, without change, and so on.

This is the problem which was, in part, enforced by the fresco technique. So, that's what Leonardo was trying to do. That's what caused his ruin. He was trying to introduce, into this, a means by which you could show the expressive content of the painting.

Now, what I am going to say here is this: There is a direct connection between considering the Universe from the standpoint of *physics*, and transforming the art of painting, into the art of *expression*. The change in the volatility of the work, the change in the expressive power of the work, is directly connected to Leonardo's conception of the world that we live in, as a physical universe, consisting of phe-

Leonardo's Unity of Thought

There is a book on Leonardo by Kenneth D. Keele, *Leonardo da Vinci's Elements of the Science of Man*,* which is a very honest book, I think, and which tries to reconstruct, more or less accurately, the material. How brilliant he is, or not, I leave to your judgment. But, at least you won't be dealing with someone who believes that Leonardo is an Aristotelian, or a member of the faculty of the University of Chicago, or something like that—which many people do.

The usual idea is: "Well, Leonardo's a botanist on Monday, and then on Tuesday, he takes up his brush, and then on Wednesday, he's working on mechanics; and on Thursday" As if he were forced to fit into the disciplines, as they are established. But, the great challenge, and the great puzzle of the Notebooks, as they have been left to us, is how to reconstruct the

unity of Leonardo's thought. Two-thirds of the Notebooks are lost. They have been corrupted. For example, the famous *Codex Atlanticus* was slapped together by a crude salesman, to sell it.

But, meticulously, over time, scholars have, to some extent, reconstructed what can be rediscovered of Leonardo's original notebooks. What people have not been able to discover, principally for a problem of cultural prejudice, is how these all go together as a unity of thought.

For example, Leonardo did a book, or a treatise, on astronomy, that was meant to be part of a chapter of a super-treatise, which included a treatise on the eye, which has survived; we have the codex that deals with the subject of the eye. Well, no one in modern times would do that. But, in Leonardo's way of thinking, since it was the eye that received the astronomy, the heavens, they went perfectly togeth-

er. He was trying to have a totality of how the physical world functions: how we see, what we see, and so on. So, the super-treatise would have gone from astronomy, down to botany. There would have been a book, one of his books, on light. This is really something you can explore. You can get the various publications, Richter's edition of the Notebooks, which again, you see, distorts the situation, because it's organized by category—which is useful, in one sense, you know, "Perspective," and so on. But Leonardo never considered perspective isolated from astronomy. The problem is, that when you get these modern works, the categories that they establish are contrary to the systematizing that he did, which would have made it possible to follow his thought through. The challenge of anybody who wants to pursue this—and you don't have to be an expert to pursue it—is to establish Leonardo's continuity of thought.

—DSP
post-lecture discussion

* (New York: Academic Press, 1983).

nomena that could be represented. Because the principle here is the principle of, fundamentally, light and shade, then elaborated by gesture and pose, and so on, all of which are really extensions of the same notion, that Nature, the physical world, is not fixed and immutable, but changing and transient, and that if you have to render it, you have to be able to render its *changing* character, and not its fixed character. So that's what all of this is about. That's why, in his usual fashion of recognizing how *anomalies* give us insight, Leonardo said that the people you have to observe are deaf mutes. In fact, his student Melzi's son was a deaf mute! I didn't know that; I just read about it in preparing for this talk. He goes on, in his Notebooks, saying how, if you want to study gesture, you have to look at deaf mutes. The point is, that art, as the art of *expression*, and not of fixed verities, is another invention of Leonardo's. And it comes, as directly—I can't say it's an extension of, it's part and parcel of his view of how the physical universe functions. I'll read you some comments of his.

I'm reading from this book that I'm writing on, basically, the art of expression, or at least that's the first part of the book—just like Leonardo, I'm going to have a book on the art of expression, and this is part one of it, devoted to an artist named Annibale Carracci: "Fundamental to Leonardo's outlook, is that material phenomena, observed in the world, are not autonomous, but are, instead, the consequence of causes that arise through the action of universal laws of Nature." And that is the idea: that we are confronted with a world of phenomena, a changing world of phenomena, but which have a source in universal law. "Further, Leonardo believed that these laws could be known, and that it was the task of the artist to penetrate the surface of Nature, to reveal their actions. Since painting is, in fact, a science, in fact the greatest of all sciences, it not only represents the appearance of all things, but it reveals the causes

which create them, and reveals how they are formed. The scientist-painter not only portrays Nature, but its intentions. Leonardo expresses these views throughout his writings, and in his paintings, but they are most concisely expressed in the *Paragone*, the first part of the *Codex Urbanus*, preserved in the Vatican Library, entitled, *Libera di Pittura di Maestro Leonardo da Vinci, Pittore, Scultore Fiorentino*. That is, *Paragone*, which is a famous book in itself, is the introduction to the *Treatise on Painting*. "Leonardo writes:

If you despise painting, you will certainly be despising a subtle invention, that brings philosophy and subtle speculations to bear on the nature of all forms. Sea, land, plants, and animals, grasses and flowers, which are employed in shade and light. Truly, painting is a science, the true-born child of Nature. It is in the joining of painting, which extends to the surfaces, colors, and shapes of all things created by Nature, to Philosophy, which penetrates below the surface, in order to arrive at the inherent properties, which makes of the painter, he who apprehends the foremost truth of these bodies as the eye errs less.

"The purpose of so much of Leonardo's effort, indeed, the very purpose to write the *Trattato* [*Treatise*], is directed at training the painter's eye to see with the penetration of philosophy, so that painting, the most noble of all sciences, because it serves the eye, will realize its true purpose, to deal with the quality of things which constitutes the beauty of the works of Nature."

So, you see where this development, in its broadest form, has been articulated by Leonardo.

Now, here is more in my text, specifically on the expressive content. The woman who edited the *Paragone* wrote, for Leonardo, "the body was shaped by the spirit, and it is for the painter to reverse this process, and to create a body that give expression to the soul." One of Leonardo's followers, Lomazzo, wrote this story about Leonardo: "There is tale told that Leonardo once

wished to make a picture of some laughing peasants. He picked out certain men, whom he thought appropriate for his purpose, and sitting close to them, he proceeded to tell the maddest and most ridiculous tales imaginable, making them, who were unaware of his intentions, laugh uproariously. Whereupon, he observed all of their gestures very attentively, and impressed them on his mind, and there, made a perfect drawing, which moved those who looked at it to laughter, as if they had been moved by Leonardo's stories at the feast.

"Leonardo further comments: 'A good painter is to paint two main things, namely, the man, and the working of man's mind. The first is easy; the second, difficult, for it is to be represented through gestures and movement of the limbs, and these may be best learned from the mute, who make them more clearly than any other sort of man.'"

So, let's look at the "Last Supper" again. Now, the virtue of any lecture on art, is that you can *see*. You can *see* that the whole question . . . —just like these men laughing uproariously, the gestures are captured. Here is how Leonardo has proceeded: with numerous drawings, he has captured when someone hears something appalling or sur-

prising, just as the gestures of a deaf mute. And of course, only a trace of this is left today, but you can see that the whole environment is luminous, and the Christ, at the center of this luminosity, with the light behind him, is the key to the whole arrangement. But, this you can all see, so I'm not going to spend the time waxing poetic about what *I* see.

Instead, I want to show you this [SEE Figure 11]. Wonder of wonders! It's Rembrandt doing the "Last Supper." Now, Rembrandt never went to Italy, and yet he understood the "Last Supper" perfectly. He made four or five drawings, based upon prints that he saw of the "Last Supper." But he understood Leonardo. And he created this masterful drawing. Unfortunately, we can only get a glimmer of it here. He's transformed it, of course, but, he's understood the idea of *emphases*, expressed in contrasts of heavy emphasis of shadow, and so on. And he has grasped the importance of every gesture, or the gestures. And, it's just a wonderful, lively, red-chalk drawing, which communicates much more of the essence of Leonardo, than very accurate copies.

So, we've now brought Rembrandt into the picture.

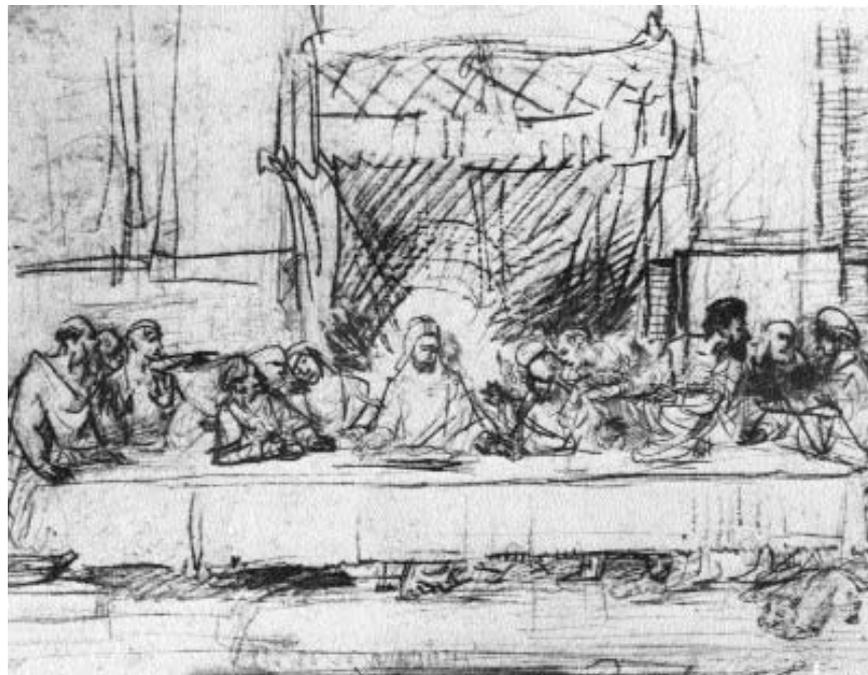


FIGURE 11. Rembrandt van Rijn, "Last Supper" (after Leonardo da Vinci), red chalk drawing, 1634-35.

The Metropolitan Museum of Art



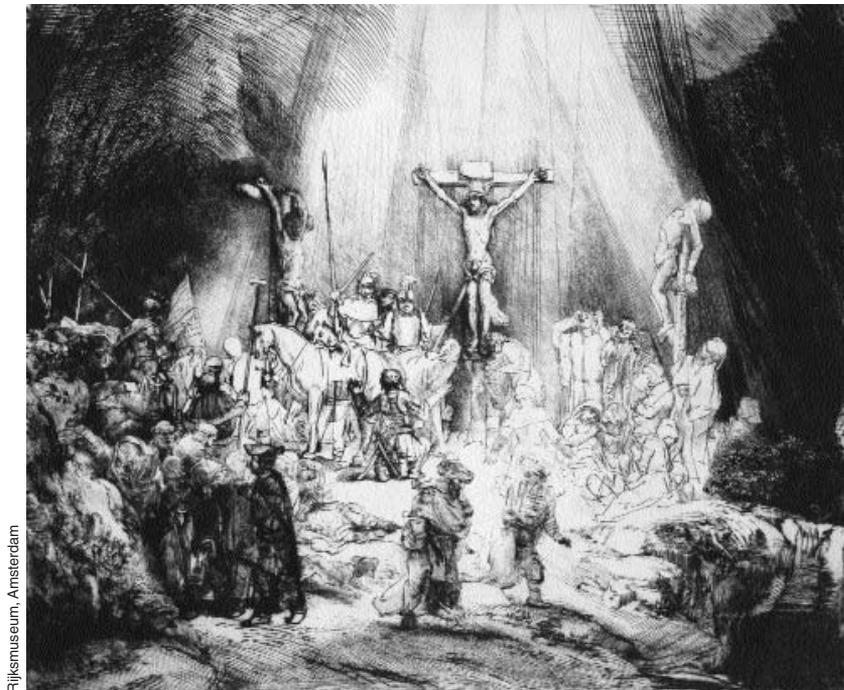
FIGURE 12. *Exhibition catalogue, "Rembrandt: Experimental Etcher," showing successive phases of plate, "Rembrandt Drawing at a Window," 1648.*

Rembrandt: Light and Shade

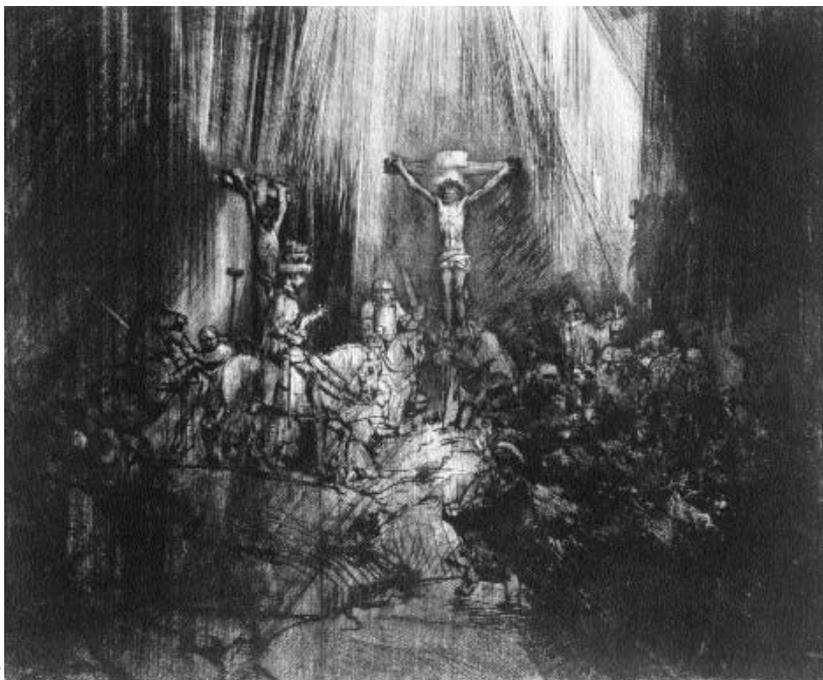
This is the cover of an exhibition catalog on Rembrandt as an engraver [SEE Figure 12]. What is wonderful about this, is that it shows you, all on one sheet, about fourteen or fifteen proofs of the same etching. First of all, it's very important that it's Rembrandt who's making the engraving, or making the drawing. That is, it is a man who is at work with his mind. And since Leonardo has pointed out, that the hard point is to represent the working of the mind, the movement of the mind, then we have a wonderful expression of that here. He has posed himself next to a light source, almost like a Leonardo experiment.

And, what he has changed in the successive proofs, what he has studied so meticulously—just like a Leonardo Notebook—is the penetration of greater and lesser light, the interaction of light and shade. In that interaction, the entire content, the expressiveness of the work is contained.

I can show you several other examples of how what concerns Rembrandt in each and every case, is the change in the proportion of the amount of light available, or the interaction of light and shadow. For example, we have this famous print of the Crucifixion [SEE Figure 13]. You'll see, that time after time, what concerns Rembrandt is almost the "quantity" of light, or shade, or darkness, or lightness that will appear.



Rijksmuseum, Amsterdam



Rijksmuseum, Amsterdam

FIGURE 13. Rembrandt van Rijn, "The Three Crosses," phase I (top), phase IV (bottom), 1653.

Here is a painting at the Frick Collection in New York, by the early Rembrandt, painted in 1631 [SEE Figure 14]. You can see that the outline is fairly complete in this early painting, it is not broken and mottled, as in the later work. And you can see, that the shadow, the light, is almost like an object. You could say, he paints this shadow on the collar, and the shadow has a shape; and he paints the light here, on the face. So, light is objectified. It's something that can *fall into the painting*.

If we can turn to a very late work, and to his favorite subject, his self-portrait, you can see all of that is changed. Even in the reproduction, you get a sense of the *impasto* [SEE Figure 15, and inside front cover, this issue]. *Impasto* is an Italian word, from which pasta also comes, meaning doughy. It is a thick treatment of the paint on the surface. You see how the light and shadow—the shadow eats into the surface, and that everything is now rendered in an atmospheric fashion. So we have a transformation, very similar to that which took place in Leonardo's activity between 1492 and his thought of 1513.

I have many other wonderful Rembrandt paintings here, and I'm going to show you one, or maybe two more. This is a painting in the National Gallery here in Washington, which, if you come upon it in the right mood, and you are ready for it, you will burst into tears [SEE inside back cover, this issue]. No question about it—in fact, I'm in danger of doing that right now. It is the most moving painting; it represents the tragic woman Lucretia, who kills herself after she has been raped by Tarquin, and disgraced. Everything that we have seen of the way that the phenomena of the physical universe can be represented—the breaking of the light by the *impasto* surface, so that nothing is sharp or clear—it is all *morbido*, it is all in that fashion. The gestures. The study of the gestures. The way the light falls on the hand. The tilt of the head. All of these features, bring you to the point where you are so aware of the tragedy of this event, the disgrace and the redemption through her suicide, that you cannot help yourself but be

swept away by the clarity—not by just emotion—but by the *clarity*. Now, that’s the point I want to make: There is no distinction here, between the way the physical material is used, and the ability to render it expressive. It’s not like we’re studying, on the one hand, physics, or physical properties, and on the other, art and art expressiveness. They are absolutely unified. That is what Rembrandt gets from Leonardo.

I’ll just show you another treatment of this incredible subject [SEE Figure 16]. Here’s Lucretia again, mournful and bleeding, just, you know—all of this based upon the way the light and shade interacts here, just as in his engravings.

Okay, I have some things to read now. We’re coming to the conclusion of this discourse. I bring Rembrandt into my book, because I say that there is a relation between Annibale Carracci and Rembrandt. Later, as a coda to this, I’m going to show you a couple of things by Carracci. Here’s what I say:

“But the most striking feature that they shared in common, was the view that the creative act was defined by the autonomous will of the artist. That this view was held by Rembrandt, was demonstrated by the attitude attributed to him by Arnold Houbraken in his life of the artist. Houbraken wrote that Rembrandt made the remark, that a picture is completed when the master has achieved his intention by it.

Now, this is contrary to what you always hear, “Oh, it’s the patron who says . . . ,” and so on. Rembrandt maintains that you know when the picture is finished, when it satisfies your intention. That is to say, it is an expressive vehicle. “That means, that what guided Rembrandt, was his own intention. And it was exactly that elevation of the principal role played by the artist’s own creative power, that is celebrated in his self-portraits. With Annibale it’s not quite as explicit, but nevertheless, it’s there. As to their methods, they were both masters of the expression of the emotions through gestures.” The method of *affetti*, it’s called in Italian. “At one portrait, Houbraken comments, ‘The



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FIGURE 14. *Rembrandt van Rijn, “The Merchant Nicolaes Ruts,” 1631.*



Erich Lessing/Art Resource, NY

FIGURE 15. *Rembrandt van Rijn, “Self-Portrait,” 1669.*



FIGURE 16. Rembrandt van Rijn, "Lucretia," 1666.

Minneapolis Institute of Arts

head appeared to protrude from it, and address the beholders.' Another pupil, Samuel Hoogstraeten, adds his praise of Rembrandt's representation of emotions, when he wrote of the wonderful attention given to the depiction of people of all classes, who are listening to St. John preaching." This is St. John, and all the people are there, and what Hoogstraeten was prais-

Rembrandt and the Science of Light

One thing that is very interesting, is, to look at the relation of the physical character of Rembrandt's paintings, to the discussion of the wave theory of light, and the radiation of light, being done more or less contemporaneously.* Because, as you know, Rembrandt's paintings are done, especially the late paintings, with this attention to the thickness of the pigment, so there is actually, physically, a process taking place, of the light being refracted, its entrance and its reflection, which gives the experience, as if the light originates in the painting, as a feature of the physical properties of the paint. Rembrandt was very conscious of this. That's why he did it.

—DSP, post-lecture discussion

* The work of Huyghens, Fermat, and Leibniz; see page 54.—Ed.

ing, was the attention, the various expressions, on the faces of the various people listening to the speech.

"Many remarks of contemporaries attest to the widespread appreciation of Rembrandt's use of *chiaroscuro*, and his ability to render reflections, the study of which Leonardo had laid particular emphasis. Two features of Rembrandt's technique are singled out: his use of *impasto*, and his break-up of the color. And these are techniques which were used in Venetian painting, in particular, if you think of the late Titian, for example." And then the book gets into material which is interesting, but a little too off the track for us.

The North Italian Tradition

What I'm suggesting is, that this discovery, that the principal and primary—the *prima materia*—of this universe, is light, and its correlate, shade; and that everything that we see is a characteristic of that primary material, as we see it in the luminous atmosphere, and is the basis for rendering the emotions. And that this development corresponds to the development of Leonardo's emphasis on this at the end of the Fifteenth, and the early part of the Sixteenth centuries, and it is then communicated through a school of art in the North of Italy, which is very well represented, by the way, in the National Gallery in Washington: Bernardino Luini, and other artists of Leonardo's school, particularly Boltraffio is a great artist, and so on.

