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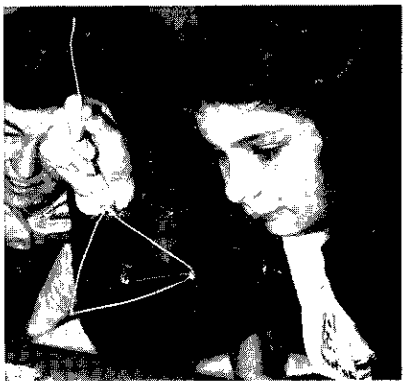
Genius can be taught

Teaching Geometry Through Dante's Poetic Method

THE CRIME OF DE-SCHOOLING

HOW DANTE USED POETRY TO START THE SCIENTIFIC RENAISSANCE

In a groundbreaking study of the *Commedia (Divine Comedy)* of Dante Alighieri, Dr. Muriel Mirak shows how this famous epic poem provided the rigorous basis for the advances in natural science, art and political science associated with the "Golden Renaissance" of Europe's fifteenth and sixteenth centuries. Leading the reader through each of the three canticas of the *Commedia*—Inferno, Purgatory, Paradise—she shows how poetry is used to convey the developing process of the human individual from a bestial state to that of a "golden soul" guided by creative reason, the same self-developing principle which governs the physical universe. Mirak uses Dante's own theoretical writings on poetry to prove that the poet's musical enrichment of the vernacular language was indispensable for making this principle accessible to the population led by the great inventors, artists and political thinkers of later generations.

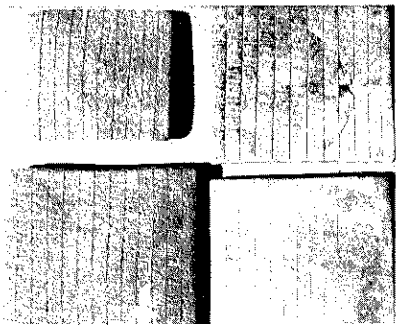


GENIUS CAN BE TAUGHT!

Using examples drawn from a project to teach geometry to grade school children, mathematician Uwe Parpart demonstrates how history's most complex mathematical ideas are easily comprehended—even by adults!—once the physical processes they describe are made clear. These principles have guided scientific and political development from the time of Plato's *Timaeus,* to Wilhelm Gottfried Leibniz and the founding of the American Republic, to the geniuses of the French Revolution's Ecole Polytechnique.

MAKING GREAT MUSIC AND POETRY AMERICA'S NATIONAL PASTIME

Impossible? Efforts are now underway to group professional musicians and amateurs into a NASA-style program of orchestras and choruses committed to recreating the level of polyphonic richness practiced in the American Musical System of the 19th century.



ARCHAEOLOGICAL FIND A POLITICAL HOT POTATO

The 2400 B.C. city of Ebla in central Syria promises to overturn the well-known theory that civilization originated in the labor-intensive agricultural cycles of Mesopotamia. However, the results of this find may be buried by a dispute whose origins lie in the politics of Biblical scholarship: the conflicting claims of Zionists and Arabs.