Let me just show you one by-product of that. This is something called the *Codex Huygens*, and it's now in the Morgan Library in New York. Curiously, the Huyghens family was very closely connected to Rembrandt. The elder Huyghens, who was the secretary to the Staatholder of Holland, wrote the first biography of Rembrandt, when Rembrandt was still a young man in Leiden, or just after he came to Amsterdam. He commissioned a series of the Passion, which is now in the Munich Alte Pinakothek, and his two sons, Christiaan and Constantijn, were the great scientists, or one of them was, anyway, who

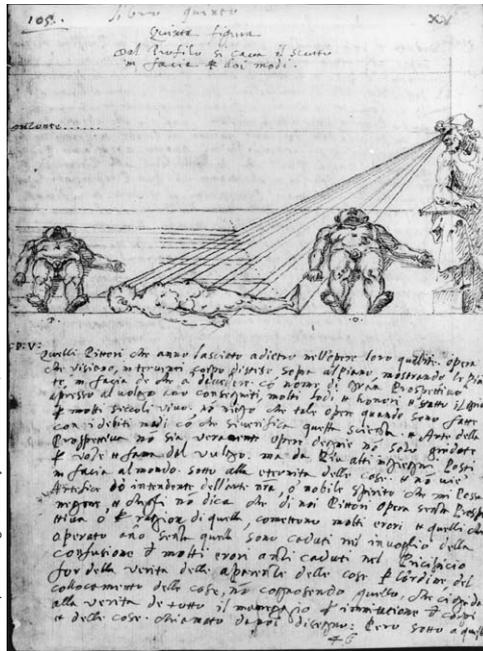
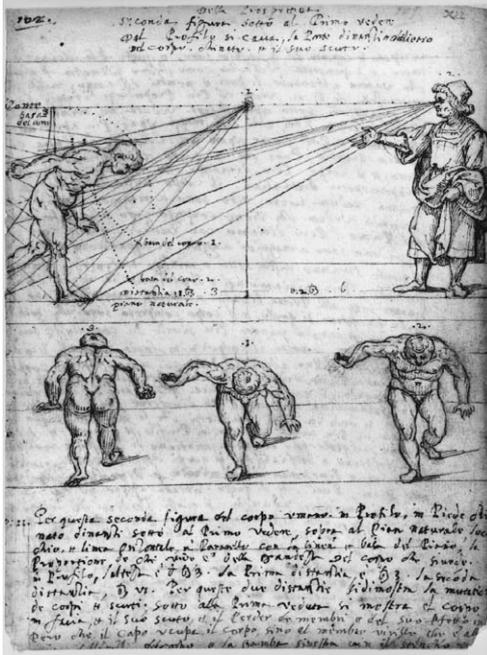


FIGURE 17. Carlo Urbino (after Leonardo da Vinci), *Codex Huygens*, fol. 102r (left), 105r (right).

worked in Paris. Both had been pupils of Rembrandt; both had learned drawing from him. We have a correspondence between the two brothers, in which one Carracci asks the other to examine some Carracci drawings, because they wanted to know whether the drawing by Carracci owned by Rembrandt was authentic, and the great collection of Carracci drawings was in Paris.

This latter Huyghens bought a codex, which was thought to be by Leonardo, but, in fact, it's by a pupil of Leonardo. Nonetheless, it gives a very good idea of the continuing study of the principles of movement and motion of the human body, which, of course, affected many people who came in touch with Leonardo, most notably, Dürer (although this is later than Dürer). There's a close connection between Dürer and the North of Italy.

Here are drawings from the *Codex Huygens*, which are all based upon the idea of the angle of vision in natural perspective [SEE Figure 17]. What he's interested in, is how you can regularize the rendering of figures seen from below, seen from straight on, seen from above. A very Leonardesque set of problems. Some of the drawings must come from the artist's copies of lost Leonardo drawings. And it's very interest-

ing, this idea of the rendering of the figure, seen, in forced perspective, feet first. If you remember, there's a wonderful painting by Mantegna, of the "Dead Christ," with similar perspective, and that goes on down in time, through Northern Italy.

So, we have a very definite school,

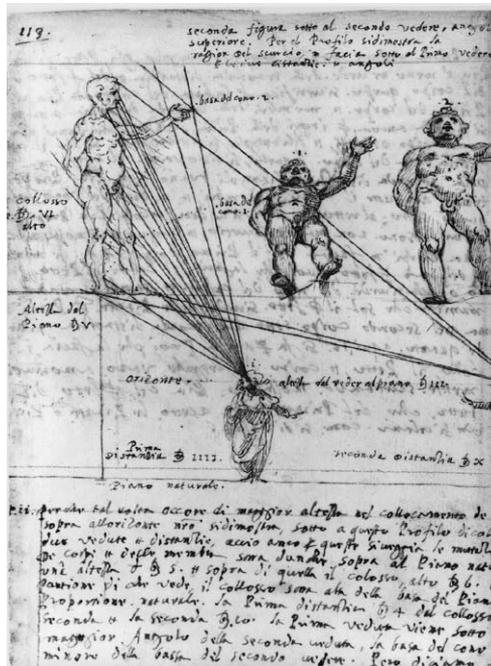


FIGURE 18. Carlo Urbino (after Leonardo da Vinci), *Codex Huygens*, fol. 113.



FIGURE 19. Annibale Carracci, "Bean Eater," (c. 1583).

shaped by Leonardo, but continuing past his death, where the study of the physical properties in the problems posed by perspective, and so on, are minutely studied. Bramantino, many treatises were done by artists in the North of Italy; and it's a very different tradition from what's taking place in Central Italy and Rome at the time, influenced by Michelangelo. That is to say, Central Italy and Rome is influenced by Michelangelo, and the North of Italy is influenced by Leonardo.

I'll just show you one more drawing, a colossal statue, gesturing and being seen from different angles, found in the *Codex Huygens* [SEE Figure 18]. This is another kind of problem, an architectural problem.

So, this gives you an idea of how the Leonardesque tradition survived. In my opinion, the greatest artist who took it up, was Annibale Carracci. I cannot really go into it very much, but I'll show you one or two things by him, which will, if not amaze you, at least amuse you. Let me show you this wonderful painting that he made of a man eating beans [SEE Figure 19]. Now, what this is, actually, is a kind of caricature. Annibale invented the caricature, which is completely in the Leonardesque tradition.

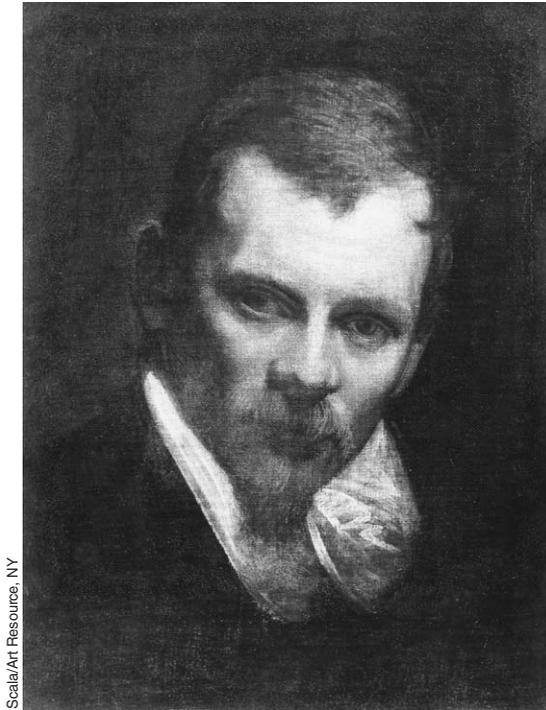
Leonardo made drawings of deformed people, but he did not make them as specific representations of people. That's what Annibale introduced. It fits into the whole idea of the anomalies of Nature, telling you more about Nature than the standard. You can't imagine Michelangelo making a drawing of a deformed face, or of a bean-eater! So, what happens is, that the chap is about to lose his spoonful, the gravy is falling down. The reason is, because some intruder has come into his den. This obviously was born of an observation, although this is a finished, worked-up painting to be sold. But Annibale obviously encountered this chap on the road between Parma and Bologna in Italy, where he travelled frequently, because the delectable dish shown here is called *erbasone*, which is a specialty of Reggio Emilia. Apparently, you can only get it in Reggio Emilia. Indeed, I have eaten it in Reggio Emilia. And I don't know exactly what it is; it's something like Brussels sprouts, or something like that, you know. I never ask. Otherwise you might not go forward with your courage!

This means, that Annibale saw this event take place in a sort of squalid tavern on the way between Parma and Bologna, indeed, exactly where you find Reggio Emilia. And then, he got home, and he made a painting of it. It's a very Leonardesque idea, the whole thing; it really represents gluttony. It doesn't represent gluttony in the way the Sixteenth century did, some kind of deformed, allegorical figure, who's called "Gluttony." It's someone in the act of gluttony, and that's what makes it funny and appealing.

Here is a portrait by Annibale [SEE Figure 20], long believed to be a self-portrait, but actually not, a portrait of another artist named Antonio Vassillacchi, and it's in the Uffizi. You see that it fits between Leonardo and Rembrandt, if we think of the *percorso* that I've been discussing: this North Italian tradition of representing, by the physical means, the interior of the individual, the existence of an animating soul, which becomes the burden of Rembrandt's

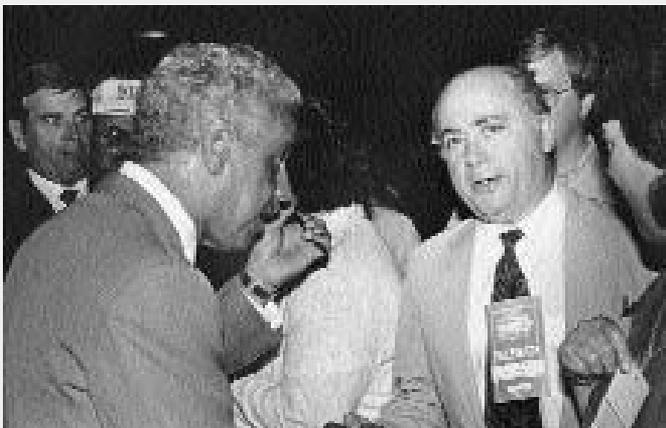
activity. We might call this whole development, from Leonardo through Annibale, through the North Italian school, Annibale to Rembrandt, the “History of Self-Consciousness.” The artist becoming aware of his own powers, as the intervening and determining power *vis-a-vis* Nature. Because Nature is no longer a fixed set of attributes. It’s a changing, transient process, and you see how Annibale conveys the idea, with a tilt of the head, the intensity of the eyes; very important. He’s putting the eyes into shadow, so that you have to look into the picture, and the course of looking into the picture, is a metaphor for you looking *into the person*, seeing that thing, the interior, not the surface, which is the difficult part of art. This is completely in the tradition of Leonardo to Rembrandt, the very quick and sketchy way he’s rendered the setting of the head in the collar, and so on, so as, on the one hand, to give the feeling of the transience, the spontaneity of the situation, while not distracting from the intensity and the focus on the head.

So: I think the best thing to do is to quit while I’m ahead, and I think I’ll leave it at that. If we can have the lights, we can take some questions, and have discussion.



Scala/Art Resource, NY

FIGURE 20. Annibale Carracci, “Self-Portrait” (“Portrait of Antonio Vassillacchi”), (c. 1590).



EIRNS/Suzanne Kiebe

D. Stephen Pepper (right) greets Virginia Lt. Governor (later Governor) Douglas Wilder, at the state Democratic Party convention in 1989. A prominent LaRouche Democrat, Pepper was running for the post of Chairman of the Virginia Democratic Party.

D. Stephen Pepper

Art historian Dr. D. Stephen Pepper was a long-time associate of Lyndon LaRouche and the Schiller Institute. An expert on Renaissance art, he was the recognized world authority on the Italian painter Guido Reni, authoring the definitive *Guido Reni: A Complete Catalogue of His Works, with an Introductory Text* (New York: New York University Press, 1984), and was called upon to authenticate paintings in collections throughout Europe and the United States. He died suddenly in Italy in December 2000, at 63 years of age. “Leonardo da Vinci and the Perspective of Light” was the last lecture he delivered to members of the LaRouche political movement.

Two Papers on the Catenary Curve And Logarithmic Curve

(*Acta Eruditorum*, 1691)

G.W. Leibniz

LEIBNIZ'S PAPER *on the catenary curve*, was written at the instigation of Jacques Bernoulli, for the *Acta Eruditorum* of Leipzig, June 1691. Following the example of Blaise Pascal, who had initiated, in 1658, a contest for the construction of the cycloid, Gottfried Leibniz also provoked the geometers of his time, by challenging them to submit, at the fixed date of mid-1691, their geometric method for the construction of the catenary curve. Leibniz later provided the answer, followed by Jean Bernoulli and Christian Huyghens.

The two following papers are a historical account of the origin of the study of this transcendental curve, and, at the same time, the first physical-geometric construction showing the species-relationship between the catenary and the logarithmic curves, as two companion curves; one arithmetic, the other geometric. (All of the differentials of the catenary curve, are arithmetic means of corresponding differentials of the logarithmic curve; and, all of the differentials of the logarithmic curve, are geometric means of the catenary.)

This discovery of Leibniz, which was based on the quadrature of the hyperbola, is a beautiful example of the method of PROPORTIONALITY AND SELF-SIMILARITY, which has been the hallmark of Platonic physical-geometry from the first applications of the Thales Theorem, to the later constructions of Carnot, Monge, and Poncelet, at the Ecole Polytechnique. In a letter to Huyghens, Leibniz added this



G.W. Leibniz

Prints and Photographs Division, The Library of Congress

insight concerning his discovery: "I have reduced everything to logarithms, not only because everything is generated in a very simple and natural way (so much so that the catenary curve seems to have been created for the purpose of generating logarithms), but also because they make possible, by means of ordinary geometry, the discovery of an infinity of real points, all constructible from a single constant proportion applicable in all situations." In the Acta of 1691, Leibniz emphasized that, with his work on the catenary, he was able to determine "the best of all possible constructions for the transcendentals."

The search for a mathematics that would be the "least inadequate" for describing the physical phenomena of elliptical pathways of the planets, had been initiated by Johannes Kepler, but had remained incomplete. Leibniz, drawing upon work by Huyghens, Fermat, and the Bernoulli brothers, undertook to resume that unfinished agenda, which was premised on the Platonic assumption that the generative principle in the universe was not only well-ordered proportionately, but also required a calculus (differential and integral) for transcendental curves, whose physical conditions are subjected to non-constant changes in curvature. This was in direct opposition to, and conflict with, the straight-line, action-at-a-distance ("push me-pull me") treatment of the problem of gravitation, and of the pathway of light,

elaborated by Descartes, Newton, and their followers.

Although Leibniz often makes a statement like, “given a certain property, find the curve,” the discovery of principle that Leibniz developed in the papers published in the *Acta*, and especially in his calculus of the catenary curve, was not aimed at the discovery of curves, *per se*. It was aimed at the discovery of the “INTENTION,” or “PURPOSE,” of the curve. There are two levels at which this principle of discovery applies: one is the level of the integral, and the other, the level of the differential.

From the higher standpoint of the integral, the purpose, or final causality of the curve, is a transfinite relative to the differential, incorporating within itself an ever-increasing density of singularities. And, as a transfinite, its purpose resides, ultimately, in the increase of the power of mankind over nature, with the intention of demonstrating the principle of sufficient reason in the best of all possible worlds. From the standpoint of the differential, on the other hand, the intention of the curve is to follow a non-linear direction which expresses the least-action pathway at every infinitesimally

small increment of action, as exemplified by the least-time curvature of the pathway of light developed by Pierre Fermat, Christian Huyghens, and Jean Bernoulli, in their discoveries of the non-linear curvature of light in the changing density of a medium of refraction.

Indeed, light knows the least-action pathway to take, because it follows, according to a non-entropic law of physical space-time, a PROPORTIONAL ORDERING PRINCIPLE which is coherent with a least-pathway and least-time motion. It is this PROPORTIONAL ORDERING PRINCIPLE which expresses the relationship between the differential and the integral, between the evolute and the involute, and between the catenary curve and the logarithmic curve.

The following two articles have been translated from the French text, “G.W Leibniz: La naissance du calcul différentiel, 26 articles des *Acta Eruditorum*. Introduction, traduction, et notes par Marc Parmentier” (Paris: Vrin, 1989), in consultation with the Latin original as it appears in, “G.W Leibniz: *Mathematische Schriften*,” ed. by C.I. Gerhardt (Hildesheim: Georg Olms Verlagsbuchhandlung, 1962).

1. The String Whose Curve Is Described by Bending Under Its Own Weight, and the Remarkable Resources That Can Be Discovered From It by However Many Proportional Means and Logarithms

from *Acta Eruditorum*, Leipzig, June 1691

The problem of the *catenary curve*,¹ or *funicular curve*, is interesting for two reasons: First, it further extends the science of discovery, in other words the science of Analysis, which up to now has been incapable of tackling such questions; second, it extends the progress of construction techniques. In point of fact, I have come to realize that the resourcefulness of this curve is only equal to the simplicity of its construction, which makes it the primary one among all the transcendental curves.

This curve can be constructed, and traced very simply, by a *physical type of construction*, that is, by suspending a string, or better, a *small chain* (of variable length). And, as soon as you can determine its curve, you can discover all of the proportional means, and all of the logarithms that you wish to find, as well as the quadrature of the hyperbola. Galileo was the first who tried, without success, to discover its nature; he mistakenly conjectured that it was a *parabola*. Joachim Jung, the renowned philosopher and mathematician of this century, who, well before Descartes, had many enlightened ideas for the reform of the sciences, experimented with it, made some calculations, and

came up with the proof that it was not a parabola; but without coming to the solution for the real curve.

Since then, many people have tried to solve the problem, but without success, until a very learned scientist recently gave me the opportunity to deal with it. In fact, the well-known Bernoulli, after having successfully tested different cases of curves with the Analysis of the Infinite which I had contributed with my differential calculus, asked me publicly, in the *Acta* of last May (p. 218ff), if I would examine the problem of the catenary curve, and see if, with our calculus, I could come up with a determination of the curve. After having graciously accepted to do the experiment, I have not only succeeded, unless I am mistaken, in becoming the first to solve this famous problem, but, I have also found some remarkable applications for this curve; which is why, following the example of Blaise Pascal, I invited mathematicians to discover, for themselves, the solution to this problem, by challenging their methods, to see if others could eventually find other ways to the solution, different from the one Bernoulli and I have used.

Only two people made it known that they had suc-

FIGURE 1. The Catenary Curve and Logarithmic Curve

Given an indefinite straight line ON parallel to the horizon, given also OA , a perpendicular segment equal to $O3N$, and on top of $3N$, a vertical segment $3N3\xi$, which has with OA the ratio of D to K , find the proportional mean $INI\xi$ (between OA and $3N3\xi$); then, between $INI\xi$ and $3N3\xi$; then, in turn, find the proportional mean between $INI\xi$ and OA ; as we go on looking for second proportional means in this way, and from them third proportionals, follow the curve $3\xi-1\xi-A-1(\xi)-3(\xi)$ in such a way that when you take the equal intervals $3NIN$, INO , $OI(N)$, $I(N)3(N)$, etc., the ordinates $3N3\xi$, $INI\xi$, OA , $I(N)1(\xi)$, $3(N)3(\xi)$, are in a continuous geometric progression, touching the curve I usually identify as *logarithmic*. So, by taking ON and $O(N)$ as equal, elevate over N and (N) the segments NC and $(N)(C)$ equal to the semi-sum of $N\xi$ and $(N)(\xi)$, such that C and (C) will be *two points of the catenary curve* $FCA(C)L$, on which you can determine geometrically as many points as you wish.

Conversely, if the catenary curve is *physically constructed*, by suspending a string, or a chain, you can construct from it as many proportional means as you wish, and find the logarithms of numbers, or the numbers of logarithms. If you are looking for the logarithm of number $O\omega$, that is to say, the logarithm of the ratio between OA and $O\omega$, the one of OA (which I choose as the unit, and which I will also call *parameter*) being considered equal to zero, you must take the third proportional $O\psi$ from $O\omega$ and OA ; then, choose the abscissa as the semi-sum of OB from $O\omega$ and $O\psi$, the corresponding ordinate BC or ON on the catenary will be the *sought-for logarithm corresponding to the proposed number*. And reciprocally, if the logarithm ON is given, you must take the double of the vertical segment NC dropped from the catenary, and cut it into two segments whose proportional mean should be equal to OA , which is the given unity (it is child's play); the two segments will be the *sought-for numbers*, one larger, the other smaller, than 1, *corresponding to the proposed logarithm*.

Another method: After you have found NC , as I have said, take OR (the R point being taken from the horizontal AR , such that OR is equal to OB or NC), the sum and the difference of segments OR and AR will be the two numbers, the one larger, the other smaller, than 1, corresponding to the given logarithm. Indeed, the difference between OR and AR is equal to $N\xi$, and their sum to $(N)(\xi)$; just as OR and AR are, in turn, the half-sum and the semi-difference between $(N)(\xi)$ and $N\xi$.²

Here is the *solution to the main problems* usually posed for a given curve. *To draw the tangent at a given point C.*

On the horizontal straight line AR , going through summit A , take R such that OR is equal to OB which is known, the straight line CT which is anti-parallel to OR (cutting the axis OA at point T) will be the tangent we are looking for. In short, I call here *anti-parallel*, the straight lines OR and TC , which make with the parallels AR and BC , the angles ARO and BCT , not equal angles, but complementary angles. The right triangles OAR and CBT are thus similar triangles.³

Find the Segment Equal to an Arc of the Catenary Curve

If you draw a circle with center O , and radius OB , cutting the horizontal straight line going through A and R , AR will be equal to the given arc AC . We also see from what precedes, that $\psi\omega$ will be equal to the portion of the curve $CA(C)$. If that portion were twice the value of the parameter, that is to say, if AC or AR were equal to OA , its inclination on the horizon at point C , in other words the angle BCT , would be 45 degrees, and the angle $CT(C)$ would consequently be a right angle.

Find the Quadrature of the Area between the Catenary Curve and One or More Straight Lines

After having found point R , as we did above, rectangle OAR will be equal to the area of the quadriline $AONCA$. The quadrature of any other sector can be derived in the same way. We can also find that the arcs are proportional to the areas of the quadrilines.

Find the Center of Gravity of the Catenary Curve, or of a Portion of That Catenary

After having established the fourth proportional $O\theta$ of the arc AC , in other words AR , of the ordinate BC and of the parameter OA , let us add to it the abscissa OB ; then the half-sum OG will generate the center of gravity G of the catenary $CA(C)$. Furthermore, by taking the intersection E of the tangent TC with the horizontal straight line going through A , and by completing the rectangle $GAEP$, P will be the center of gravity of arc AC . The center of gravity of any other arc CIC will be at the distance AM from the axis, πM being the perpendicular segment to the horizontal line going through the summit, taken from the intersection point π of the tangents $C\pi$ and $IC\pi$; but we can also get it from the centers of gravity of the arcs AC and AIC . We can further deduce BG , corresponding to the lowest possible position of the center of

gravity of a string, of a chain, or of any other flexible but non-extensible line, of the given length $\psi\omega$, suspended from points C and (C) . For any other figure other than the curve $CA(C)$ which I am now interested in, the center of gravity will be further up.

Find the Center of Gravity of the Area Between the Catenary Curve and One or Many Straight Lines

Take the half $O\beta$ of OG , and then complete the rectangle βAEQ ; Q will be the center of gravity of the quadriline $AONCA$. We can easily deduce from this the center of gravity of any other figure taken between the catenary curve and one or many straight lines. The remarkable result is that not only the quadriline figures like $AONCA$ are proportional to the arcs AC , as I have already noted it, but the distances between their centers of gravity and the horizontal straight line going through O , that is OG and $O\beta$, are proportional, the first always being double of the second; as for their distance to axis OB , that is PG and $Q\beta$, their proportionality is purely and simply equality.

Find the Volume and Surface of Solids Generated by Rotation Around Any Fixed Straight Line Delimited by the Catenary Curve and One or Many Straight Lines

As one can see, this result is gotten from the two preceding problems. If the catenary curve $CA(C)$ rotates around axis AB , the area generated will be equal to the circle whose radius is the root of the double rectangle EAR . We can also discover the value of other surfaces and volumes by the same method.

Because I wished to be brief, I omit here a number of

theorems and problems which are already implicit in what I have just elaborated, and which can easily be derived from it. Given, for example, two points C and IC of a catenary curve, and given π the intersection of the tangents at these points, draw from points IC , π , C , the segments $ICIJ$, πM , CJ , perpendicular to the horizontal straight line AEE going through the summit, then we shall have

$$(IJ \times AC) - (IC \times IJM) = IB \times OA.$$

This could also be an opportunity for introducing infinite series. For example, parameter OA being considered as unity, establish the notation a for arc AC , the segment AR , and y as the ordinate BC ; we shall get:

$$y = \frac{1}{1}a - \frac{1}{6}a^3 + \frac{3}{40}a^5 - \frac{5}{112}a^7, \text{ etc.},$$

a series which can be established from a simple rule. By making use of what we have just said, we can further deduce the rest from the characteristic elements of the curve. For example, by considering as known the summit A , another point C , and the length AR of arc AC , which limits it, it is possible to get the parameter AO of the curve, that is in substance point O : in fact, since B is also known, let us trace BR and then draw segment $R\mu$, such that angle $BR\mu$ is equal to angle BRA . Under such conditions, the straight line $R\mu$ (which you have extended) will cut the axis BA (extended) to the desired point O .³

I think what I have said includes the essential, and will permit anyone to deduce everything that needs to be stated about this curve. I am excluding myself from the task of going through the demonstrations, in order to avoid unnecessary prolixity, and, moreover, because they would be self-evident to anyone who has understood the calculus that I have just explained, and which forms the basis of our new Analysis.

2. Solutions to the Problem of the Catenary, or Funicular Curve, Proposed by M. Jacques Bernoulli in the *Acta* of June 1691

Acta Eruditorum, Leipzig, September, 1691

I was thrilled to discover in my reading of them, the concordance between three solutions to the problem initiated by *Galileo* and revived by *M. Bernoulli*; it is a guarantee of exactitude which will convince those who do not go into the details of such questions. Therefore, even if there is no opportunity to compare them, here, point by point, their agreement on the fundamentals is

obvious. The three of us have established the law of tangency, as well as the rectification of the catenary. I demonstrated, a long time ago, in the *Acta* of June 1686 (p. 489), (by means of a new type of contact which I have called "osculation") how to measure the curvature of a curve by using the radius of its osculating circle; that is, among all of the tangent circles, the one which is the

closest to the curve, and which forms, with the curve itself, the smallest possible angle of contact; the famous *Huyghens* (while noticing that the centers of those circles are always located on the curves that he was the first to invent; that is, evolutes whose development generate involutes) took the idea of applying my theory to this curve, and looked for the radius of curvature of the catenary, that is, its osculating circle, and in doing so, he discovered its evolute; this curve is also shown in the solution of the *Bernoullis*.⁵

Furthermore, the *Huyghens* solution also gives the distance between the center of gravity and the axis of the catenary; the solution of the *Bernoullis*, along with mine, not only gives the distance to the axis, but also to the basis, and to any other straight line; thus permitting to locate that center point as well as the quadrature of the area encompassed by the catenary. To this, I have even added to my solution the center of gravity of this last figure, that is, of its area. *M. Huyghens* gives the construction of the curve by supposing the following quadrature: $xyy = a^4 - ayy$, while *M. Jean Bernoulli*, and myself, have related the catenary to the quadrature of the hyperbola; this last one makes an absolutely judicious use of the quadrature of a parabolic curve, while for my part, I have reduced everything to logarithms; I have determined in this way *the type of expression, as well as the best of all possible constructions, for transcendentals*. Indeed, all you need to know is a unique constant proportion, which will enable you to discover an infinity of points, using only ordinary geometry, and without any more need of quadrature or rectification. One might enjoy noticing, in my construction, this singular and elegant concordance between the catenary and logarithms. Furthermore, *M. Huyghens* (giving us the hope of a considerable simplification with the use of a Table of Sines), made the observation to the effect that the problem could also be reduced to a sum of secants, uniformly growing by minimal increments. I had made the same remark in the past, and since I can still recall that it was also from such increments that one could determine the rhombic or loxodromic curve for the purpose of navigation, such a curve, which I remember having established a number of years back by means of logarithms, I have dug out



Christian Huygens

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my old draft papers which I have finally published in the *Acta Eruditorum* of last April (p. 181).⁶

So, it turns out that the famous Basle professor, *M. Jacques Bernoulli*, who had precisely put the problem of the catenary back on the agenda, has also forwarded a study on loxodromic curves, plus many remarkable discoveries, including the solution to this problem found by his brother last June (p. 282), and where he showed a construction of the loxodromic curve in which he used the rules of my calculus with respect to the quadrature of the curve of abscissa z , and of ordinate y , following my differential equation:

$$dx = \frac{trr \, dx}{2\sqrt{rr - zz}}$$

When he finds out how I have reduced the problem to the quadrature of the hyperbola, that is, to logarithms, he will admit, I think, that this brings the final touch to this investigation, and that all that remains to be done is to facilitate practical applications, and bring this discovery more to the reach of everyone.

I have to point out, here, that certain errors, which I have made in the construction of the rhombic curve that I published last April, must be corrected. In point of fact: p. 181, line 12, *IL2L* must be replaced by *IL3L*; line 25, *ld3L* by *2d3L*; and, p. 182, line 20, the ratio

$$\frac{e}{1} + \frac{e^3}{3} + \frac{e^5}{5} \dots$$

must be replaced by the ratio

$$\frac{e - (e)}{1} + \frac{e^3 - (e)^3}{3} + \frac{e^5 - (e)^5}{5}, \text{ etc.,}$$

These are things that the context would have obviously reestablished.

I find that *M. Jacques Bernoulli* has developed something very elegant in January (p. 16 of the *Acta*), on the equality of certain portions of dissimilar curves. As for the length of the finite curve, while describing an infinity of loops, in the *Acta* of June (p. 283), it is not indeterminate since it is equal to a finite curve, and we can follow it by a uniform movement in a finite time. I

refer on this point to what he has himself declared in January (p. 21), that one cannot obtain the (general) rectification of any closed geometric curve. I know that another great man also tried to prove the impossibility of determining the indefinite area quadrature of any closed geometric curve; however it became evident to *M. Huyghens*, as well as to myself, that the question was far from resolved. And, unless I am mistaken, there exist counter-examples to which, nonetheless, the same reasoning can be applied. I hope the author will not be offended by this remark, which is inspired only by the love of truth and not by any spirit of contradiction, because it does not diminish in any way the great merits of his other results.

My character leads me to personally celebrate wholeheartedly, and with real pleasure, the men who have acquired, or will acquire great merit in participating in the Republic of Letters, because I think this is the most justified price that must be given for their works, and which can constitute for them, as for others, an incentive for the future. I cannot hide the immense joy brought me by the work erected by the famous *Bernoulli*, with his younger and very ingenuous brother, based on the new calculus that I have initiated; more especially, as I had not yet met anybody who had made use of it, with the exception of the very quick-witted Scotsman, *John Craig*.

But, thanks to their brilliant inventions, I hope to see extended into the works of the mind, the use of this method which to my view, as well as to their own admission, is extremely rich in possibilities. There is no doubt that with this method, Mathematical Analysis shall be brought to its perfection, and that the problems of *transcendentals*, which up to now have been excluded, should come under its purview. So, *M. Bernoulli* has made this profound remark, which is, that at each inflection point, the proportion between t and y , that is to say, between dx and dy , takes the greatest or the smallest value that can be assigned. In all eventuality, I have no doubt that he will uncover some results which even I do not suspect myself; because there still remain many points which I am not able to concern myself with, and on which I am not able to pronounce myself



Jean Bernoulli

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conclusively with the necessary precision.

Just as the works of *Pascal* and *Huyghens* gave me the opportunity to make discoveries through these kinds of reflections, and from which I gradually achieved some results, which would have been difficult to attribute to such works directly; similarly, it seems to me that all that I have accomplished will give rise to more profoundly hidden discoveries that others will make. So, I sincerely thank the famous Bernoulli for having formulated the problems related to the catenary, and to continue to do so, in cases where the catenary is of variable thickness, where the string is extensible, or where the heavy string is

replaced by an elastic band, or, finally, the case of the curve formed by a sail in the wind. I only wish I had the free time to debate these questions with him, but responsibilities of a totally different nature forbid me entirely to do so, and so, it is with difficulty that I have been able to recently find the time to put together and finalize the solution to the problem which he asked me to solve more than a year ago.

Finally, since he attempted to imagine (p. 290) the circumstances that led me to these ideas, and which works I had been using to help me, I insist on revealing to him my sources in all honesty. Advanced geometry was a total stranger to me until I met *Christian Huyghens*, in Paris, in 1672, and to whom I publicly acknowledge in this article, as I did in personal letters, I owe the most, after *Galileo* and *Descartes*. After having read his *Horologium Oscillatorium*, as well as the *Letters of Dettonville* (that is, *Pascal*), and the works of *Gregoire de Saint Vincent*, I acquired suddenly from them a great light, quite unexpected on my part, and also for that of those who knew I was a novice in this domain. I was very open to these results, and I soon began to give a few outlines on them. This is how a considerable number of theorems appeared to me spontaneously, and which were only corollaries of a new method.

I later found a few, among others, from *Jacques Gregory* and *Isaac Barrow*. But I noticed that their origins were not sufficiently clear, and that a more profound thing needed to be discovered, which was not thought possible before; that is, that the most elevated part of geometry could one day be submitted to Analysis. I have revealed

certain elements of this, a few years ago, more for public interest than for personal glory, and maybe it would have been a better service to keep my name out of it. However, I prefer to see that my seeds grow and bear fruit also in the gardens of others. Even though my hands were tied, and I could not busy myself with this as I should have, there was a higher domain for which new avenues needed to be opened; so, this is what was important in my eyes: That is, the case of developing methods is always more crucial, than particular problems, although it is the latter which usually bring applause.

In conclusion, I will only add one thing, even if it is not on this subject. I would like *M. Bernoulli* to consent to examine closely the article on the measurement of forces, which I opposed to *M. Papin*, especially near the end, where I think I have noticed the origin of the common error. He



Jacques Bernoulli

The Granger Collection

was right, last July (p. 321), to underscore the fact that no element of a force disappears without reappearing somewhere else; but force and quantity of motion are two different things; and aside from the fact that the more an obstacle is hard, the less the potential is dissipated, it is absolutely certain that the small impediments can be diminished in any given proportion, and that the resistances from rubbing, that is to say, owing to friction, are not proportional to the speed (as I indicated in my *Schediasma de resistentia*). Even though there exists resistance of the medium, nothing forbids us to imagine oscillations in empty space, free of air, or in a medium as thin as you

want; finally, we must free the human mind from arbitrary contingencies, in order to bring out the underlying nature of the thing itself.

—translated by Pierre Beaudry

TRANSLATOR'S NOTES

1. The identification of the hanging chain by the name “catenary” was established by Christian Huyghens, in a letter to Leibniz, dated November 18, 1690.
2. The reader should note that the proportional means developed by Leibniz correspond to the arithmetic and the geometric means, and that the descriptive expression “semi-sum” signifies the arithmetic mean. Leibniz obtained the proportionality between the two curves by using his divider as a differential calculator, to generate those two means. He calculated that, for any two segments, say NC and $(N)(C)$, taken vertically under the catenary curve, which are equal to OB , and are equally situated on each side of the central axis, he could find their geometric mean AR by generating a circle whose radius and arithmetic mean is OB . The shorter segment $N\xi$, under the logarithmic curve, will be derived by subtracting the geometric mean AR from the arithmetic mean OB of that circle. The longer segment $(N)(\xi)$, under the logarithmic curve, will be gotten by adding the geometric mean AR to the arithmetic mean OB . Thus, the logarithmic curve is the geometric mean of the catenary curve, and the catenary curve is the arithmetic mean of the logarithmic curve.
3. This method of finding the tangent to a curve, without the curve itself, is one of the most profound discoveries of Leibniz. It was Huyghens who initiated the method of discovering a curve by the property of its tangents; that is, discovering the evolute at the intersection of two perpendiculars generated from its involute. Here, Leibniz applies a similar property of tangents, which is to relate the tangent at right angle to its anti-parallel. Generally, Leibniz treats the problem of inversion of tangents, from the vantage point of the intention of the differentials oriented toward their final cause.
4. Note that the shapes of the two curves are not only variables of each other, but their curvature will also be subject to variation by changing the ratio of K to D . At the limit, and following Leibniz's principle of continuity, if the ratio of K to D were to become 1:1, then both curves would be transformed into a curve of zero curvature; that is, a single, horizontal straight line. The ratio of K and D chosen by Leibniz in this construction is 3:1.
5. **A note on osculation.** The reason why the notion of *osculation* is so important, is that it involves directly the application of the Parmenides Paradox. This is because the very idea of discovering an *osculating circle* to a given curve, leads you to the discovery of the *evolute* of that curve, as well as to an infinity of similar curves of the same family. In other words, the discovery of the *evolute*, implies the discovery of a One of a Many.
6. **Leibniz and the construction of the sine curve.** According to the *Acta Eruditorum* of 1694, Leibniz developed a construction for the sine curve as derived from the circle, using the Roberval method of transferring the sine of the circle along the sine curve of a cycloid, and in so doing, he was able to determine the *quadrature*, that is, he was able to construct the entirety of an area perfectly equivalent to a quarter of a circle.
On the one hand, such a true definite of *quadrature* is uniquely possible, only when you treat the sines of such a *quadrature* as indivisibles, as an actual completed infinite sum; that is, an infinite which is determined in such a way that between two infinitesimals of that sum, there is no possibility of inserting a third. However, on the other hand, an indefinite quadrature could never have a completed infinite sum, and therefore, one cannot add infinitesimals to such an indefinite sum, nor can one reduce their indefinite totality to zero: nothing finite can be added to, or subtracted from, that which is infinite.

Washington, D.C. Conference

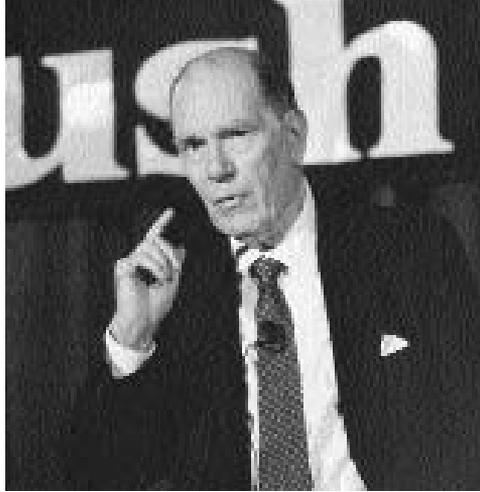
Is the U.S.A. Under Bush Doomed?

The annual Presidents' Day weekend conference of the LaRouche movement, meeting in Reston, Va. Feb. 17-19, was attended by more than 800 people from around the nation and the world, including more than 120 college-age students, who have begun to be recruited into the LaRouche movement over the past year.

LaRouche's keynote focussed on the question of why the Bush administration itself is doomed, and how Americans can keep the administration from taking the whole country down with it.

There are, LaRouche said, three elements to preventing that doom.

- The first is to develop a strategic policy which will outflank the Bush administration's intentions, creating an alliance between the U.S. and a Russia-China-India combination, centered around the Eurasian Land-Bridge.
- The second involves eliminating deregulation and other such obscenities,



Lyndon H. LaRouche, Jr.



Helga Zepp LaRouche

and returning to a policy oriented to the General Welfare.

- The third is to transform the American people into a nation of citizens *who think*. This means evoking from them the quality of mind, which will give them the courage to stand up and fight for a strategic perspective, and for a new, just economic policy.

After a short question period, LaRouche was followed by Bruce Director, with a demonstration of astrophysicist Johannes Kepler's method of discovery. Director engaged the audience in the question of how to gain knowledge about the universe, using video animations of the movements of the stars, planets, and constellations. These were accompanied by a series of quotations from leading discoverers, such as

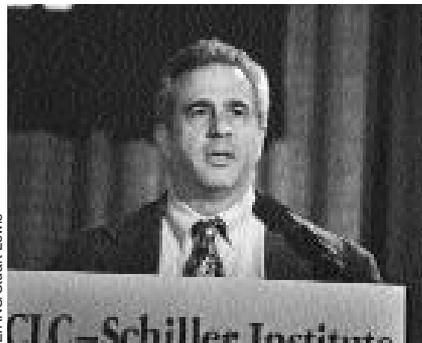
Kepler, Nicolaus of Cusa, and, at the conclusion, even U.S. President John Quincy Adams, who had commented on the link between knowledge of astronomy, and the moral conduct of politics.

That evening's session, "The Role of Cognition in Music, Poetry, and Speech," continued the theme of uplifting mankind to the level of reason. Following an introduction by Dennis Speed, both professional singers and a number of Schiller Institute amateurs performed Classical songs and Negro Spirituals.

The audience was then treated to a series of pedagogical interventions by Maestros William Warfield and Sylvia Olden Lee, coaching the Schiller Institute amateurs. What came across was a ruthless commitment to the truthful rendering of the *idea* of the music, as the singers were shown how they were distracted from conveying the compositional idea transparently [SEE page 69 for related coverage].