the Campaigner

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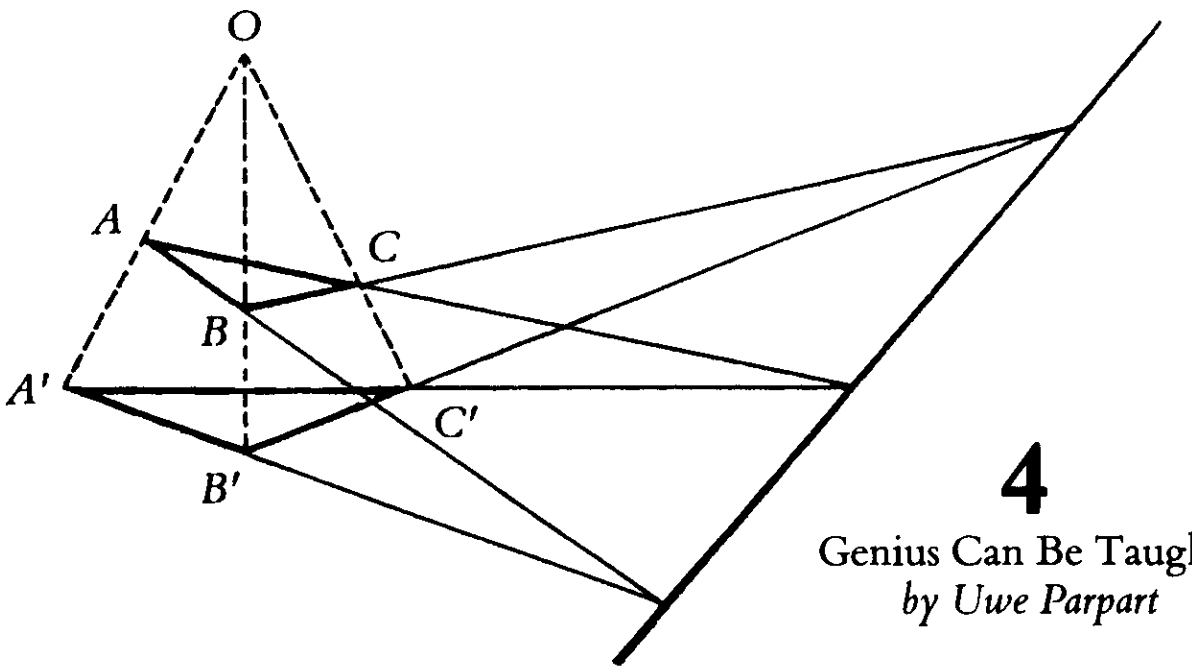

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EDITORIAL

Making Great Music and Poetry America's National Pastime

For at least the last 3,000 years of human history, great polyphonic music, poetry and scientific advance have been associated with every forward-looking society mobilized to progress and prosper, from the Athens of Plato to the American republic of our founding fathers. With equal historical certainty, every culture in terminal decay near total collapse—from ancient Rome to Nazi Germany and the United States today—has basked in the frenzy of sporting extravaganzas and drug-infused counterculture.

Americans today must choose their future course for the 1980s in the form of a full-scale "NASA-style" commitment to revive and foment in this once culturally proud nation the music of Beethoven and Mozart, the poetry of Dante and the achievements of new scientific breakthroughs. The creation and re-creation of great music, in particular, has been the most direct historical method of infusing that poetic quality of mind associated with scientific advance into the population. Inaction on this question dooms the nation to a New Dark Ages of Roman circuses and the sporting life of Nazi Germany.

Therefore, our most serious concern is to find the means—the proverbial "how"—through which the great music of Beethoven, Mozart and Bach can be promoted in America today. In truth, the answer for where to begin is as straightforward as allowing it to be performed and heard. Beethoven, Mozart and Bach will do the rest, provided that the performers are trained and committed to play the music as Beethoven, Mozart and Bach intended.

All Children Are Gifted

Over the last year, while most schools were cutting their classical music programs through various austerity budgets, a small vanguard of professional and amateur musicians associated with the Humanist Academy of America and Europe and the International Caucus of Labor Committees have been collaborating in a highly successful pilot program suggested by Lyndon LaRouche to offer children and youth exposure to the music and method of Beethoven as an alternative to the drug-rock ersatz culture which permeates their upbringing. Despite the mass media's evil promotion of banal background noise in the form of disco, rock, popular tune arrangements, or the distilled and unrecognizable versions of classical music presented alongside the unpalatable debris of modern "serious" music, there were no problems at all in interesting the children in the excitement and joy of Beethoven's music. Now the question becomes one of "scaling up" and further developing the pilot program and bringing into the effort enough qualified musicians and music teachers.

The overall plan to build a Classical Music System in America is to immediately regroup leading professional musicians and talented amateurs from throughout the country, with special emphasis on the New York and Chicago areas. Such a program would, in particular, present a real forum of opportunity for black musicians and musicians of other minorities who have been viciously excluded from the country's leading symphonic and musical institutions. Classically trained musicians who come from minority groups have been racially tracked into the church circuit or, worse, offered futures only in moonlighting in the jazz or other racially accepted "entertainment" slots.