The Cult of Ugliness

The second keynote of the conference was given by Helga Zepp LaRouche, who dedicated her remarks to an attack on Romanticism as the source of the "Cult of Ugliness," counterposing this to Friedrich Schiller and his insistence that "beauty is a necessary condition for



EIFNS/Stuart Lewis



EIFNS/Stuart Lewis



EIFNS/Stuart Lewis

Panelists Bruce Director (top), Dennis Speed (left), Paul Gallagher (right).



EIRNS/Stuart Lewis



EIRNS/Stuart Lewis



EIRNS/Stuart Lewis



EIRNS/Stuart Lewis

Discussion from the floor (clockwise from top left): former South Carolina State Senator Theo Mitchell, Korean journalist Harry Lee, Nevada State Senator Joe Neal, Dr. Abdul Alim Muhammad, Minister of Health, Nation of Islam, Camden City Councilman Ali Sloan-El.



EIRNS/Stuart Lewis

poets, to contrast the fascination with the grotesque and ugly—which led to today’s embrace of the hideous—to the Classical poet’s concentration on beauty and the sublime as the means to develop the human character. The fascination with ugliness is nothing but the ideology of the Roman Empire, and the enslavement—including the literal enslavement—of mankind and its emotions, she argued. This contrasts with the

fied in the Classical Greek statue of Lao-cōn.

Economic Reality

After an afternoon session devoted to a dialogue with LaRouche, the final panel reported on the current economic situation, under the title, “The Demise of the Importer of Last Resort.” Using extensive charts and graphs, **EIR**’s Dennis Small, Paul Gallagher, Richard Freeman, and John Hoefle presented a picture of the ongoing devolution of the U.S. and world economy.



EIRNS/Stuart Lewis

Above and right: LaRouche in dialogue with students. More than 120 college-age students participated in the conference, both in the special session shown here, and in the full proceedings.



EIRNS/Stuart Lewis

Campaign for ‘LaRouche in 2004’ Launched

On December 27, Lyndon LaRouche, world-renowned economist and former candidate for the Democratic Party Presidential nomination, announced that he will run for the Democratic Party nomination for President in 2004, and released a statement. Excerpts from the statement follow.

* * *

I herewith set my guidon at the top of the hill; those supporters of the Democratic Party, and others, who recognize the need to return to that quality of leadership out of a great financial crisis which President Franklin Roosevelt represents, must have a rallying-point around which to transform the efforts into an effective, mission-oriented mobilization, a mobilization to save this republic from what appears, presently, to be our assured ruin.

“Although the outgoing President Bill Clinton will be, still, the leading institutional figure around which the Democratic Party will continue to be rallied as a party, that is not sufficient. The world is gripped by a great moral crisis, which is also a great economic crisis. The great need, is to return this nation, from the past thirty-five years direction in policy-making, by which the nation has ruled and ruined itself, to those successful principles of policy-shaping by means of which the nation survived the great crises of 1933-1945. The fate of this nation depends upon our ability to choose, now, a kind of leadership qualified to lead our republic

please turn to page 64

lic out of the great catastrophe which thirty-five years of national folly have dumped upon us now. . . .

“The immediate, urgent practical importance of presenting my candidacy now, is not the November 2004 vote; the issue is whether this nation reaches November 2004 intact. Someone, a person actually qualified for this role, must place the guidon on the top of the hill, to rally the forces into order of battle, around urgent, fundamental changes in economic policy, for the days and months immediately ahead. At the moment, I am the only living person both situated and qualified to supply that quality of leadership. . . .

“The Democratic Party’s campaign for the year 2000 election-campaign, was a terrible mistake, a terrible error of substituting unprincipled political opportunism, in place of judgments based upon honest principle. To resume its proper role, the Party need not resort to public *mea culpas*; it will be sufficient to signal the turn, by doing the right thing, for a change.

“This means a return to the principles set forth in the 1776 Declaration of Independence and the Preamble to the 1787 Federal Constitution. This means, once again, a repudiation of the legacy of Theodore Roosevelt, of Ku Klux Klan enthusiast Woodrow Wilson, of Coolidge, and of Nixon and Carter, too. It means to do what is equivalent, for today, to what Franklin Roosevelt did in his campaign of 1932. Our nation’s survival, and also that of your family, depends upon making that kind of change, now.

“I take my stand. We shall sort out the succession in the leadership as the fight develops over the weeks and months to come.”



EIRNS

LaRouche at Berlin Seminar

A Path to F.D.R.-Style Recovery For Russia, U.S., Europe

‘As we plunge into the worst global financial crisis in more than a century, only among those three national powers which were principal victors of World War II, the British monarchy, the United States, and Russia, do we find the historically defined, cultural temperament needed, to lead the introduction of a desperately needed, new world economic order for the planet as a whole. Only in two of those three, the U.S. and Russia, do we find any inclination among leading political institutions, to look back to the successful U.S. recovery policies of the 1933-1945 Roosevelt era, and to the 1945-1965 reconstruction of Western Europe, as the basis for challenging the rampant follies practiced under the present I.M.F. and World Bank systems.’

With these words, American statesman and economist Lyndon LaRouche opened his remarks at a March 5 Berlin seminar attended by approximately 100 policymakers, diplomats, and citizens. LaRouche’s subsequent remarks elaborated his unique vision of how, despite the disastrous Bush administration, the *intention* of Franklin D. Roosevelt’s General Welfare policy could be fulfilled today, by collaboration between the U.S., Russia, Western Europe, and other leading Eurasian nations.

The kind of international dialogue

required was previewed by the participants in the seminar themselves, which included leading representatives from Russia, France, Germany, and Italy.

America’s Economic Collapse

EIR’s Lothar Komp opened the seminar with a presentation on “The World Economy in a Dive—The Basic Economic-Financial Data, with Focus on the U.S.A.” Komp was followed by LaRouche, whose keynote stressed the need to revive the *intention* of the American intellectual tradition, which was shared by Lincoln and Roosevelt, in order to build up Eurasian cooperation that will be beneficial to the entire planet.

Other presentations included:

- Dr. Kurt Riechebächer, noted economist and publisher of the *Riechebächer Letters*, read a prepared statement entitled, “Today’s American Economic Model: ‘After Us, the Deluge.’”

- A speech on “Globalization, Multinational Concerns, and Labor Power,” by Dr. Nino Galloni of the Italian Labor Ministry.

- A paper entitled “Remarks on an Overdue Reorganization of the World Monetary System,” by Prof. Wilhelm Hankel, former chief economist of the post-World War II Kreditanstalt für Wiederaufbau (Frankfurt), was read.

- Professor Dr. Sc. Tatiana Ivanov-



Left: EIR editors Lothar Komp and Michael Liebig flank Lyndon LaRouche; at right, Dr. Nino Galloni, Italian Labor Ministry. **Above:** Professor Tatiana Ivanovna Koryagina, Russian Ministry for Economic Development and Trade.

na Koryagina, from the Macroeconomic Research Institute of the Russian Ministry for Economic Development and Trade (Moscow), spoke on “The Current Situation and the Development Perspectives of the Russian Economy.” In the discussion periods, Prof. Koryagina presented chilling examples of the utter poverty into which the majority of the Russian people have been thrust.

• Jacques Cheminade, who will be running for President of France, presented a paper on “Europe’s Tasks in the Creation of a ‘New Bretton Woods.’”

Moscow Conference Hears ‘Eurasian Land-Bridge’ Proposal

A conference on “The Threat of a Crisis of Global Reserve Currencies” took place on March 6-7 near Moscow, at the Bor resort center belonging to the administration of the Russian President. Sponsored by the Russian Federal Foundation for Appraisals and the Institute for Crisis Studies, the gathering was attended by some 200 persons, including several members of the Russian lower house of Parliament (Duma), representatives of the Russian Economics Ministry and of the governments of Moscow and several Russian regions, the Association of Russian Banks, several dozen banks and financial consulting firms, as well as economic institutes, foreign embassies, and major press.

The first speaker was Schiller Institute scientific adviser Dr. Jonathan Tennenbaum, who presented Lyndon LaRouche’s analysis and programmatic proposals for reorganization of the world financial system. Tennenbaum’s 40-minute presentation focussed on the historical genesis of the ongoing global financial collapse, and the necessity for rapid consolidation of long-term trade and economic agreements, based on LaRouche’s concept of a basket of commodities, and pivoted on large-scale infrastructure

development of the “Eurasian Land-Bridge,” as the basis for creating a new global financial and economic order.

Tennenbaum’s presentation was prominently reported by the Russian business news service RBC, as well as in an interview with the national radio station Radio Rossiya. The Russian translation of LaRouche’s paper “On a Basket of Hard Commodities: Trade Without Currency,” and the call by Italian parliamentarians for a New Bretton Woods Conference, were distributed among participants, and later placed on the website of the conference.

Other speakers included the well-known economic analyst Mikhael Khazin (co-author of a recent Russian book *The Crash of the Dollar*); Mikhail Delyagin, economics adviser to Russian political figures Yevgeni Primakov and Yuri Maslyukov; Alexander Anasimov, a leading Russian expert on the Chinese financial system; two members of the Russian State Duma; an economics analyst of the Military Academy of Russia; a representative of the German Bundesbank; the Ambassadors of Malaysia and Venezuela; and several advisers to Russian financial institutions.

Italian Parliament Hears Call for New Bretton Woods

On March 8, eight Senators of the Centro Democratico Cristiano (CCD), an opposition party, presented a motion calling for a New Bretton Woods before the Italian Parliament. The Senators were all active in the organizing of the Interparliamentary Group for the Jubilee 2000, and wished to signal their intent to maintain the commitment declared at the November Jubilee Conference held in Rome. More than 5,000 parliamentarians from around the world participated in that conference.

The motion, which was published in the *Parliamentary Record*, binds the

Italian government:

“To promote concrete measures to contribute to the stabilization of the international monetary system, and to assure a real sharing of the benefits that a sane and more just world economy could produce, particularly for the developing countries;

“To undertake, in particular, the initiative to propose in the international forums, the convening of a new conference at the level of heads of states and governments, similar to the one organized at Bretton Woods in 1944, with the aim of creating a new international monetary system, and to

take those measures required to eliminate the mechanisms which led to the financial instability and to implement programs to restart the real economy;

“To bring this proposal to the Strasbourg European Parliament, to the European Commission, and to all institutions of the European Union responsible for the E.U. economic policies, and through bilateral agreements, to individual European governments;

“To support similar initiatives promoted by other governments and Parliaments, in particular those of the developing countries.”

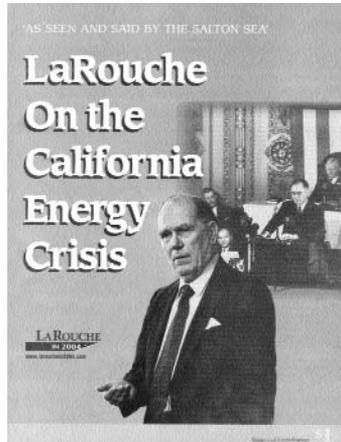
California Energy Crisis Pamphlet Released

The first mass pamphlet issued by Lyndon LaRouche's 2004 Presidential campaign—"LaRouche on the California Energy Crisis"—was released February 13. The 24-page pamphlet features a strategic piece by LaRouche, "As Seen and Said by the Salton Sea."

The LaRouche movement's mobilization around the California energy crisis has emphasized that it is the energy cartel privateers like President

Bush's top corporate funder Enron, which are, in a "free market" frenzy, driving energy prices sky-high, and using them as the mechanism to loot American consumers. This devastation is the result of deregulation of electricity, and LaRouche insists that re-regulation and Chapter 11 bankruptcy re-organization of the utilities, are the essential first steps to solving the crisis.

LaRouche identifies short-, medium-, and long-term policies to solve, not only the immediate California energy crisis,



Right: Organizing in Chicago for electricity re-regulation: "Bankrupt Bush's Enron, Not U.S. Economy."



EIRNS/Sylvia Rosas

but the profound deindustrialization crisis of our economy, which has destroyed the living standards of millions of Americans, and the fabric of American society.

In the long-term approach, LaRouche evokes the lessons of space science, recalling that the imperative of exploring space was one of the great "science drivers" of technological progress in the Twentieth century, and must be adopted now as part of our national long-range mission, to the same end.

Lastly, in discussing the central issue

of leadership, LaRouche recalls the quality of the great leaders who have emerged to bring this country out of crisis in times past, men like John Quincy Adams, Lincoln and Roosevelt.

Hence, the solution today is, as it was before, to bring about a "renaissance of that American intellectual tradition, a renewal of the idea reflected in the Declaration of Independence and Preamble of the Federal Constitution."

To date, 600,000 copies of the pamphlet have been issued.

Prince Philip's World Wide Fund for Nature Sues LaRouche Associates

The Brazilian branch of the World Wide Fund for Nature (WWF), the international environmentalist NGO founded by Britain's Prince Philip and former Nazi Party member Prince Bernhard of Holland, filed a slander suit in a Rio de Janeiro court against the Ibero-American Solidarity Movement (M.S.I.A.) of Brazil on March 5. The M.S.I.A. is part of the international political movement associated with Lyndon LaRouche.

About two months ago, on Jan. 19, WWF-Brazil had obtained a prior restraining order against the M.S.I.A., sanctioning a search and seizure of M.S.I.A. publications, which WWF-Brazil found offensive to their "honor." The

grossly unconstitutional restraining order was obtained by WWF-Brazil, despite the fact that they at no point presented evidence refuting the *truthfulness* of the M.S.I.A. publications. The president of WWF-Brazil is Jose Roberto Marinho, the scion of the *O Globo* media conglomerate.

The content of the now-filed slander suit has not yet been made available to the M.S.I.A.'s lawyers.

On January 27, in response to the original restraining order, Lyndon LaRouche issued a lengthy report, analyzing what was behind the WWF attack on him and his associates. In the report, entitled "Look at What Happened in Brazil," LaRouche pinpointed

the central issue in the Brazil incident, as the British Monarchy's ongoing attacks against him, personally, and what he stands for as an international alternative to their genocidal policies, noting that "[t]he personal attack on me, shows that WWF's targetting of Brazil expresses a much broader, global intention."

That intention includes deploying such forces as the British-French financial oligarch Teddy Goldsmith, the radical environmentalist organizer of the recent Porto Alegre, Brazil gathering of global Jacobin movements, to stop any and all promotion of industrialization, either by sovereign nation-states, or by nationalist forces within those countries. Although the Brazilian

Resolution to Support D.C. General Fight

A resolution aimed at supporting the expanding political mobilization to save Washington's D.C. General Hospital from impending shutdown, is currently being circulated internationally. The resolution, which is addressed to Washington Mayor Anthony Williams and the Congress of the United States, is entitled "Saving D.C. General Hospital Is a Matter of International Importance."

The resolution reads in part:

"At a recent meeting that took place just outside of Washington, D.C. between Lyndon LaRouche and a group of elected officials, trade unionists, and constituency leaders, Mr. LaRouche identified the current groundswell to stop the shutdown of D.C. General Hospital—the capital city's *only* public hospital—as a matter of international importance. We agree with him.

"There can be no argument that the world has entered the greatest financial and economic crisis in modern history. In the context of that crisis, the United States is at a crossroads. Either we re-adopt the commitment to the General Welfare clause of the U.S. Constitution that was the basis of both Franklin Roosevelt's policies and Dr. Martin Luther King's, or we will find our



March to save Washington's D.C. General Hospital, March 8, 2001.

nation going the way of Nazi Germany.

"Although those who advocate closing the hospital seek to cloak their actions behind the veil of 'fiscal management,' the fact is, the closing of the hospital is an expression of a social policy that the poor should die. Beginning with Richard Nixon's infamous 'Southern Strategy' alliance with the Ku Klux Klan, up through the 'globalization' policies of the Bush (Sr.) administration, the operating policy of the U.S. govern-

ment has been one of systematic undermining of General Welfare clause.

"We face a crisis today even greater than the one F.D.R. faced in 1932, but the choices are the same—either we protect the General Welfare, as F.D.R. did then, or we go the way of Nazi Germany. There is no middle ground. It is time to draw the line. D.C. General Hospital must be kept open and restored to its full operational capability to serve the population of Washington, D.C."

in Brazil

government of President Fernando Henrique Cardoso has itself shared much of the outlook and policies of the WWF, LaRouche noted that this government is also in mortal danger from the British-sponsored offensive:

"If Brazil's government were toppled by aid of WWF's activity, then all of continental Europe, not excluding 'Teddy' Goldsmith's France, in addition to Brazil itself, would be obviously the next target on the list for destruction. If Europe, too, goes under as a continuation of the chain-reaction touched off in Brazil, the fate of the rest of the planet is menaced accordingly."



Schiller Institute's Lynne Speed introduces Pennsylvania State Representative Harold James.

'Peace Through Development' Sudan Hosts Historic Nile Valley Conference

In Khartoum, the capital city of Sudan—located where the Blue and White Niles join together to form one river as they flow north towards Egypt and the Mediterranean—a historic conference entitled “Peace Through Development Along the Nile Valley, in the Framework of A New, Just World Economic Order,” was co-sponsored January 14-17 by the Centre For Strategic Studies and the Ministry of Information and Culture from Sudan, along with the Schiller Institute and *Executive Intelligence Review* of Germany and the United States.

Lyndon LaRouche keyed the opening of the conference on Sunday, at the Friendship Palace Hotel in Khartoum North, with a comprehensive presentation on strategic method, to an audience of 75 primarily Sudanese intellectuals, officials, and current and former members of government, including Sadiq al-Mahdi, the leader of the opposition Umma Party, who is now involved in a dialogue of reconciliation with Sudan’s President General Bashir. A second presentation by LaRouche, “The New Bretton Woods System: A Framework For a New, Just World Economic Order,” was delivered the following day.

The Monday evening panel, “The Economic and Political Failure of Globalization in Africa,” heard presentations by Professor Sam Aluko of Nigeria, well known throughout West Africa for his staunch opposition to the I.M.F. and the structural adjustment programs that destroyed Nigeria during the 1980’s, and Uwe Friesecke of *EIR*-Germany.

The New Silk Road

On Tuesday, two Egyptian professors from Cairo University provided detailed plans to connect Africa to the “New Silk Road.” First, Dr. Gabir Said Awad, of the Center for Asian Studies, gave an exciting presentation using materials first published by *EIR* in its 1997 Special Report, “The Eurasian Land-Bridge.” Then, Professor Hamdy



Above: Lyndon LaRouche and Helga Zepp LaRouche (center), with conference participants. **Below (left to right):** Mogus T. Michael, Ethiopian International Institute for Peace and Development; Prof. Hamdy Abdel Rahman, University of Cairo; Prof. Ode Ojowu, Centre of Development Studies, University of Jos, Nigeria.



Abdel Rahman provided the audience with a picture of various proposals to link Africa, through Egypt, to the Middle East, to the Land-Bridge crossing from China through Central Asia to Europe.

That evening, engineer Kamal Ali Mohamed, Minister of Irrigation and Water Resource, presented a paper on how the three nations sharing the Nile—Sudan, Ethiopia, and Egypt—have developed a “Shared Vision Program” for development of the river. And, Professor Abdalla Ahmed Abdalla, former Minister of Agriculture, detailed the state of food production in Sudan, and the country’s potential, not only to become self-sufficient, but to become a net food exporter.

The final session of the conference, “The Peace Process in Sudan,” was chaired by Mogus T. Michael, vice president of the Ethiopian International Institute for Peace and Development. This panel included Amin Omer, editor-in-chief of *Al-Abna* daily newspaper; Dr. Tagelsir Mahgoub, Secretary General of the States Support Fund Round Table Discussion; Professor Ode Ojowu from the Centre for Development Studies at the University of Jos in Nigeria; and Helga Zepp LaRouche, founder of the Schiller Institute. Zepp LaRouche, quoting from Confucius and Nicolaus of Cusa, introduced the importance of having a policy based “on love,” and on respect for the dignity of all people.

‘Save the African-American Spiritual!’

A Dialogue with William Warfield and Sylvia Olden Lee

On the weekend of Jan. 19-21, 2001, William Warfield and Sylvia Olden Lee were featured in a series of events in Houston, Texas, which offered to those privileged to be in attendance, precious insights into how to convey beautiful ideas through the performance of Classical music. Maestros Warfield and Olden Lee have a combined total of more than 140 years of experience in

such activity, as they have devoted their lives to art. Both are still energetically involved in teaching and performing, driven, in part, by a passionate desire to keep alive the American Classical musical tradition, which reaches its most powerful height in the African-American Spiritual. It was no less an authority than the great Czech composer Antonín Dvořák who described the Spiritual as the authentic American Classical form.