The rare individual exception to the vicious, racially motivated policy in the classical music field only underscores the hideous practices operating in terms of the personal traumas an individual has to endure to secure a position.

Talented professionals and amateurs, whether of minority groups or not—most of whom have nearly given up hope of seeing true Beethovenian standards of music flourishing in America—will form the core of a number of orchestras and choruses whose ultimate intent can be nothing less than to bring actual musical performance, music participation at some level, and Universal Musical Training to every city and town in America.

The creation of a Classical Music System in America must adopt a NASA-style approach to identifying and rapidly organizing a coalition of musical forces and resources to form the most qualified musicians into a Board of Musical Advisors, to ensure that the highest teaching and technical standards be maintained, successively approximating the level of polyphonic richness and contrapuntal development set by Beethoven, Mozart and Bach.

As first suggested by Lyndon LaRouche, the initiator of the Humanist Academy movement in America and Europe, the Music System will be organized along the lines of the "baseball system" in America. The aim will be to form three interrelated orchestras and choruses in each area. Top professionals will form a "major league" orchestra and chorus and take responsibility for guiding and educating talented amateurs, who will perform on a "Double A" level. In addition, a beginners orchestra corresponding to the "sandlots" will gain musical experience and training under the direction of the corresponding instrumental and voice performers in the upper leagues.

A variety of benefit concerts, master classes, composition workshops, and lectures in musical history and interpretation can raise the necessary funds to further cultural activity among increasing numbers of the population. In the near term, the threshold must be reached in popular demand for fully utilizing the enormous potentialities of television.

Such a "baseball farm system" approach can be happily employed also with existing amateur choruses. The planned program now being organized for the amateur Humanist Academy Chorus in New York can serve as a useful model. The chorus of existing amateur voices is seeking to add two professional singers for each of the four voices (soprano, alto, tenor and bass). With this combination of professionals and enthusiastic amateurs working closely together, the chorus will be able to rapidly develop the necessary vocal and musical skills needed for even the most challenging of major choral works, such as Beethoven's Ninth Symphony.

True Musical Standard

The conception of creating an American Classical Musical System is not merely intended to fill a void in the budget-slashed music programs of our schools, or to function as a supplement to existing professional and advanced amateur music institutions. Rather, because of the absence of any in-depth understanding of the method of Beethoven, standard performances of his works do not even reproduce the musical conceptions themselves as written. Nearly fifty years ago the great German conductor Wilhelm Furtwängler remarked that in America there were many orchestras which performed adequately from a technical standpoint, but that no American orchestra had an adequate commitment to the interpretation of the musical ideas

Continued on page 86

The Crime of Deschooling

It is no exaggeration to identify economic and social policies which resurrect the hideous Nazi doctrine of "useless eaters" as fascist. What else is a policy which increasingly denies medical services to elder citizens under the euphemism "the Right to Die"? Or the ravings of Professor Shockley when he participates in eugenics experiments to found an Aryan master race? Or "libertarian" propaganda which promotes libertinism, the spread of drugs, pornography and homosexuality among the young—all under the guise that freedom is freedom from restraint?

The present trend toward deschooling has already reached the proportions of a national emergency. Moves to lower the age of mandatory school attendance, substitute on-the-job training that dooms adolescents to be semi-skilled adults, and erode the core curriculum, are particularly vicious examples.

A society which uses the excuse of cost cutting to treat its young people as useless eaters has no future. In some eighth grade classrooms already half the children are regular drug users. Study is impossible because teachers faced with overcrowded classrooms pacify their students by allowing them to play transistor radios. More and more children become "functional illiterates"—they can spell out the words but they cannot concentrate sufficiently to understand the meaning of what they read.

The cost-cutting mentality which triages the young condemns their posterity as well. Thus the "Right to Die" is extended to the nation as a whole.

We do not propose merely to bring education back to the dull standard of the 1950s. It is neither possible nor desirable. In order to salvage children from the present wreckage, in order to prepare a future generation fit to rule this nation as a democratic republic, we must awaken them to a joy in their own potential to be creative. We must educate for genius.