In his autobiography, *My Music and My Life*, Warfield wrote that, as a young man born into humble circumstances—a family of sharecroppers in Arkansas—he knew he “wanted to teach music to bring a new generation the lessons of my art in life. I wanted to play a role in world culture.” Although he has performed everywhere, singing parts from grand opera to Broadway, his real passion has been presenting German Classical Lieder and their American counterpart, the African-American Spiritual. In a career that took him around the world many times, his inspiring work earned him the honorary title of “America’s Musical Ambassador.”

Spirituals are the basic folk-song music of the Blacks as they were expressing the desire for freedom.

—WILLIAM WARFIELD



ERNS/Stuart Lewis

Sylvia Olden Lee and William Warfield, Washington, D.C., 1994.

in Philadelphia. She followed in her parents’ footsteps as a part of the tradition of Classical music at Fisk University, where African-American students learned to sing Bach, Beethoven, and Brahms, as well as Spirituals.

The weekend events in Houston, and similar events in Los Angeles and New York, are part of an ongoing collaboration of the two with the Schiller Institute—of which Dr. Warfield is a Board member—in a campaign to “Save the Spiritual.”

Concert and Workshop

The artistry of Warfield and Olden Lee was on display at the concert on January 20, the second half of which consisted entirely of Spirituals. In addition to Warfield, Houston baritone Dorceal

Duckens, who is a featured singer with the Houston Ebony Opera Guild, participated in this portion of the program.

Warfield performed three sets of Spirituals, accompanied on the piano by Olden Lee, the first two of which

were preceded by his poetic recitation of the text. The songs included in each set were composed or arranged by three of the greatest composers in the field: Harry Burleigh, Hall Johnson, and Roland Hayes. All the songs shared a common theme, the longing of man to achieve a personal relationship to God, with a Jesus whose suffering unto death is real for the singer, and yet, at the same time, who is still alive in his heart and mind. There is an identification with the pain, as well as with the promise of triumph over death.

The most effective pairing of these songs was that of “Take My Mother Home,” arranged by Hall Johnson, with “Ain’t Got Time To Die,” which Johnson composed. The former tells the story of the Crucifixion, following Jesus on his final journey to Calvary. Despite the abuse and suffering imposed on Him, He maintains His dignity—His primary

It’s a rare African-American who knows anything about Spirituals today. They’ll sing ’em, but they’ve got the overdone speech, and you know, they’ll say, ‘Well, I’ve just never done this before.’

—SYLVIA OLDEN LEE

In his autobiography, Warfield wrote that, as a young man born into humble circumstances, he ‘wanted to teach music to bring a new generation the lessons of my art in life. I wanted to play a role in world culture.’



Dr. Warfield instructs Schiller Institute chorus, Leesburg, Virginia, May 1995. Chorus director John Sigerson is at right.

concern is that His mother be spared seeing the agony He is facing. When Warfield finished this song, the audience was completely still, and many were choking back tears.

He then leaped into a joyful rendition of “Ain’t Got Time To Die,” which tells how one who is “servin’ his master,” is too busy and full of life to pass quietly from this world. The tears of sorrow from the previous song were transformed instantly into “tears of joy.”

To fully appreciate the ability of a teacher to evoke thoughtful emotion in others, which comes from dedicating one’s life to developing the capacity to convey, with passion, beautiful and profound ideas, one must see Warfield and Olden Lee conduct a workshop with voice students. While it is impossible to convey the breadth of the teaching which occurred at the work-

shop at the University of Houston, there was a single underlying theme to their comments: Both were insistent that a performer begin by determining the idea of the composer. If one does not know what the composer—and poet—were intending to convey, do not waste time standing before people to “perform.”

Olden Lee was particularly sharp with this message, asking several singers who sang Spirituals, if they thought they were singing opera arias: “This is not about your voice,” she said, “it is about ideas.” One singer, with a beautiful voice, but little in the way of phrasing, drew a biting comment. “Such a beautiful voice,” Olden Lee commented. “You would really be able to do something, if only you would think before you sing.”

Warfield picked up on this, when asked how to prepare to sing a particular piece. “This is what I believe Lyndon LaRouche refers to as ‘thorough-composition.’ If I understand him, it means that, before you sing the first note, you have the whole piece in your mind, you know where it is going. In that way, there is a direction for each phrase, each is shaped by knowing where you are going with the whole

piece. That is how I prepare myself to sing,” he said.

Again and again, both teachers would ask the student performer to recite the song’s poem, before singing it. In most cases, what was demonstrated was that the singer did not really know the poem. Another theme of Warfield’s was, that one must understand a musical line as a complete phrase, even when there is a steady, conflicting rhythm from the piano, or from the words themselves. “You must emphasize the idea,” he stressed. With a good composer, the tension between the steady rhythm of the piano and the contrary emphasis from the meaning of the line, makes for great drama.

There was much laughter and joy during the workshop’s three hours, as both the young performers being coached, and the audience, which included singers, music students, and faculty, made discoveries for themselves.

Dialogue on the Spiritual

What follows is a partial transcript of an informal roundtable discussion on the African-American Spiritual, held at Texas Southern University (T.S.U.) on January 19. In addition to Dr. Warfield and Mrs. Olden Lee, participants included Débriaa Brown, Professor of Voice and Artist-in-Residence at the University of Houston; Dr. Jason Oby, Voice Professor at T.S.U.; and Bernadine Oliphant, of the T.S.U. Fine Arts Department. Harley Schlanger and Leni Rubinstein of the Schiller Institute also participated.

Dr. William Warfield: It’s hard to corral thoughts into a comment, to say something about my religious experience. Being raised as a Baptist minister’s son, I was introduced to the Spiritual at a very early age, and grew up with it, so my concept of the Spiritual is that of a necessary thing one does, like eating and sleeping.

I was singing soprano in my father’s church choir before my voice changed, and I would do all of the high notes that the sopranos didn’t. I can’t remember not being associated with Spirituals, because my mother—I remember her favorite Spiritual was [singing] “This

EIFNS/Stuart Lewis

Little Light of Mine, I'm Gonna Let It Shine"—and it was very interesting that years later, when I married, I found out Leontyne's* mother's favorite Spiritual was "This Little Light of Mine," so we both had that in common.

My father was in the Baptist church back in those days, and, at the regular Baptist church, the standard Baptist church, we could not play a jazz record. Jazz was considered the work of the devil. As a matter of fact, there's nothing new about that, they wouldn't allow instruments in the chapel when they first started, because instruments were the work of the devil.

So, the basic thing we had was singing, and what did we sing? We sang those things that came out, that helped us as a race, cope with slavery, and cope with inequities, whatever was going to give hope, to give understanding. And that's basically why Spirituals came about.

And Burleigh¹ sat down and made arrangements of Spirituals, which finally we all started singing as solo; but basically, they are the songs of people, and the people sang them together. Only in retrospect have we characterized them as "choral and response," and whatever we want to call them. . . .

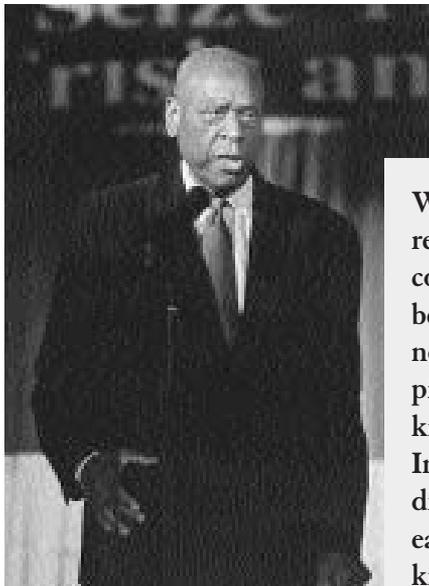
Many have said that the Spirituals didn't die because they were used by the slaves, who used them to find a way to freedom through the Underground Railroad. They were used for that—for example, "Steal Away" became a code to say that tonight, the Underground Railroad was running, so you should get ready to go; or "There's a Meeting Here Tonight," to let you know when to go.

* Soprano Leontyne Price.

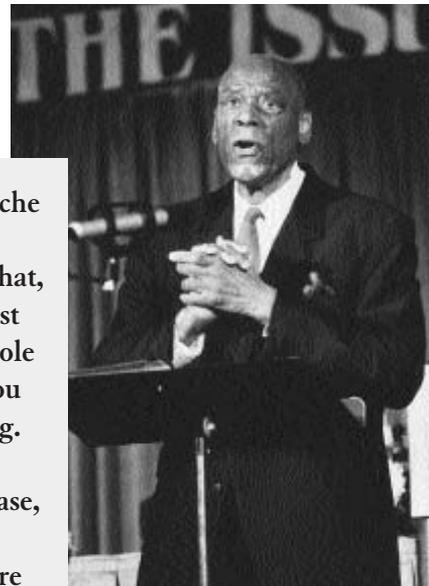
But this was just incidental, they weren't originally written for that.

They worked pretty well for that, however, as all of this was going on under the nose of the white plantation owner, they were planning their escape, and the plantation owner would say, "Aren't the Blacks"—only they wouldn't use that name—"singing nice and all?" These kinds of things were going on with the Spirituals at that time, as a thing of hope, and at the same time, as tribulation.

When I work with young people now—especially young Black people—I work with them in the sense of getting to know what the Spiritual was all about in the first place, and why they're singing it, so they know what they are singing in all its aspects. Then



William Warfield in performance, Sept. 1999 (left), Feb. 2000 (right).



What Lyndon LaRouche refers to as 'thorough-composition,' means that, before you sing the first note, you have the whole piece in your mind, you know where it is going. In that way, there is a direction for each phrase, each is shaped by knowing where you are going with the whole piece. That is how I prepare myself to sing.

—WILLIAM WARFIELD

EIRNS/Stuart Lewis

they can know how to approach singing it. Then we can go into various kinds of things to approach later on, so they can get its full meaning and emotion across. I have found working with white students who are starting from scratch, is sometimes easier than some of the Blacks who don't know anything but gospel, they don't know the difference, and it affects how they sing Spirituals.

EIRNS/Stuart Lewis

Gospel vs. the Spiritual

Audience: What is the difference between Spirituals and gospel music?

Sylvia Olden Lee: I am the daughter, granddaughter, and great granddaughter of Baptist preachers. My grandfather was a slave and ran away as a young teenager when he heard about the War, on a plantation in Kentucky where he grew up. These people didn't know anything about music or composition, they'd just be out battling in the mines, or doing some kind of hard work, and one of them might think of what he had been able to hear from the visiting preacher on Sunday, preaching for the master in the front. And he was then allowed to come around the back and listen, and then to say something from that Biblical reference, without any idea

of what key it was, or what the voice was, and pretty soon, they would start singing "Joshua Fought the Battle of Jericho."

They did not know anything about music, what they did just came straight from folks. They weren't musicians, but they were just expressing what they heard from the preacher, in their own way.

As for gospel, some of it has a spiritual similitude, and some of it makes sense, like hymns that have been written—but when it gets to be bumping and grinding, and going through all this

yelling “Jesus!” about fifty times, that has no relation to anything in the Spiritual, *ever!*

Because in the Spiritual, we have never had anything like losing yourself, in just getting worked up sensually. To me, I just haven’t been able to gather how gospel has a spiritual content. It might, from the text, because sometimes it has a text that is quite harmless, but when it gets all violent and everybody’s going on like this, and it goes over into the sensual, the carnal side, then I don’t want you bringing up God, and Jesus, and the Saviour, in the text. So I don’t know, I’m not too good on that.

Audience: Could I just comment on that, Sylvia? The Spiritual, of course, some people thought it was secular, and some people thought it was . . .

Olden Lee: How could anyone think it was secular? [Laughter]

Audience: Well, long ago, they used to have something called the “shouts”

after church, where they would sing the Spirituals, and there would be all this dancing and gyrating, and so forth.

Olden Lee: Yeah, but not all the shouting, not the sensual, in the Spiritual!

Audience: Yes, but you see, they couldn’t have it in the church. They would have to have it after church. This is the whole thing about it, even some of the Spirituals. They couldn’t sing it in the church.

But when they would have this shouting, it was like a thing that went around in the community, whispering, “We’re going to have a shouting after the service.” It was frowned on by the church. They would get there and they would dance some kind of a dance described as a shuffle, and I thought about it today, and I think I’ve seen it before. But there was the shouting, and gyrating, that you talked about . . .

A performer must begin by determining the idea of the composer. If you do not know what the composer—and poet—were intending to convey, do not waste time standing before people to ‘perform.’ Olden Lee was particularly sharp with this message. ‘This is not about your voice,’ she said, ‘it is about ideas.’



EIRNS/Debra Jambor



EIRNS/Debra Jambor

Voice workshop, University of Houston, January 2001. Warfield and Olden Lee coach voice students.

Olden Lee: There’s gyrating, and gyrating. You said “Praise God” with the timbrel and dance. I feel that there’s such possibilities of praising God, but not with that gyrating!

Audience: But this is why it was condemned in the church. The gyrating and shouting was frowned on.

Audience: Don’t you think the Spirituals came out of slavery, and the gospel came afterward?

Warfield: If you really want a simple definition of gospel, Spirituals are the basic folk-song music of the Blacks as they were expressing the desire for freedom. There was another thing developing that had to do with jazz, Louis Armstrong, and that whole Memphis and New Orleans thing. Later on, there became a fusion of the jazz and the religious thing, and that is what is commonly known as gospel.

Audience: Was that in the ‘20’s?

Warfield: Yes, with Thomas Dorsey.

Olden Lee: The Spirituals started in the 1600’s, out in the fields, with people who didn’t know Do from Mi, and didn’t know anything about reading and writing, or anything. They would just start singing. And the people who were with them would all come chiming in.

‘The Work of the Devil’

Warfield: The Spirituals had rhythm. Dr. Nathaniel Dett,² who made many important contributions to the devel-

opment of the Spiritual, was in Rochester, New York, and I was in his chorus. And it was one of the most wonderful periods of my life. I was a senior, and I sang in Dr. Dett’s choir. Every Spring, his chorus would give a concert, and he once said to me, “You know, my introduction to the Spiritual got me the worst beating and whuppin’ I ever got in my life. I was standing in the back of the church, and my mother was playing the organ, and she was playing this Spiritual, and it sounded so wonderful, I danced all the way up to the organ, and she grabbed me, and gave me the whuppin’ of my life. That was my introduction to the Spiritual.” And the very fact that it had that rhythm—he didn’t know of anything religious that had that kind of beat—that made him want dance, and he responded in kind.

But at any rate, when Thomas

Dorsey and the whole group came along, and I'm not telling you anything you don't know, the church looked completely down on this. You couldn't even get started in the church. He had to do it on his own, because it was a new approach and the idiom of it was so jazzy, that anyone in the Baptist church thought of it as the work of the devil.

I can even remember when we used to go to the Sanctified church, and my father was preaching, and there was a Mother Thorpe who came around with her daughter Rosetta, and they had the tambourines, and all of that. I experienced this in Rochester, New York. And I would get back, and every once in a while, I would throw in a little lick at the piano, and up at the podium, I saw my father looking at me, saying, "Uh, uh. We ain't having any of that." And I knew what that expression was about. And that was in the Sanctified church, they were absolutely that straight with their own.

So when Dorsey came along, I thought, "We can't have this in the church." It was that kind of reaction. You know what I'm talking about.

Bernadine Oliphant: Yes, I do know what you're talking about. I had some of the same experiences. Also, I grew up in the church in the '40's and '50's, and we had a choir director come to us when I was probably in the ninth grade, and she felt the same way about Dorsey. She had never heard it before. She was from the South. I still, to this day, remember the first gospel song I ever heard in my life, and how I felt. If I had been white, I would have been red all over. It was sung by a ten-year-old girl, and I was about the same age. It was "Our Heavenly Father's Children," and I wondered, "Oh, my God, should I leave the church, or what should I do?"

And it was at one of the Baptist conventions that used to travel all over Texas, and all the churches would come together. And when this music teacher came, and we were all ready to get the choir going, and she said to the minister, "We will not have gospel music in the church."

And that was it! So I am a person who did not grow up with gospel music, and even today, when I go to church, it's pitiful with the gospel music there. They're trying to be modern, and then you get into swing, bebop, and the blues. So you have gospel mixed with blues, and then they have what they call contemporary gospel, which is jazz mixed with bebop and rock'n'roll.

Olden Lee: Whatever it is, it has text to it, text which should be spiritual in its content. It's sacred!

Warfield: As long as the text is expressing religious things, it can be called gospel, and it can be straight out of a jazz book, and as long as the text is religious, and praising God, then it's gospel as far as they're concerned.

Audience: As we're going through this, it reminds me of the whole history of music. You know, when cavemen got out, and started banging on rocks and what-have-you, then started putting words to music, those intents were for godliness, to express a relationship between man and the divine. Later, as civilization developed more, then we

started saying, "Okay, I'm going to look more toward myself, and personify myself, and get more away from God," this was almost an attack on the church, at least that's how it seemed. Then there's instrumental music. You had a development where the orchestra was important, and then you had a development where the solo was more important. . . .

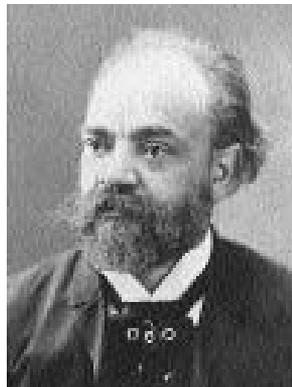
As I see the gospel, on the spiritual question, the intent, originally, was more spiritual, godly thoughts, but as we started looking more to ourselves, and adding that introspective intent to the music, and started moving away from the intent of godliness, to our own feelings with the gyrations, and "let me express some more emotional things that I originally wasn't so concerned with," and the gospel, even though they still have that spiritual text, they also put this more selfish aspect into the music.

Olden Lee: Sensual, sensual.

Warfield: Of course, when you get right down to it, gospel, as we hear it today, has evolved into so many different styles, that, for instance, the people who were with James Cleveland, were

All the songs shared a common theme, the longing of man to achieve a personal relationship to God, with a Jesus whose suffering is real for the singer, and yet, at the same time, who is still alive in his heart and mind. There is an identification with both the pain, and the promise of triumph over death.

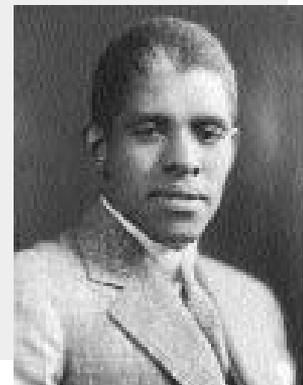
Counter-clockwise from top left: Antonín Dvořák, Harry Burleigh, Hall Johnson, Roland Hayes.



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shocked at gospel which had modern choruses and stuff, they'd say, "Oh, that ain't gospel!" Even within the realm of people who were into gospel, they criticized the other performers.

Gospels and 'Gettin' Happy'

Débriaa Brown: I have a question, because I'm really here to learn tonight, because my experience with the Spiritual came so late in life, which is another story that I may tell later.

But I have a specific question. I used to hear, when I was growing up—there's a wonderful man named Edward Hogan, who was the uncle of the now very well-known Moses Hogan, who was an expert in the Spiritual and very learned. And I grew up as a Catholic. I had no background. And I met this wonderful man at Dillard University, and asked him to teach me how to sing this wonderful music, because I went to Mass. I didn't have any gospel background, or Spirituals—I didn't have any of it.

So he helped me, and his remarks were very much that in Louisiana, especially, much of the gospel music is text taken from the Protestant hymns that the slaves overheard in the different churches, and they would just use those words, which they liked, and would simplify them, and make their own songs.

But, my question is, I would hear different people, if someone would "get in the spirit" and doin' that dance, and

people would say, "That's a holy dance, now. You can't do that dance. You just sit down. This person has the spirit, and that's a holy dance." Until this day, I want to know what that is.

Dr. Jason Oby: It's called "gettin' happy."

Olden Lee: You can move your hips around in

I am a person who did not grow up with gospel music, and even today, when I go to church, it's pitiful with the gospel music there. They're trying to be modern, and then you get into swing, bebop, and the blues. So you have gospel mixed with blues, and then they have what they call contemporary gospel, which is jazz mixed with bebop and rock'n'roll.

—BERNADINE OLIPHANT



EIRNS/Debra Jambor

Roundtable on the African-American Spiritual, Texas Southern University, January 2001. Left to right: William Warfield, Sylvia Olden Lee, Débriaa Brown, Harley Schlanger, Barbara Morgan.

As for gospel, some of it has a spiritual similitude, like hymns that have been written—but when it gets to be bumping and grinding, and going through all this yelling 'Jesus!' about fifty times, that has no relation to anything in the Spiritual, ever! Because in the Spiritual, we have never had anything like losing yourself, in just getting worked up sensually.

—SYLVIA OLDEN LEE

a holy way, or you can do it in a sensual way, that takes on really quite a different meaning, but to be saying "Jesus!" while you're doing it, is, to me, a blasphemy.

Audience: I know what you're saying.

When I was a little kid, we went to A.M.E. church, but my father was a Baptist, and that's where I go now, and just as you said, I remember when I went to church with my grandmother, people would "get happy." The preacher would go and stir them up to where they couldn't sit down any more, so they'd have to get up and shake it off, just dancing and shaking, and it's almost a Pentecostal kind of thing.

Olden Lee: But, what is that? They're happy and they can't sit down?

Audience: Well, I always wanted to experience that. I remember as a young girl in high school, "If I could just get that feeling." [Laughter] I used to think they were putting on airs, myself, that this couldn't be real, and it goes along with this kind of stuff like speaking in tongues, it's like something that they've been given, like a mantra or something to get them all whipped up. It's planned, it's very planned.

Olden Lee: To go back to the original topic, of the Spirituals—some of them were solo. Now gospel got joined in by the crowd, but the Spiritual got joined in by the chorus, but the first thought of Spirituals came from somebody in the field, and I get the idea, back in the 1600's and the 1700's, they were allowed to have a religious service somehow, by

On this dialect thing, I did a class on Spirituals, and about the second day, I asked them, ‘Do you know any Spirituals?’ And the hands went up. But not a single one knew the Spirituals. They were singing gospel.

—BERNADINE OLIPHANT

themselves, or with an itinerant preacher, who came to the master’s big house, and they were allowed to sit out on the big lawn, and hear the minister preaching for the family, the ruling family, and then after he had done with the sermon for the big house, then he was allowed to come out and do some preaching for us.

But the slaves weren’t allowed in the church. If you lived way out on one of these 200-or-more-acre plantations, and you weren’t allowed to leave, then your only training was when you heard the Bible being quoted, when you heard the preaching. Then the next day you got up and went to do your job picking the cotton, or whatever. You are absolutely a nobody. You are untrained. You don’t know anything, except what you heard. And that is where it started, with singing the texts while working, to express your devotion. Now, that does not happen with gospel.

The Rhythm of Work and Thought

Harley Schlanger: To pick up on that thought, Dr. Warfield was talking in L.A., about the relationship between singing and work, the motions of work, and I wondered if you’d say something about that.

Warfield: Well, this is part of it: that when I work with youngsters, I can remember that most of the work songs and Spirituals, they were all things that people did while they were working. And so, even if you had something that is a slow-moving kind of a thing, look for a rhythmic pulse in it. [Dr. Warfield

demonstrates moving in rhythm while singing.] It’s always there, no matter how slow it is, and that goes back to them working, and basically, if you think about it as work accompanying an emotion, then you’re on the right track of trying to recreate these things.

And the faster it goes, the bouncier it gets.

Olden Lee: And it’s usually some kind of heavy work, like a sack of cotton. And Roland Hayes³ would do the same thing.

Warfield: And Hall⁴ would always say, “People don’t have the right idea of what syncopation is. You can’t sing syn-

where I don’t necessarily hear that in their music.

Olden Lee: The bounce is not necessary. Well, there’s certain Spirituals, for instance, if you’re singing [sings]: “I feel like, I feel like,” that’s already established a rhythm in the words. Or [sings]: “I feel like my time is gone.” But, if you’re doing [sings]: “Swing low, sweet chariot,” it gets to be less trouble. The text is not loaded. It doesn’t call for it to be heavy in thought. Or [sings]: “Over my head, I hear music in the air,” there’s nothing that is wearisome about that [sings]: “There must be a God somewhere.”

And then, some of the Spirituals have no rhythm to them. They are



Voice workshop, University of Houston, January 2001. Dorceal Duckens conducts choral version of “Ain’t Got Time To Die,” with Dr. Warfield as soloist (left).

copation if you’re going too fast. Most people take these Spirituals too fast, and they run away with it, and you just can’t do that.

Schlanger: Do you want to demonstrate that?

Olden Lee: I want him to demonstrate it.

Warfield: No, that’s for tomorrow.

Audience: Don’t you think accompanists also need to feel that?

Warfield: Of course!

Audience: I hear so many accompanists playing Spirituals, and this is

like a soliloquy.

Warfield: You stop, and you’re talking, and you’re thinking and fantasizing about a better place, you’re expressing ideas.

Kids in Louisiana were ashamed. They said, ‘I don’t want to have to talk like that.’ Or they have told me, ‘I want to learn music, but I don’t want to sing all that stuff.’ Any dialect, like ‘dem’ or ‘dat.’ They immediately connect Spirituals with that, so they don’t want to do them.

—DÉBRIAA BROWN

Audience: The first Spirituals, I guess, if you go back to it as folk songs, were obviously not accompanied, anyway.

Olden Lee: That's why I insist on everyone doing it, *at least once*, unaccompanied, and I really mean that. Because a soliloquy, I think the way that's done, is unaccompanied and in a rhythm that's at the speed of your thoughts.

Schlanger: When did the piano start being brought in as accompaniment?

Warfield: With Burleigh, around then.

Olden Lee: And Mr. Burleigh didn't know much about Spirituals, he just loved them, and wrote them, because so many of his don't have the Spiritual color.

Warfield: As a matter of fact, I have a very good friend that I want to quote; "This is some of the most primitive harmonization that I've ever seen. Why Burleigh decided to put this chord here, I don't know."

Audience: And Dvořák was encouraging Burleigh, really, to transcribe the . . .

Olden Lee: . . . And I'm telling you, it's a rare Black, African-American, who knows anything about Spirituals today. They'll sing 'em, but they've got the overdone speech, and you know, they'll say, "Well, I've just never done this before." In Philadelphia! I've come across so many of them in my last thirty years in Philadelphia. Of course, gospel is very popular, but the Spirituals being done solo in many concerts, they over-pronounce them and everything.

Warfield: I sure do agree. I've shared it with several people before, but I haven't told you. You'll get a kick out of this. I had a student, in Southside Chicago, who had the worst drawl. You know, "Ah'hmmm this," and "Ah'hmm so-and-so," drawling and carrying on. And he gave me one of these, "Oh, Ah'hll bring a spiritshul t'marrow." I said, "Okay, what have you brought?" And he said, "Oh, ah'hmm goin' sing, mmm, 'Honah, honah,' by Hall Johnson." [Warfield

sings in a rapid, exaggerated manner, in perfect English, without dialect, accompanied by howls of laughter from the audience.]

I said, "You've got to be kidding!" All of a sudden, he was this great King George or something. I screamed, "You don't sing it that way. You must be joking."

Bernadine Oliphant: On this dialect thing, I did some lectures on singing right here at Texas Southern University.

I was in Austria and Germany when the Berlin Wall came down, and I found that so many of the Eastern people, the Russians, and the people from the Balkan countries, are so in love with this music, it's uncanny.

I was doing *Carmen* in Romania, and this guy said, 'I'm having this recital, and I'm singing some of your music.' And I went and heard the recital, and this man sang these Spirituals with intensity and feeling. It was wonderful.

—DÉBRIAA BROWN

I came here seventeen years ago, and I did a class on Spirituals, and about the second day, I asked them, "Do you know any Spirituals?" And the hands went up. I said, "Sing it for me." Not a single one knew the Spirituals. They were singing gospel. Oh, I was so embarrassed. I said, "I've got to do something about this."

I gave out little charts with the vowels on them and so forth. But it is so easy, because when I do these classes, they are for people of all ages, and it's as easy to teach whites and non-Blacks as it is to teach Blacks, sometimes, because of this problem.

In Oklahoma, there was a Black student there, and most of the students I worked with were white, but this Black student absolutely did not want to sing with us. Absolutely did not want to sing the Spirituals. So I worked with him, and by the time we finished, he could sing Spirituals.

Brown: I'd just like to make a comment about an interesting thing that happened in the Eastern European zone. I was in Austria and Germany when the Wall came down, and I found that so many of the Eastern people, the Russians, and the people from the Balkan countries, they are so in love with this music, it's uncanny. And they know it, and I tell you, they can sing it. It's wonderful.

It was thrilling for me to get to Romania, I was doing *Carmen*, and this guy said, "Well, I'm having this recital, and I'm singing some of your music." I said, "How nice." But I was thinking, as an American, singing "your music," could mean a lot. And I went and heard the recital, and this man sang these Spirituals with intensity and feeling. It was wonderful.

Audience: I have a Japanese friend, to whom I taught some Spirituals. She sings them all over the world, now. I know people really love them.

The Issue of Dialect

Audience: I know some Black churches in the United States don't associate with or encourage

the singing of Spirituals in the church. Why is that?

Olden Lee: The shame of the bad English, and the dialect.

Oliphant: The larger Black churches do, but you have a much larger congregation there, where they can have several different choirs. But the choir directors here, receive a lot of telephone calls from ministers, bemoaning the fact that they cannot find qualified musicians to play in the church. Generally, they pay very well. There was an article in the newspaper about four months ago, talking about the poor quality of music in the churches, and we get calls all the time, because the churches really want choirmasters that can do these things, and they hire people who don't have very good skills, because people really are clamoring for the gospel music, but at the same time they want to have quality, and it's difficult to have the two things co-existing. They don't have a

shared total idea, they don't have a shared goal.

And the singers, they want to take voice lessons because they want to have a stronger voice, so they can be the next pop sensation. So, when you're trying to help them, you don't even agree on what the outcome is, that you're working toward a common goal.

Brown: Kids in Louisiana were ashamed. They said, "Well, I don't want

trainee was blonde and blue-eyed, but she had such an ear, that I started working with her. She entered the door, walked around, sang the "Strawberry Woman," and went out. It was so authentic, one of my Black students said, "Uncle Bill, you oughta be ashamed of yourself, giving away all our secrets." [Laughter]

Audience: But even with that "Strawberry Woman," we forget that it was

"Ride On, King Jesus." And I introduced him to some "blue" notes, and that child got up there, and our chorus director said, "Are you sure he ain't got Black blood in him?" But he heard in his mind how it should sound, so he was able to sing it.

Leni Rubinstein: I have read that part of the very special quality of Spirituals comes from the tradition of African singing through oral communication. And that this was combined with the conditions of learning about Christianity, and using that together, that this special quality can be traced back to that. And I would like to know, how or where this can be demonstrated.

Warfield: Basically, in the scale, which is sort of pentatonic. That's from Africa, and also the rhythms.

Rubinstein: Can you show me an example?

Warfield [sings]: "Wade in the watah, in the watah, children, wade in the watah."

The word "watah" is sung slightly flat. And then the rhythmic patterns were from Africa, with the drumming and so forth.

The evening ended with several demonstrations of Spirituals, including Dr. Warfield's beautiful rendering of "Li'l Boy, How Old Are You?" by Roland Hayes.

—Harley Schlanger



ERINS/Stuart Lewis

Informal discussion, Schiller Institute conference, January 1998.

to have to talk like that." Or they have told me, "I want to learn music, but I don't want to sing all that stuff." Any dialect, like "dem" or "dat." Of course you realize, it's not absolutely essential, but they immediately connect it with that, and so they don't want to do that.

Audience: Some of the singers that they have, today, use fantastic embellishments. And people like Louis Armstrong do a lot of improvising, but when it's sung well, people really do love it.

Oby: But, I do hate to see these things come, particularly, into the Black church. Whereas other things could, and should be, preserved, these things take over and others decline.

Warfield: I want to share something. One of my students at the University of Illinois did a lecture recital on "street calls," and traditions like that. And he asked me if I would train someone to do the "Strawberry Woman," from *Porgy and Bess*, as an example. Now the

the Jewish George Gershwin, who composed it.

Warfield: If you go down there, and hear this, and relate to it in the right way, it comes. It comes from listening, from hearing the rhythm of the voice. I started a kid singing, one of my tenors, doing

One of my students asked me if I would train someone to do the "Strawberry Woman," from *Porgy and Bess*. Now, the trainee was blonde and blue-eyed, but she had such an ear, that I started working with her. It was so authentic, one of my Black students said, 'Uncle Bill, you oughta be ashamed of yourself, giving away all our secrets.'

—WILLIAM WARFIELD

1. Harry T. Burleigh, 1866-1949. One of the pre-eminent arrangers of Spirituals, he collaborated with Antonín Dvořák when Dvořák was the director of the National Conservatory of Music in New York, and Burleigh was one of the students.
2. Nathaniel Dett, 1882-1943. A renowned teacher and choir director, who arranged and composed Spirituals, he compiled "The Dett Collection of Negro Spirituals."

3. Roland Hayes was the first African-American singer to win recognition as an artist from American audiences and critics; he was an outstanding figure in the tradition associated with Fisk University.
4. Hall Johnson, 1888-1970, was known for his work as a choral director and arranger. Johnson was also a composer, who helped popularize the African-American Spiritual for a broad audience.

Universal Culture, Ecumenicism, and the Classics: Two Communications from The Republic of Georgia

Transcending the Limits of One's Native Culture

To the editors of *Fidelio*,
Dear ladies and gentlemen,

To the very interesting observations of Mrs. Zepp LaRouche about the relationship of the Classics and Romanticism in Eighteenth-Nineteenth century German literature, and to the parallel she draws with the current spiritual-intellectual situation in the world, I want to add two points.

First of all, I want to refer to the eternal and lawful circumstance, that *both* the forms of artistic expression, *and* the range of feelings and moods which they nourish, have a tendency to lose their sharpness and, consequently, to give rise to a striving towards something still more stimulating for the imagination, more unexpected, and even irrational. In this regard, the counterposition of German Romanticism to the German Classics is of the same order, as the decadent art of the late-Nineteenth/early-Twentieth century, and many other "rebel" departures from the Canon in the past and in the future. Secondly, it seems to me that this *psychological* factor in the departure from the Classics was not unique.

There is another factor at work in this phenomenon, in a more or less conscious form, and that has to do with *one's system of values*. Self-assertion and the assertion of one's principles and

positions in the setting of one's native culture, within its limited framework, is not as high a value for the creative personality, as is self-assertion on an intercultural scale, as is the location of higher artistic and moral values in the setting of everything achieved, or not achieved, by humanity as a whole. With the passage of time, the artistic forms and the range of moods, which attain classical status within a given culture, as well as a culture's moral and social principles, are necessarily fitted into the framework of an establishment, or sometimes even just of one social layer or class. The creative personality, as well as its more or less creative audience, strives in its searching, to transcend the limits of this milieu, for the fruits of its search to be of genuinely universal significance (*allgemeingültig*), and to be adequate to the entire real wealth of human nature.

The farther the process of democratization proceeds in the world, with the globalization of a long list of relationships and problems, the closer become the contacts among cultures, and among social layers within the same culture; the less the individual's hereditary social characteristics shape his biography and, in particular, his world view, his moral choices and capacities, and, on the contrary, the more they are shaped by his personal qualities; —so

We have received the following items from readers in the Republic of Georgia. Dr. Nodar Natadze, who is Chairman of the People's Front of Georgia, comments on Schiller Institute founder Helga Zepp LaRouche's article in our Summer-Fall 2000 issue, "Only a New Classical Period Can Save Humanity from a Dark Age" (Vol. IX, No. 2-3). And, two members of the faculty of Tbilisi State University, Dr. Nino Silagadze and Prof. Dr. Tedo Dundua, offer an insightful political interpretation of a unique feature of Georgia's early church architecture. Dr. Natadze's letter was translated from the Russian by Rachel Douglas, and the original English of the Silagadze-Dundua paper has been edited.

much the stronger will be his striving to transcend the limits of his native culture, in the search for truth and for universally significant self-assertion in all areas of life, including in literature and art, on a global scale, i.e., under conditions of the absolutely free, unbiased competition of all possible approaches, tastes, and norms, from the norms of the higher intellectual elite, down to the norms of the so-called "bottom."

The impossibility of "returning" to the Classics in their initial form, should not mean an inevitable victory by the present "dark ages," i.e., the reign of incompetent "public opinion." It merely indicates that for humanity there is an inevitable process of seeking the above-mentioned harmonic, rational, and stable solutions, i.e., the search for a new or constantly renewed Classics, in the form of a stable equilibrium among the eternal, mutually contradictory principles in human nature, will take place on a broader intercultural basis.

—Nodar Natadze, Doctor of
Philosophical Sciences,
October 2000

The Three-Church Basilica Type in Georgia

The contemporary spirit is filled with multicultural and universal concepts, which regard all cultures as being equal. In other words, we need to enrich our own culture, and respect its minorities. Historical background may be useful in supporting this global idea. Georgia appears to be a good example, as a permanent recipient of different ethnic groups and confessions, treating them moderately. This article presents one of the specific expressions of this idea.

Three-church basilicas present, indeed, a very special architectural appearance, and they are by and large concentrated in Georgia. These churches were built mostly in the Sixth-Seventh centuries. Who needed three separate chambers in a basilica, which thus restricted the space for the faithful? Christianity is a teaching, and a teaching needs an auditorium, and an auditorium demands a large interior. Why, then, is the Georgian case so unusual? This paper deals with the problem of providing a functional explanation for the three-church basilica type.

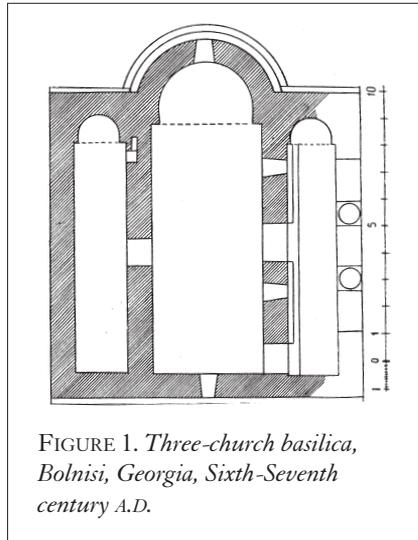


FIGURE 1. *Three-church basilica, Bolnisi, Georgia, Sixth-Seventh century A.D.*

Lines of columns are present in a normal basilica, whereas a three-church basilica is formed when the columns are replaced by interior walls [SEE Figure 1]. The purpose of these interior walls is still obscure.

We are greatly indebted to some brilliant contributions to this field. Ernst Badstübner¹ considers a Benedictine

presbytery [SEE Figure 2] to be derived from an Eastern Christian, possibly even Georgian, prototype, with a Swiss example [SEE Figure 3] being a transitional stage. In the Middle Ages, the small chambers of a presbytery served either for storage of the holy relics, or as an assembling area for the monks before prayer. Badstübner wants to regard the Georgian division of a church in the same way. This comparison remains hypothetical, requiring many arguments to prove that the Benedictine rules were the same as those of Georgia. And, if the Georgian type had been adopted by the West *via* Byzantium and the Mediterranean, as Badstübner thinks, why don't we find any remnants in those places? Theoretically, a division of a church is more a necessity, than an influence.