Genius Can Be

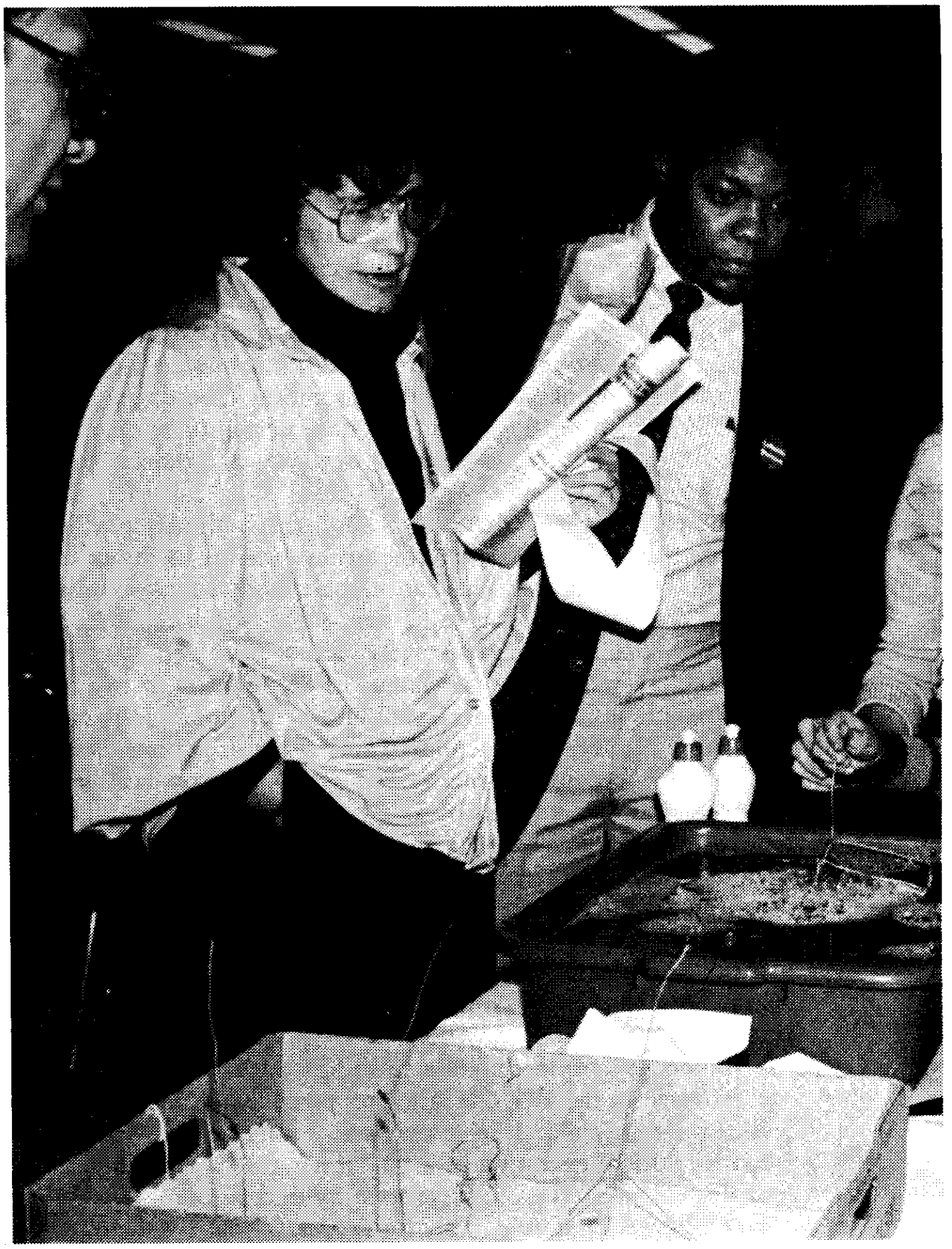
Uwe Parpart presented this informal report on a three-month program of geometry education with a group of grade-school children to last December's "Leadership in the 1980s" conference of the International Caucus of Labor Committees. The conference session on education policy also heard reports on "Creating Tomorrow's Beethovens" and "The Role of Classical Studies in the Humanist Curriculum."