We remain inclined to think that Georgia's Zaza Aleksidze was quite accurate in his conclusion, that those separated spaces in Georgia served for the different Christian confessions—Monophysite and Diophysite.² Indeed, there had been substantial confessional dualism in East Georgia (Iberia) in the Sixth-Seventh centuries, and those three-church basilicas could have served as an architectural compromise for the sake of unity. And Iberia was a special case of this solution. An additional three-church basilica comes from Egypt (Sixth-Seventh centuries), and is thought to be of Georgian origin.³

In the Sixth-Seventh centuries, Iberia, being a traditional ally of Byzantium, was badly threatened by the [Iranian] Sassanids, who made their attempt to

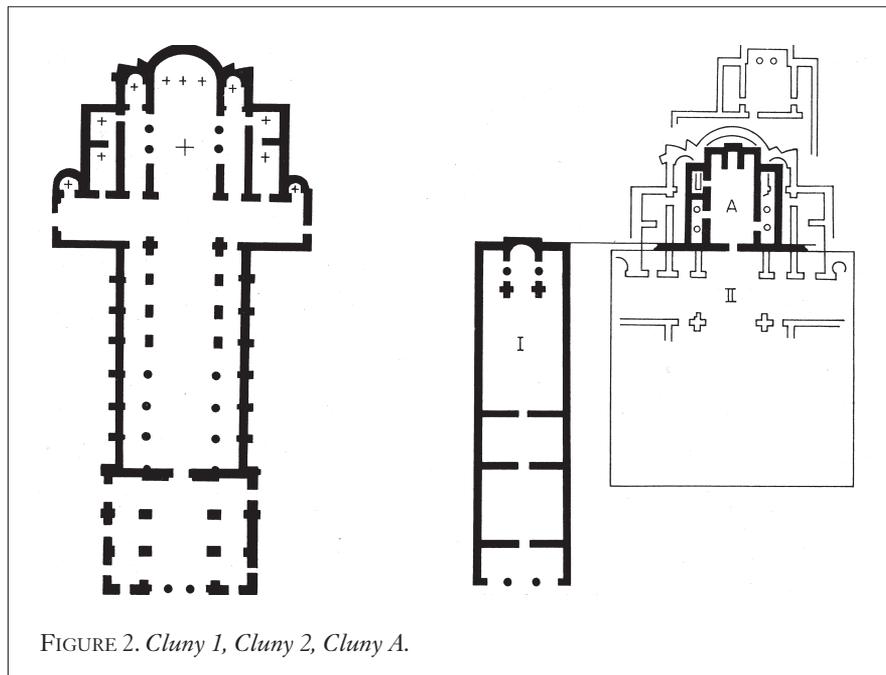


FIGURE 2. *Cluny 1, Cluny 2, Cluny A.*

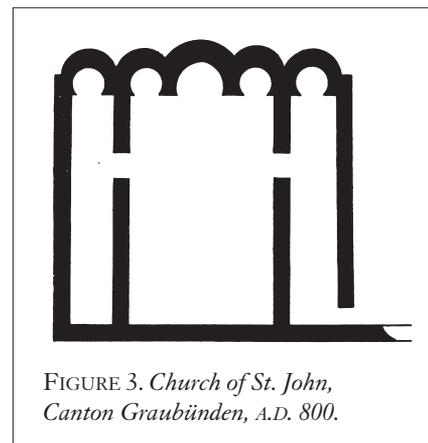


FIGURE 3. *Church of St. John, Canton Graubünden, A.D. 800.*

build an Asiatic empire, and who demanded that the Caucasian range be considered the outer boundary of their political influence. The Iranians supported the Monophysites, whereas the Georgians wished to be Diophysites, thus demonstrating their fidelity to Byzantium and Europe. However, most of the lower classes, inspired by Iranian aid and irritated by the local magnates, stressed their loyalty to the pro-Iranian branch of Christianity, as did some ambitious nobles. Moreover, the Armenian *receptio* (community) was present in Georgia, and they were faithful Monophysites. The situation seems to have been even more complicated by Iranian Zoroastrian proselytizing, conducted either by the Persian *receptio* dwelling in the Iberian cities, or by new native converts to the Iranian confession.

Thus, Diophysites, Monophysites, and even Zoroastrians, were present, and, in trying to maintain the national unity and social security of the country, one had to deal with them. What was to be done? Collect them in one place, ignore their confessional divisions, and not allow the appearance of truly separate—dominated by the Iranians—religious and political structures. The three-church basilicas were intended to serve this basic purpose, especially in the villages, where the serfs were rudely suppressed by their lords. Thus, although the village churches are very small, they are still divided into three sections. One could argue, that there was no place for the Zoroastrians in a Christian church, but we have to take into consideration the fact of Iranian (Sassanid) Zoroastrianism being largely influenced by European Mithraism, according to which even the date of birth of Mithras was fixed to the 25th of December.⁴ The Armenians, inspired and strengthened by the support of Khosrau I, the Persian pro-Monophysite Shah, accused the Georgians of disloyalty to the Monophysite faith, and of loyalty instead to all of the Christian confessions, admitting even Nestorians to the churches. Of course, the Georgians would have preferred their country to have been neatly orthodox, but failing to achieve this comfortable situation, they tried to achieve a

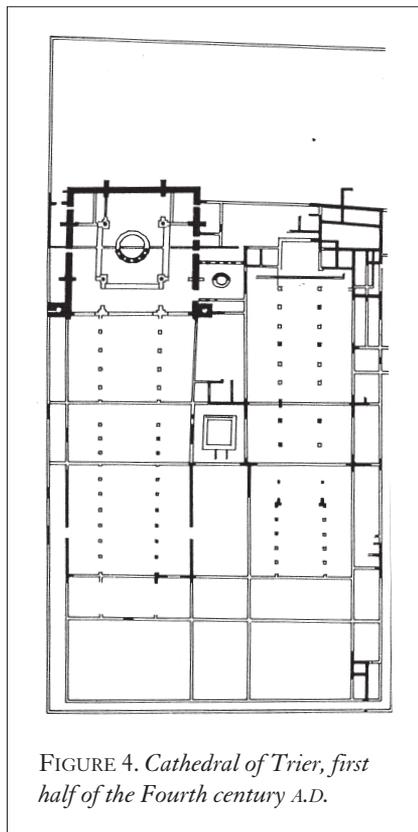


FIGURE 4. *Cathedral of Trier, first half of the Fourth century A.D.*

national—and not religious—unity, putting all the confessions into one church.⁵

Europe had faced the same problem earlier, in the Fourth-Fifth centuries, with the orthodox Christian folk, the Arians, and the Mithra-worshippers living together. So, we are inclined to expect something similar there. Indeed, the joint basilicas [SEE Figures 4 and 5], or a Mithraeum inserted into a Christian church (Santa Maria Capua Vetere, Santa Prisca at Aventine Hill), could have served the same purpose.

And, perhaps, the Egyptian case included three separate chambers, with

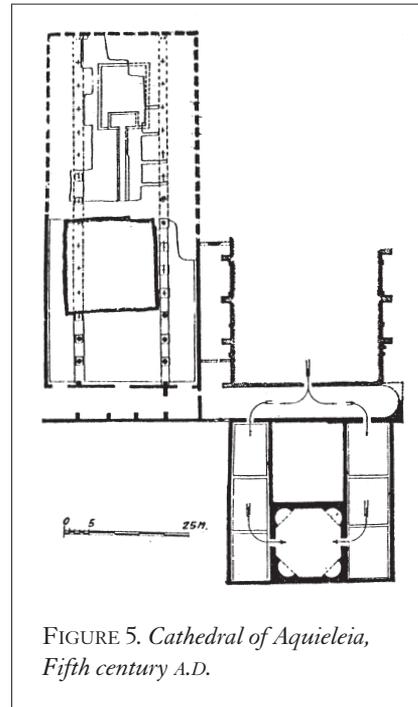


FIGURE 5. *Cathedral of Aquileia, Fifth century A.D.*

the Greek, Coptic, and Armenian languages being involved in the church service. It is thought that a certain Cyrus from Iberia extended his activity by founding the three-church basilica in Thebes in the Seventh century.⁶

This pattern of confessional pluralism has continued to be precisely maintained. Being largely an Orthodox country, Georgia still embraced different communities, such as Jewish (from the Second century B.C.), Muslim (from the Eighth century A.D.), Armenian, Roman Catholic, etc.

So, co-existence was easily achieved—which means that it can be achieved any time, anywhere.

—Dr. Nino Silagadze,
—Prof. Dr. Tedo Dundua,
Tbilisi State University

1. E. Badstübner, "Zum Ursprung des dreischiffigen Presbyteriums an Klosterkirchen des benediktinischen Reformmönchtums (ein Vergleich mit den Drei-Kirchen-Basiliken in Georgien)," *Georgica*, Jena-Tbilisi, Heft 7, 1984, pp. 77-81.
2. Z. Aleksidze, *Liber Epistolarum: Textum Armenicum cum Versione Georgica Edidit et Disputatione Commentariisque Instruxit* (Tbilisi: 1968), pp. 262-266.
3. U. Morrenet de Villard, "Una chiesa di

- tipo georgiano nella necropoli Tebana," in *Coptic Studies in Honor of Walter Ewing Crum* (Boston: 1950), pp. 495-500.
4. T. Dundua, *Christianity and Mithraism, The Georgian Story* (Tbilisi: 1999).
5. Z. Aleksidze, *op. cit.*, p. 191. Pope Gregory I is said to have been delighted by the religious toleration in Georgia.
6. Z. Aleksidze, *op. cit.*, pp. 167-272; also G. Chubinashvili, *Architecture of Kachetia* (in Russ.) (Tbilisi: 1959), p. 142.

A Witness of Hope for All People

In the Jubilee Year 2000, Pope John Paul II selected a humble, Vietnamese former prisoner, Msgr. Francis Xavier Nguyen Van Thuan, to preach the spiritual exercises to the Roman Curia during Lent. Van Thuan, after studying in Rome as a young man, was Bishop of Nha Trang, Vietnam, from 1967 until his 1975 appointment as coadjutor Archbishop of Saigon (now Ho Chi Minh City). A few months later he was arrested, and he spent thirteen years in prison, nine of which were in solitary confinement; he was then released, under house arrest. In 1991, Van Thuan was expelled from Vietnam. In Rome, he became vice president of the Pontifical Council for Justice and Peace, and, since 1998, he has served as the Council's president. On Jan. 21, 2001, he was named Cardinal by Pope John Paul II.

After reading the twenty-two spiritual exercises contained in his book, one can only conclude that John Paul II was once again inspired when he instructed Van Thuan to submit his testimony.

What makes this testimony so powerful, is Van Thuan's profound experience in prison, of overcoming suffering with love. Having been unjustly imprisoned myself, along with Lyndon LaRouche, whose cellmate I was for the

The method Van Thuan employs in his spiritual exercises transcends the sense perceptions of the empiricists and materialists, and the logic of the Aristotelians and Kantians. It instead emphasizes those powers of cognition which are the characteristic of man as a creature of Reason, as made in the image of God.

first six of the thirty-nine months of my incarceration, Van Thuan's testimony reminded me strongly of the way in which LaRouche responded to his unjust imprisonment.

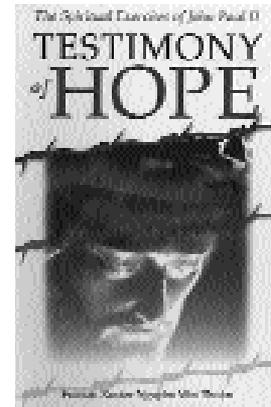
Van Thuan begins his book by echoing the Apostle Paul, saying, "I do not believe that I know many things except Jesus Christ crucified." I recall to this day LaRouche's statement on Christ at Gethsemane to the court in 1989, before being sentenced to fifteen years in prison, comments which he recently reemphasized in his essay "Jesus Christ and Civilization" (*Fidelio*, Winter 2000): "The lesson of Christianity over nearly 2,000 years, shows how the sense of a personal relationship to a living Christ crucified, supplied to European civilization that degree of admittedly unperfected passion for Reason, which has proven essential to bring civilization to the levels reached by the Fifteenth-century Renaissance and its actual progress in the human condition since."

The Ontological Paradox of Christ Crucified

As Pope John Paul II wrote in thanking Van Thuan for his spiritual exercises, he wanted to give particular place to the witness of people who "have suffered for their faith," in this case for "courageously facing interminable years of imprisonment and privations of every kind." Such a witness shows that "the merciful love of God, which transcends every human logic, is without measure, especially in moments of greatest anguish."

And indeed, as Van Thuan's testimony makes clear, it is this most profound ontological paradox, Christ crucified, which is the key to the capacity of humanity to achieve a true Jubilee of peace and justice.

The method Van Thuan employs in his spiritual exercises is that needed to prevent a terrible outcome in the world today—far worse than the catastrophe



The Spiritual Exercises of John Paul II: Testimony of Hope

by Francis Xavier Nguyen Van Thuan,

President of the Pontifical Council for Justice and Peace
Boston, Pauline Books, 2000
222 pages, paperback, \$15.95

experienced in the Twentieth century. It is a method which transcends the sense perceptions of the empiricists and materialists, and the logic of the Aristotelians and Kantians. It is a method which instead emphasizes those powers of cognition which are the characteristic of man as a creature of Reason, as made in the image of God.

One is reminded of such writings of Cardinal Nicolaus of Cusa as *On Learned Ignorance*, where he distinguishes, as does Plato, among the senses, rationality (logic), and intellect (cognition). As Cusa writes, "Christ is the center and the circumference of intellectual nature," and when one elevates one's mind above sense perception and rational logic, to the level of intellect, one becomes Christ-like (*Christo similior*).

The way in which one makes this radical change (*metanoia*) in mentality, so as to "transform the human into the divine," is through the ironical statement of an ontological paradox, in

which no deductive solution is possible, which obliges us to recognize a higher principle, which overcomes the paradox as such.

In Van Thuan's testimony, this method can be seen most clearly in his discussion of "the defects of Jesus," a confession of faith, which, as he writes, "might sound more like a heresy." The paradox is, isn't it a heresy to suggest that Jesus, who is divine, has any defect? But, as he develops the idea, Jesus is only defective from the standpoint of the logic of human practice. By posing this paradox, Van Thuan compels the reader to elevate his own mind Socratically from an actually defective human logic, to harmony with the divine intellect. As he develops this exemplary exercise, he forces us to see that Jesus has a terrible memory, and thus forgets transgressions; he doesn't know math, when it comes to saving another human being; Jesus doesn't know logic, witness the Beatitudes, which are a paradox from beginning to end; Jesus is a risk-taker, who in contrast to the publicity manager of a company or a poll-driven election campaign, promises trials and persecutions for those who follow him; nor does he understand finances or economics, from the standpoint of predatory capitalism.

The Physical Sciences

Ironically, although Van Thuan does not develop this point in his exercises, this same method is lawfully applicable not only in respect to theology, but also to the physical sciences, including physical economy. As Van Thuan points out in respect to the Eucharist, we must not only serve our fellow man spiritually, but also materially: "The Church that celebrates the Eucharist is also to be capable of changing the unjust structures of this world into new social forces, into economic systems where the sense of communion rather than profit prevails."

As LaRouche has demonstrated, we must look at the non-living, the living, and human cognition as a multiply-connected manifold. All discoveries of universal physical principles employ this

same principle of paradox employed in the spiritual exercises. Two examples suffice: Kepler discovered, when confronted with the fact that the orbit of Mars could not be derived on the basis of reductionist doctrines of pre-existing mathematical physics, that the orbit was characterized by non-constant curvature. Similarly, Fermat discovered for the case of refraction of light through different media, that the determinant of that refraction was not the shortest distance, but the least time, again because the pre-established forms of deductive mathematics left an unexplained gap, based upon a pervasive, false-axiomatic assumption of linearity in the small.

As LaRouche has argued, life represents a principle that exists, even pre-exists, independent of the principles of the non-living. Thus, the living cannot be derived from the false-axiomatic premises used to misdefine the origin of life as located causally within the category of non-living processes.

Similarly, individual cognition, as through Van Thuan's spiritual exercises, exists as a physically efficient principle above the principles of both the non-living and the living. The human personality, in the image of God, is superimposed on the living, which serves as the medium of its mortal existence, but its origin is not from within the domain of living processes *per se*.

The point to be made here is identi-

The laity asked the Asian bishops 'not to trust only in their organizational abilities, acting like good *managers*, but to be true *fathers*.' When the fullness of communion is lacking, Van Thuan writes, 'this is in a certain sense, worse than a Nazi or Communist persecution, since this is an attack on the Church that comes not from without, but from within.'

cal to that made by Nicolaus of Cusa in *On Learned Ignorance*. Just as one cannot square a circle, because the square is an inferior geometrical species characterized by linearity, and the circle is a higher order (transcendental) species characterized by curvature, so neither does the living derive from the non-living, nor does the human cognitive personality, in the image of God, derive from the living.

Hence, the true scientist knows, as did Leibniz—as opposed to Newton, Descartes, Kant, *et al.*—that without God, man could not exist; without God, there could be no life, and without God there could be no universe.

Since man participates in God through his intellect, his responsibility is to exert dominion over the physical universe and thus to contribute to the continued perfection of God's creation, as His instrument and companion. This is the fundamental principle of all physical science, including the science of physical economy.

Mechanisms of Control

Having been imprisoned by a Communist regime, Van Thuan had to discover within himself the means by which to liberate himself from the mechanisms of social control. This experience of his, of discovering and relying on the power of love, gives him the capacity to speak with authority not only of the means by which the enemy exercises social control, but also of how to unlock the mental shackles by which we are enslaved.

In the third exercise, he tells the story of an Asian kingdom in which no one dares to speak the truth except a mandarin, who finally says, "I'm afraid that our nation is in great danger and risks downfall!"

Van Thuan then reports the state of the seven churches of Asia Minor, addressed by Christ in the Book of Revelation. One church has lost the fire of its first love; a second tolerates idolatry; a third is given to compromises in morality; a fourth sleeps and relies on the glories of the past; and a fifth, having become wealthy, is tepid. In contrast, Van Thuan says, Christ does not



Msgr. Francis Xavier Nguyen Van Thuan (right), with Pope John Paul II.

reprove the final two churches. The sixth church is persecuted and poor, and the seventh is small, but faithful.

As he stresses from his own experience, one has to make a radical choice between God, and the works of God. One must make a categorical rejection of idolatry, and trust alone in the power of love, as Paul argues in I Corinthians 13.

One must examine whether, perhaps, there is a lack of justice in one's work, a lack of objectivity, a willingness to yield to favors, the need for the esteem of the powerful, a desire for approval of others even at the risk of consenting to corruption. He points out, "The martyrs taught us to say yes without conditions and limits to the love of the Lord. But the martyrs also taught us to say no—no to flattery, to compromises, to injustice—even with the intent of saving one's own life and having a little tranquility."

At one point, he stresses that without the witness of mutual love, our work would be like that of a business. He further reports that the laity asked the Asian bishops "not to trust only in their organizational abilities, acting like good

managers, but to be true fathers." When the fullness of communion is lacking, he writes, "this is in a certain sense, worse than a Nazi or Communist persecution, since this is an attack on the Church that comes not from without, but from within."

He warns that this corruption occurs in the infinitesimally small: "Communion is a battle of every instant. Even one moment of neglect can shatter it; a trifle is enough; a single thought against charity, an obstinately held judgment, a sentimental attachment, a mistaken premise, ambition or personal interest, an action done for self and not for the Lord."

'Collective Dark Night'

As Van Thuan points out, throughout history the Church has been a minority in the presence of evil; for example, under Imperial Rome, during the French Revolution, and under Nazism, Communism, and now consumerism. Among the characteristics of the current age, which has the traits of a "collective dark night," are the prevalence of rationalism and a moral relativism, which denies the existence of truth itself.

The Twentieth century was characterized by two world wars, genocide, the nightmare of the Cold War, and the threat of nuclear war. Van Thuan reports that as we enter the Third Millennium, we see a sad land in which many people are marginalized and discriminated against. We see "unimaginable things," poverty, disease, prostitution, drug-trafficking among children, illiteracy, a vicious spiral of foreign debt, and armed conflict. The gap between the rich and the poor becomes greater every day.

Van Thuan writes: "While on the one hand there are grandiose overall

designs for globalization, on the other hand millions and billions of people remain excluded. It is as if from humanity and from the Church of today there arises an appeal, almost a cry, that calls for globalization of another kind, one not guided by the logic of profit, but by the law of love."

Despite this cry, there are those who argue, like King Saul to David, that "you cannot go out against this Philistine." As Van Thuan points out, the giant, Goliath, "represents evil, or rather, anti-evangelical ideologies and values." But, "every giant has a weak point. It suffices to look carefully, for a little stone well aimed defeated the giant, and his own sword was used to cut off his head."

Van Thuan uses the story of David, as well as that of Gideon's army, to make the point that the wall of the new Jericho will fall, because "the ways of evil and injustice end up destroying themselves," if we arouse in the individual the power of Christ, the power of the *logos* and love.

The Mind of Christ

To accomplish this is the purpose of the spiritual exercises. As he writes: "Discerning the voice of God among the many inner voices, so as to accomplish His will in the present moment is an ongoing exercise that the saints undertook willingly. With continual exercise, discernment becomes always easier because the voice of God within us grows louder and stronger."

The voice of God, or, as St. Augustine writes in *The Teacher*, "the teacher who teaches us from within," is Christ, is the *Logos*, the living image of God within each human being. As Van Thuan points out, "for those who live the Gospel it is possible to arrive, with Paul, at having 'the mind of Christ' " (I Corinthians 2:16).

In the fight to save humanity from a terrible outcome, that is all we have, "the mind of Christ." That is our true power, the power of David and of Gideon's army. As Van Thuan says, Jesus appears as a man of few numbers. His attention is on the individual, on

things humble and essential. That is the lesson Van Thuan clearly learned as a prisoner, stripped of all externalities, his prison his “most beautiful cathedral.” From this standpoint, and this standpoint alone, is it possible “to acquire the capacity to read the signs of the times with the gaze of Christ himself and, therefore, to creatively affect history.”

To accomplish this, one must learn to live in the eternally present moment, or as LaRouche has often emphasized in his writings, in the “simultaneity of eternity.” From this standpoint, as Van Thuan writes, “every word, every gesture, every telephone call, every decision we make should be the most beautiful one of our life. . . . ‘The result is that it is no longer we who live, but Christ who comes to live in us. Through the words of Scripture, the Word makes his home in us and transforms us into *verba nel Verbo*, ‘word into the Word.’”

In his *On Catholic Concordance*, Nicolaus of Cusa had similarly stressed that the only basis for peace and justice is for the many individuals, created in the image of God, to come into cognitive harmony with the One Word, or *Logos*.