Before beginning his presentation, Parpart invited a number of the children participating in the project to join him on stage. When they were assembled, he reminded the audience of the motto inscribed over the entrance to Plato's Academy: "Let no one ignorant of geometry enter."

"If this motto had been written over the doorway of this conference room," he said, "then I know of only a small group of individuals who could have entered without question, and they are standing up here beside me. Those of you in the audience know how few of you could have gained admission."

Later in his report, Parpart called this "one of the major scandals of our contemporary existence. The simplest, easiest, and at the same time most important concepts in mathematical physics are by and large not understood, or very badly understood, by most adults."

What follows is an edited version of his presentation.



Demonstration booth for the geometry project at the ICLC conference.

Taught!

by Uwe Parpart

The subject of geometry is, as you know, a very ancient one. I'd like to discuss some of the fundamental points that have to be brought out in its teaching so that, as Lyndon LaRouche emphasized in his presentation yesterday, we educate not so much geometers, but physicists—people whose basic and principal task is to help humanity gain a better understanding of the laws of the universe, for the purpose of actually subjugating that natural universe to the will of mankind. This is the most profoundly human sense you can get: the sense that we not only have the freedom to abide by the laws of the universe and by our own laws, but that the universe itself has to abide by the laws that we impose upon it.

Of course, this occurs within a general framework of lawfulness, through which we have to identify the most effective pathway to guide ourselves from one point to another. Just such a pathway is described by a theorem developed by many people in many different versions, but whose most profound statement, I think, is due to Gottfried Wilhelm Leibniz.

Leibniz's theorem is a very simple one: it says that God made this the best of all possible worlds. If we want to understand what physics is all about, it is this principle that has to be foremost in our

minds—not in the vulgar sense in which Voltaire wanted to interpret it in *Candide,* but in the profound sense in which Leibniz proposed it and in which he actually took off from the ideas Plato developed in the dialogue *Timaeus*.

Before I develop that point in further detail, however, I want to give you a few ideas about the beginnings of geometry as we know it today, and then introduce some of the things that I have been working on with the children over the last two to three months.

The Euclid Problem

When the word *geometry* is mentioned, what comes to almost everybody's mind is the name of Euclid, because Euclid is virtually synonymous with the teaching and learning of geometry, especially in the English-speaking countries. This is one of the biggest problems we have.

Euclid lived at the end of the fourth and the beginning of the third century B.C., in Alexandria, one of the forerunners of Rome and second only to Rome in evil in the ancient world. He lived under the first and second Ptolemies, and these individuals, who were the descendants of the generals of Alexander, succeeded in bringing so much concentrated evil into the world, in such a short period of time, that one cannot help somehow being impressed by them. They created more cults in a shorter period of time than anyone else in history.

One of the major projects that was undertaken under these Ptolemies was to subvert Platonic science from its original purpose, and to superimpose the epistemology, if you want to call it that, of Aristotle and his followers upon the basic ideas developed by Plato and his followers. It is probably fair to say that up to the time of the Ptolemies, Aristotle was a virtual unknown, regarded as one of the minor, and not very bright, students of Plato, somebody who had tried out in the Platonic Academy and essentially failed. It was not until the time of the first three Ptolemies that Aristotle's name was resurrected and put on the kind of pedestal where it has unfortunately rested for a millennium.

One of the elements of this project was assigned to a man named Euclid, who was probably a rather skilled, but certainly not an exceptional, mathematician. Without exaggeration, there is not a single shred of original work in Euclid's treatises. All he did was take a marvelous body of developed human knowledge in the physical sciences which had been originally elaborated by the Platonic Academy, and subvert it into the framework of Aristotelian logic, organizing everything in terms of a sequence of propositions and logical connections which, if you work your way through, you are sure to come out the other side knowing less than nothing at all.

I mean *less* than nothing at all in a very precise sense, because if you subject yourself to that kind of training in geometry, then you are sure to ruin your mind once and for all, and you can be certain to never again touch a geometry book. This has probably been the fate of a great many of you. You look at simple geometrical ideas and put them into the ironclad framework of Euclidean axiomatics. By the time you work your way through, you no longer understand anything about geometry. Everything that was absolutely obvious to you when you just looked at a triangle, or a square, or a circle, is thrown completely out the window by the time you write QED at the end of the proof.