Van Thuan stresses that this is also what it means to pray constantly. As he writes, “Perhaps Augustine gives the key when he affirms: ‘Your *desire* is your *prayer*; if your desire is constant, your prayer is constant.’ For Augustine, that *desire* is identified with *charity*, and *charity* leads us to do good. Thus, another way of rendering prayer continual is by doing good. . . . The last stage of continuous prayer . . . is when we not only pray always, but when we become prayer.” If our life reflects Jesus, the *Logos*, in each moment, then our life becomes “a unique act of love extended through time.”

By thus transforming (converting) our human selves into the divine, we empower our fellow man to free himself from the mental shackles, which otherwise guarantee the perpetuation of a “collective dark night,” or worse, a New Dark Age, as Lyndon LaRouche has forecast, if policies are not changed.

Citing Paul’s first letter to the Corinthians (I Corinthians 13), “if I do not have love, I am nothing,” Van

Thuan demonstrates both by his spiritual exercises and by his own experience in prison, that not only must I have love—“even more I must be love.” Since God is love and we are created in His image, then we must become love ourselves. As Van Thuan writes, what hampers evangelization and the accomplishment of peace and justice in the world, is the fact that one does not always find love as one found it in the face of Mother Teresa or Pope John XXIII, but “instead one finds faces that appear sad or annoyed by everyday routine.”

‘Here is the novelty: the other person is not an *obstacle* to holiness, but is the *way* to holiness.’

One must ‘*carry the burdens of all humanity in its fundamental needs, not only through the good example of Christians, but also by means of their undertakings on the social, economic, and political levels.*’

Beyond the Walls

Van Thuan points out that one must “*carry the burdens of all humanity in its fundamental needs, not only through the good example of Christians, but also by means of their undertakings on the social, economic, and political levels.*” But, unfortunately, as he acknowledges, “We all know how, in the last two centuries, many who felt the need for true social justice, not finding a clear, strong witness within Christian environments, turned to false hopes.”

As Van Thuan relates, before his imprisonment, he had launched various initiatives for the evangelization of non-Christians, but his experience in prison thrust him “beyond the walls,” to be a witness of hope for all people, such as Christ, who was crucified outside the sacred gates of Jerusalem for all humanity.

In contrast to the Desert Fathers of the first millennium, who thought that one could only be saved by fleeing the company of men and the world, Van Thuan says: “Here is the novelty: the other person is not an *obstacle* to holiness, but is the *way* to holiness.” And the social doctrine of the Church, the instrument of evangelization, is the means to ensure that those who are beyond the walls, do not turn to false hopes, but rather are aroused to help their nations turn back from the brink of general self-destruction.

As we enter the new millennium, as Lyndon LaRouche has said, the resolution of the conflict between the old form of society, based upon an oligarchical (Roman-Babylonian) principle, which degrades man to a savage condition, and a new form of society, based on the common good of peace and justice for all mankind, requires a radical mental change, beginning with oneself. One must find a pathway for all mankind from within one’s self. All that we have, our only true power to do such good, is the spark of Reason, the image of God within us. Ultimately, man’s redemption is to know himself to be such an individual being and to act accordingly.

We must arouse humanity to the great mission of bringing economic and social justice to places where oppressive ruin predominates today. A new international monetary system and long-term economic development projects of an ecumenical form are required to free entire nations and peoples from the prevailing, oligarchical misconception of the nature of man.

This is the great mission, which must be undertaken at this crucial moment in history, and it must be undertaken “beyond the walls” for all humanity. But, for this mission to succeed, as both Van Thuan and Lyndon LaRouche have emphasized, each from within his own sphere of experience, it must be done in the spirit of Christ crucified. To quote Van Thuan: “For the Christian, protecting one’s own life, is not the absolute value. Love for the poor counts more than saving self.”

—William F. Wertz, Jr.

Raising Arms Against the Philistines

Early in the Nineteenth century, there began a massive, concerted attack on the tradition of European Classical music, which had reached a high point in the work of Mozart and Beethoven. Recognizing, and fearing, the role of these masterworks of art in fostering a cultural environment that encouraged the spread of republican ideas—which, in the case of Mozart and Beethoven, was entirely conscious and deliberate—the European oligarchy undertook the patronage of music that was technically flashy, but impoverished of ideas; or, worse yet, that substituted novel and titillating sensual effects in place of ideas. This became known as the “New German” style, the “Music of the Future,” and, ultimately, as Romanticism; its leading practitioners were Liszt and Wagner.

The individual who emerged to defend the Classical idea against the “Music of the Future,” was the composer and journalist Robert Schumann—although, ironically, it is popular opinion today that Schumann was himself a Romantic.

The standard litany of the academics goes something like this: “During the historical period that preceded Beethoven, all composers were Classical. Beethoven started out as a Classical composer, but then, for some undetermined reason—perhaps glandular in origin!—he became Romantic. Henceforth, all composers became increasingly Romantic, until they reached a point where they underwent another metamorphosis, and became Modernist.”

The Unheard Idea

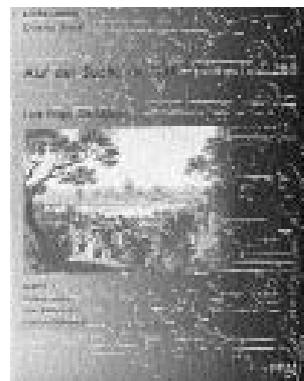
This academic dogma does not correspond to reality. The most distinctive quality that Robert Schumann’s masterworks, such as the piano suite “Carnaval,” have in common with Beethoven’s late works, such as the quartets Opus 131 and 135, is that the emotional tone seems to move rapidly and abruptly from one affective state to another, from what might be termed tragic, to comic, to heroic. What the composer is doing, is to create ironies,

paradoxes, which are resolved by an overarching, unheard *idea*, which maintains the absolute, perfect unity of the composition. It is this degree of rigor, which allows the artist to be “playful,” in the Schillerian sense.

To the listener whose cognitive powers have been damaged by the pathology of Romanticism, however, what is perceived, is a mere kaleidoscope of contrasting “effects.” A musician suffering from this outlook can easily destroy the composition in performance; one who understands it properly as Classical music, on the other hand, can drive home the paradoxes to powerful effect, while the greater idea acts to keep the performance on course, maintaining the cognitive tension that leads the listener’s mind toward the joyful resolution of the paradoxes.¹

Thus, Lyndon LaRouche, in his essay “Politics as Art” [SEE page 16, this issue], writes: “[I]n art, nothing must ever be arbitrary, never as the Romantics and so forth insist upon arbitrary, irrational whims, whims whose claims to art are limited to the presumption that that which is utterly irrational, such as the works of Richard Wagner, is unfathomably mysterious, and therefore incredibly artistic and sexy as well. There must be governing necessity, as there is in science. That governing principle of reason, must be supplied by the governing, underlying role of contrapuntal development, the contrapuntal development derived from the spark of well-tempered thorough-composition.”

The conclusive proof that Schumann understood this idea, is to be found in his compositions. But, in order to combat the growing tendency toward the arbitrary and irrational in music, Schumann became a political organizer as well, using as a vehicle the journal of music criticism he founded, the *Neue Zeitschrift für Musik* (*New Journal of Music*). Schumann peopled the pages of his journal with a cast of characters he called the “Davidsbündler” or “League of David,” after the Biblical King David, who played and composed



**Auf der Suche nach der poetischen Zeit:
Der Prager Davidsbund
(In Search of the Poetic Age:
The Prague Davidsbund)**
by Bonnie and Erling Lomnäs,
and Dietmar Strauss
Saarbrücken, PFAU-Verlag, 1999
Volume I: Commentary, Registry
of Works, Concert Documents
407 pages, paperback, 158DM

music, wrote poetry,— and slew the Philistines. All the half-fictitious members of the Davidsbündler, who contributed articles and aphorisms to the journal, had their real counterparts among the allies Schumann counted in his war against the latter-day Philistines: “Chiarina” represented the piano virtuosa Clara Wieck, whom he later married; “Felix Meritis” was Felix Mendelssohn; and “Florestan” and “Eusebius” reflected two contrasting aspects of Schumann’s own personality. These characters also appeared in Schumann’s compositions, particularly in “Carnaval,” which concludes with the rousing “March of the Davidsbündler against the Philistines.”

Davidsbund in Prague

The authors of the German-language *Auf der Suche nach der poetischen Zeit* present a detailed account of a group of Prague critics and composers who enlisted themselves as soldiers in Schumann’s army. Among them were August Wilhelm Ambros, Eduard Hanslick, Franz Balthasar Ulm, Josef

August Heller, Josef Bayer, Friedrich Bach, Hans Hampel, Joseph Alexander Freiherr von Helfert, and Bernhard Gutt. They constituted themselves the “Davidsbund of Prague,” and wrote in a style similar to that of Schumann.

The city of Prague had always played an important role in the musical history of Europe, as the capital of Bohemia, producing composers such as Zelenka, Reicha, and Dussek. Mozart had a network of collaborators there. At the point when Bohemia (what is today the Czech Republic) began to assert its independence from the Austro-Hungarian Empire, there appeared the two Czech composer/patriots, Bedrich Smetana and Antonín Dvořák. It was in the early 1840’s, shortly before the emergence of the movement for independence, that the Prague Davidsbund became active.

There were differences between this Davidsbund, and Schumann’s; whereas Schumann’s “Bündler” were all essentially his own creations, and expressed, in a variety of ways, his ideas, the Davidsbund of Prague was composed of a number of distinct, living individuals, who did not necessarily see eye to eye on all matters. They were not, for example, unanimous in opposition to composers such as Liszt, Wagner, or Berlioz, although the most prominent among them, Eduard Hanslick, ultimately became such a fierce opponent of Wagner, that Wagner lampooned him in *Die Meistersinger* as the pedantic character Beckmesser.²

The Prague Davidsbund shared with Schumann a reverence for Bach and Beethoven. Hanslick wrote the following in tribute to A.W. Ambros, who used the pen-name “Flamin, the last Davidsbündler”: “But that person, who now kneels reverently before Sebastian Bach and Beethoven and broods over ideas of great music and spatters ink upon music paper, that is Flamin, the last Davidsbündler.” And the authors of this volume report an anecdote about F.B. Ulm’s “all too early morning walk to a performance of Beethoven’s Ninth in a church, although he was a late riser, this with the observation, that the Ninth is also a church service.” It is this recognition that the tradition of Bach and Beethoven must be honored and



The Granger Collection

Robert Schumann

defended, which absolutely distinguishes these writers from the Romantics.

The Prague Bündler who attained the most prominent historical role was Eduard Hanslick, and the authors report, with relish, some of his choicest polemics. (For example, he characterized Wagner’s music as “Wirkung ohne Ursache,” that is, “effects without a cause.”) Hanslick wrote an extremely influential manifesto against “program music” and other tenets of Romanticism, entitled “Vom Musikalisch-Schönen” (“On the Musical-Beautiful.”) It was Hanslick who personally introduced Brahms to Dvořák.

Competing Images of Man

One might have hoped for a greater appreciation from the authors of the historic significance of this movement in Prague. Despite the fact that the Prague Bündler had mixed opinions about the “Music of the Future,” the fact that there was any opposition to it at all is noteworthy. Certainly, the collective vision of the group was less clear than the personal vision of Schumann, and with the passage of time, the tradition of Bach and Beethoven was growing fainter; in Europe to the West, the Romantics were increasingly hegemonic. But, this movement in Prague set the stage for another development of great importance. After Schumann, in his last journalistic foray, had proclaimed Johannes Brahms his successor in composition, Brahms went on to sponsor

others, in particular, Antonín Dvořák. Dvořák, in turn, found other protégés in the African-American composer Harry Burleigh, and the African-English Samuel Coleridge-Taylor. So, in a Europe that was increasingly enveloped in the fog of Romanticism, Prague stood out as a beacon, however diminished.

In keeping with conventional obfuscation, however, the authors do not present the conflict between Classicism and Romanticism in its true light, as a life-and-death struggle between competing images of Man. Instead, their stated objective being to document a “forgotten chapter in the music history of the Nineteenth century,” they report, in “objective, non-judgmental” fashion, some of the influences, other than Schumann, which shaped the Prague milieu: the Romantics Novalis, the brothers Schlegel, and Ludwig Tieck—all of whom Helga Zepp LaRouche has recently identified as direct counter-operations to the republican Friedrich Schiller and the Weimar Classic, and as the precursors, along with Nietzsche, of the Romantic cult of Twentieth-century Nazism.³ Nonetheless, in producing their detailed account of this little-known history, the authors have done a useful service. Volume II of the book is composed entirely of source documents from the Prague Davidsbund.

—Daniel Platt

1. For a truthful performance of the “Carnaval,” look for a recording by pianist Arturo Benedetti Michaelangeli.
2. Even Schumann himself vacillated somewhat in his views toward the “new breed” of composers; he originally praised Berlioz, only to later attack him. A.W. Ambros wrote: “When Berlioz appeared in person 1845/46, that was it. ‘You were completely beside yourselves,’ said Schumann with a smile, thereby forgetting, that he himself, ten years earlier, had been ‘completely beside himself’ over the French composer.” In fact, the only person in Schumann’s circle who never wavered from a militant opposition to the “Music of the Future,” was his wife Clara.
3. Helga Zepp LaRouche, “Only a New Classical Period Can Save Humanity from a Dark Age,” in “Proceedings of the Schiller Institute Conference on the Subject of Strategic Method, Bad Schwalbach, Germany, May 26-28, 2000,” *Fidelio*, Summer-Fall 2000 (Vol. IX, No. 2-3).

The model you must come to know, to be able to rise to the higher level of deliberation on the subjects of our nation's policy-making issues, is to be found in re-enacting the Socratic dialogues of Plato. It is by re-enacting those dialogues as dramas, that ordinary people, may be pleasantly surprised to touch something of that quality of mind which makes for genius.

—LYNDON H. LAROUCHE, JR.
November 6, 2000

Politics as Art.

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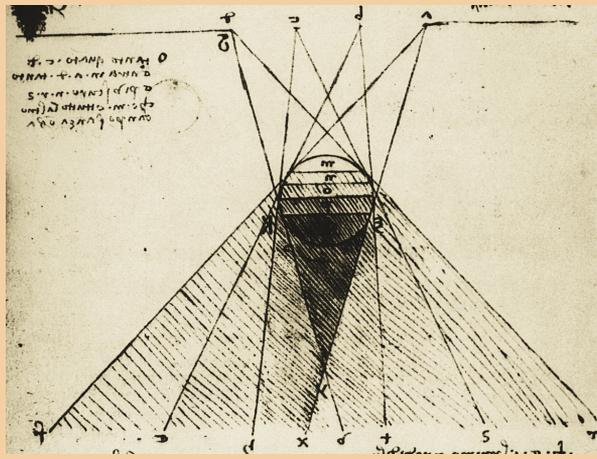
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Leonardo da Vinci, drawing of gradation of light and shadow, Manuscript B.N. 2038.

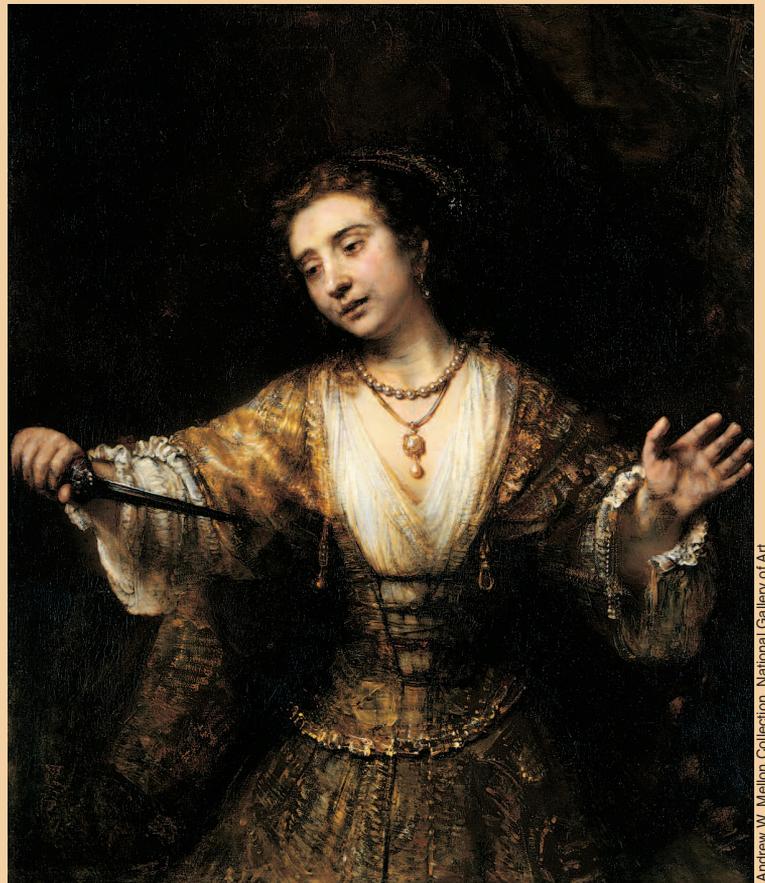
Leonardo, Rembrandt, and the Science of Light

Turn to a late Rembrandt work, ‘The Suicide of Lucretia.’ Even in the reproduction, you get a sense of the *impasto*, the thick treatment of the paint on the surface. You can see how the shadow eats into the surface, so that everything is now rendered in an atmospheric fashion.

The painting represents the tragic woman Lucretia, who kills herself after she has been raped by Tarquin, and disgraced. Everything that we have seen of the way that the phenomena of the physical universe can be represented—the breaking of the light by the *impasto* surface, so that nothing is sharp or clear—the gestures; the way the light falls on the hand; the tilt of the head. All of these features bring you to the point, where you are so aware of the tragedy of this event, the disgrace and the redemption through her suicide, that you cannot help yourself but be swept away by the clarity—not by just emotion—but by the *clarity*. There is no distinction here, between the way the physical material is used, and the ability to render it expressive. It’s not as if we’re studying, on the one hand, physics, or physical properties, and on the other, art and art expressiveness. They are absolutely unified. That is what Rembrandt gets from Leonardo.

* * *

It is very interesting to look at the relation of the physical character of Rembrandt’s paintings, to the discussion of the wave theory of light, and the radiation of light, being done more or less contemporaneously by Huyghens, Fermat, and Leibniz. Because Rembrandt’s late paintings are done with this attention to the thickness of the pigment, so



Rembrandt van Rijn, ‘Lucretia,’ 1664.

there is actually, physically, a process taking place, of the light being refracted, its entrance and its reflection, which gives the experience, as if the light originated in the painting, as a feature of the physical properties of the paint. Rembrandt was very conscious of this, and that’s why he did it.

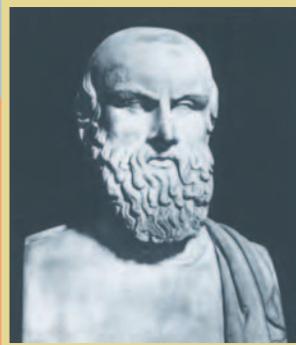
[SEE Leonardo da Vinci and the Perspective of Light]

The Cult of Artificial Intelligence vs. The Creativity of the Human Mind

What exactly is it that computers simulate—and *don't* simulate—in pursuit of the goal of 'Artificial Intelligence'? A close examination of the works of M.I.T.'s Marvin Minsky leads author Gabriele Liebig from the philosophy of creativity, to the historical development of computer 'intelligence,' to the simple question: 'What is science for, if not for people?'



Illustration by Alan Yue

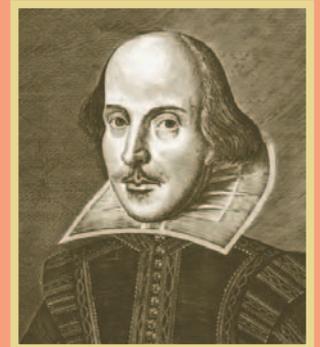


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Politics as Art

Written on the eve of last year's Presidential election, Lyndon

LaRouche's essay looks beyond campaign issues, to the underlying capacity of the American electorate to exercise its responsibility for self-government. For, as LaRouche writes, 'Truthfulness is a quality of *ideas*, as Plato's Socratic method demonstrates the reality of *ideas*. Classical art's source of authority for statecraft, is that it is specifically the medium most appropriate for adducing the relative truthfulness of the ideas by which a nation or culture chooses to rule its affairs.'



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Save the African- American Spiritual!

A Dialogue with William Warfield and Sylvia Olden Lee

Student coaching, concertizing, and workshop discussion combine to illustrate the universality of the African-American Spiritual in its ennoblement of the intellectual qualities of all men and women— as opposed to the bumping and grinding of today's popularized gospel music.



EIPNS/Stuart Lewis