Proceeding from Euclid's logical or axiomatic development in geometry, the next step is to claim that geometry is not really basic to mathematics at all, and that what is much more fundamental is algebra, because algebra and logic are closely akin to one another. This is in a sense quite true, for a Euclidean geometry proof is completely independent of its subject matter, just as logical syllogisms are independent of their subject matter. A proof in Euclidean geometry could just as well have been a proof about tables or telephones, and would come out just the same.

This is why, to this day, geometry and mathematical physics are treated as some kind of mysterious, mythological secret science, unattainable to the majority of human beings. Everyone has had the experience of looking at a mathematics book and saying, "What in hell is this? How could someone conceivably study this and come out with any sense at all about anything?"

There are some people who spend years being indoctrinated in this "secret knowledge," who are essentially *uneducated*, because they have not been taught the *basic* principles of human science in the sense of the German *Geisteswissenschaft*.

There is no way, for example, that the greatest physicist of the nineteenth century, Bernhard Riemann, would have been possible without Leibniz, without Schiller, without Beethoven. Riemann copied excerpts of a biography of Leibniz into his own notebooks, and commented in the margins about reports of Leibniz's political activities and his intellectual and epistemological efforts. One of the major things Riemann says is, in paraphrase "The most important thing that I read in Leibniz was his devastating critique of the British empirical philosophy of John

Locke." As you may know, one of Leibniz's major works was his reply, line by line, to John Locke's *Treatise on Human Understanding* (or failure thereof!). The point Riemann makes in the margin is, "What I really began to understand here for the first time is how the human mind works, and what I have to learn and understand in order to do the kind of work I've been trying to do effectively, as a mathematician and as a physicist, over the past several years."

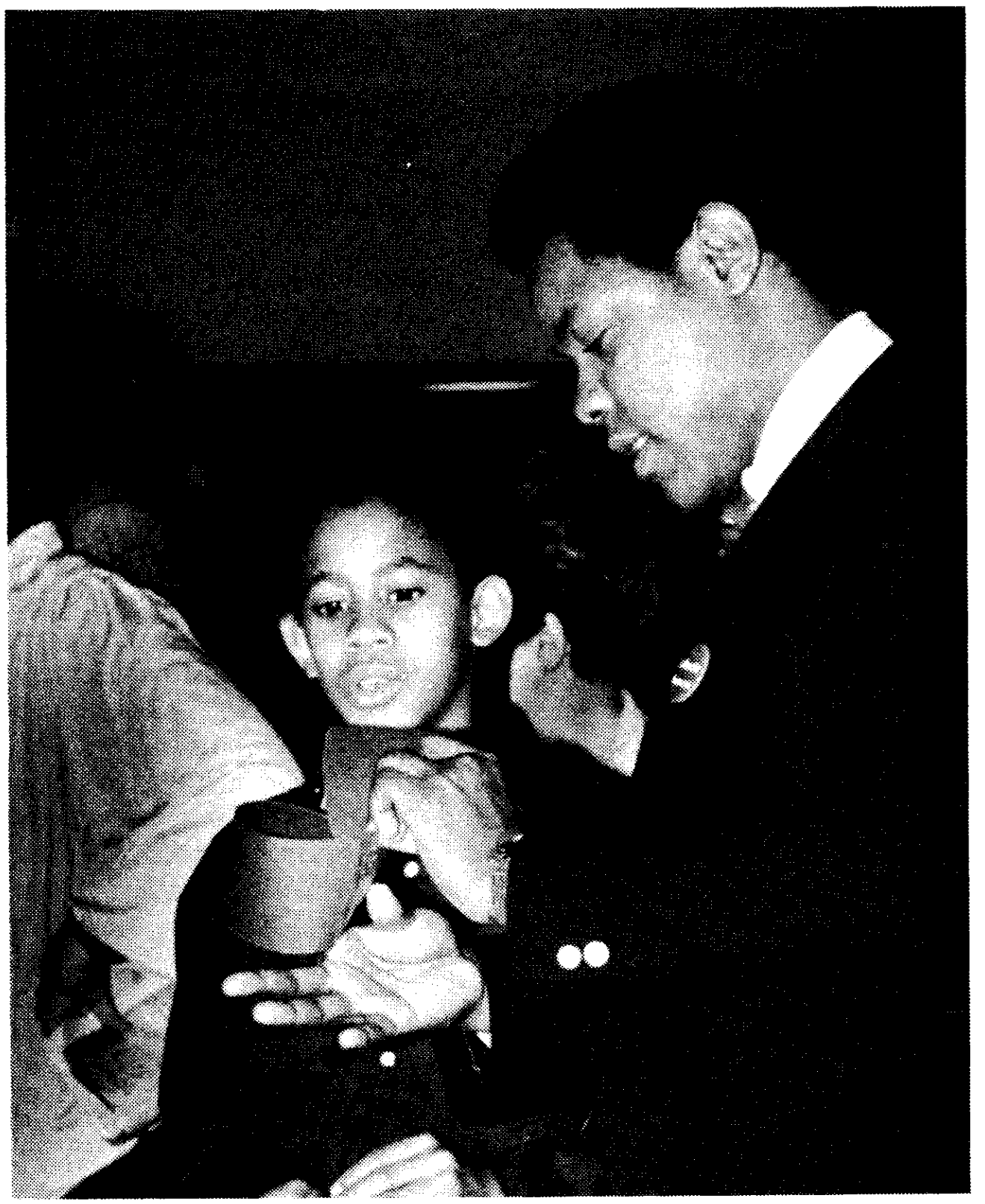
Riemann's Accomplishments

Within a six-month period of writing this notation, Riemann wrote three different treatises which, taken together, are the basis of all mathematical physics today. One, entitled "The Hypotheses Upon Which Geometry is Based," is the foundation of modern differential geometry and topology, and hence of the General Theory of Relativity; the second, on the expansion of functions in trigonometric series, is the foundation of almost all the modern techniques for solving partial differential equations and so-called Fourier analysis; and the third, a treatise on what we today call topology which, using Leibniz's nomenclature, Riemann called *analysis situs.*

If you ask any modern mathematician whether one man could work on these totally different subjects in a period of six months, they would answer that this would certainly not be possible today. But Riemann did, and he came out with three works which are the three cornerstones of modern mathematical physics. And a few years later, he wrote a piece on shock waves in which he discovered an experimental phenomenon in theoretical terms at least fifty years before any possible physical realization of that phenomenon. Despite what people say about physics being an empirical science, Riemann discovered shock waves half a century before anyone had ever experimentally produced one!

Riemann was rooted very deeply in Platonic epistemology, and not just in Leibniz. Among his writings there are a number of comments concerning the mathematician Euler's correspondence with J.S. Bach, for instance. That correspondence is very interesting, for Euler's idea of what was wrong with eighteenth-century "modern music"—Rameau and others—is precisely the point that Anno Hellenbroich has discussed about well-tempering and today's "modern music." There were many attacks in that period on well-tempering also, and Rameau was held up as the shining counter to Bach's work. Riemann comments on Euler's letters, saying that, "Of course, from an informed physicist's standpoint, Euler is absolutely correct; no one could be so stupid as to assume that Rameau might be superior to Bach." So Riemann was very intimately familiar with that debate too.

I mention this broad context for Riemann's work because it is precisely by opposing the ap-



Investigating a Moebius strip: a surface with only one *side.*

proach Euclid took that Riemann was able to succeed. In antiquity, the individual counterposed to Euclid who most directly and dramatically paralleled the ideas and development of Riemann and Leibniz was Archimedes—the man who for some ten years used his geometrical and physical inventions to prevent the Roman armies from conquering his native Syracuse. In addition to the mathematical works produced by Archimedes which have survived through the ages, the work of Apollonius on conic sections may, at least in part, have been cribbed from him. (Apollonius is another of these Alexandrians. If you think Euclid is unreadable, try to read Apollonius and understand anything. You will be in for quite a shock.)

The point is that there are two entirely different methods of looking at mathematical physics. One is the method of Plato, of Archimedes, of Riemann, which defines mathematical physics as part and parcel of the overall effort of *Geisteswissenschaft*. On the other side, directly opposed to that, we have the efforts of individuals in the Aristotelian tradition such as Euclid and Apollonius, leading up in modern times to the evil work of Bertrand Russell—the attempt to logicize everything, and therefore succeed in not only making mathematical physics entirely inaccessible to most people, but simultaneously making it totally ineffectual. Once that distinction is clearly understood, it is very easy to see how geometry should be taught, how to proceed with it, and what the critical elements of such instruction should be.

The Platonic Tradition

I want to present a number of illustrations to prove some of the specific things we have developed with the children over the past two or three months; but first we must briefly mention two other points.

If you have read the new translation of Plato's *Timaeus**, you have found a passage which has puzzled many people no end: the passage in which Plato claims that fire is made out of triangles and other such weird things. A.E. Taylor, who is one of the major British authorities on the *Timaeus*, said, " 'Fire is made out of triangles'. . .well, now, let's think about it. How can fire be made out of triangles? If that is going to make any sense they must be triangles that have a certain minimal thickness, because if they have no thickness at all, then how could they ever add up to anything, let alone fire?" Then he says, "Well, this is terrible, because Plato seems to make the mistake of thinking that triangles with no material existence at all could somehow add up to fire. That can't be; how could it be?"

What does Plato actually mean? What Plato says is basically very simple: all material phenomena that we observe in the real world are phenomena that utilize geometrical shapes for the purpose of organizing energy and the material universe in a specific fashion. Fire, then, says Plato, should not be thought of as a "what," but as a "such." It should not be thought of as a thing, but as a type of modification of energy, of pervasive energy. This modification is not arbitrary, but follows very definite geometrical laws that govern the evolution of the physical universe, not merely on the basis of what Plato calls the "necessary" or "lower" cause, but on the basis of the "divine" cause, the same cause that Leibniz later on identified in his theorem about the best of all possible worlds.

When you realize that Euclid proposed his axiomatic thinking less than a hundred years after Plato wrote this, you can have no doubt that Euclid is not only a fraud, but someone who was deliberately put into a position to subvert the spirit of Platonic science.

The other point I want to mention briefly concerns the other major group of individuals, aside from Leibniz, who understood Platonic science, whom I did not mention earlier.

This group of people centered around the founding and early years of the Ecole Polytechnique, during the French Revolution and early nineteenth century. The principal architects of the Ecole, the mathematician Gaspard Monge and Lazare Carnot, the Minister of War, set it up so that the most advanced scientific studies were taking place simultaneous with the training of platoons of teachers and engineering cadets, who formed the backbone of the first modern army established by Carnot.

The work of Monge started from an interesting development in the middle of the eighteenth century. In those days, fortifications, bridges, streets and so on had to be scale-modeled in clay or plaster; engineers would mold the plaster and derive the exact specifications for construction in this way. Monge at one point in his schooling was asked to perform a specific task which was assumed to take about two or three weeks to model, but he came back the next morning and reported he had completed it. The head of the Academy said it was impossible, and sent him back to the plaster-casting studio. But Monge finally convinced him he had done the job.

What Monge did was to invent a method of representing a three-dimensional object in an effective way on a two-dimensional

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* This translation appeared in the February 1980 issue of *The Campaigner*.

plane; he had invented what is now called descriptive geometry. This invention was promptly declared a military secret by the French army, and for some thirty years after the invention Monge was not allowed—he and others were in fact threatened with death—to talk about the technique of descriptive geometry that he had invented.

I have taught the children this kind of secret knowledge, and we have had a great deal of fun with it. We have imagined ourselves projected back in history some two hundred years, to the middle of the American Revolutionary War, at the time when the British were holding Manhattan island and the Americans were on the other side of the Hudson River, facing each other at the two points, Fort Washington and Fort Lee, that are now connected by the George Washington Bridge. We imagine that we have sent out a party of American spies to sketch the bridge, to draw it to specifications in such a way that it would be possible to figure out the best way to blow it up if that became necessary to prevent the British from entering New Jersey. In the course of our project, the bridge has been photographed from all the right angles, it has been sketched, and we are figuring out the statics of the situation.

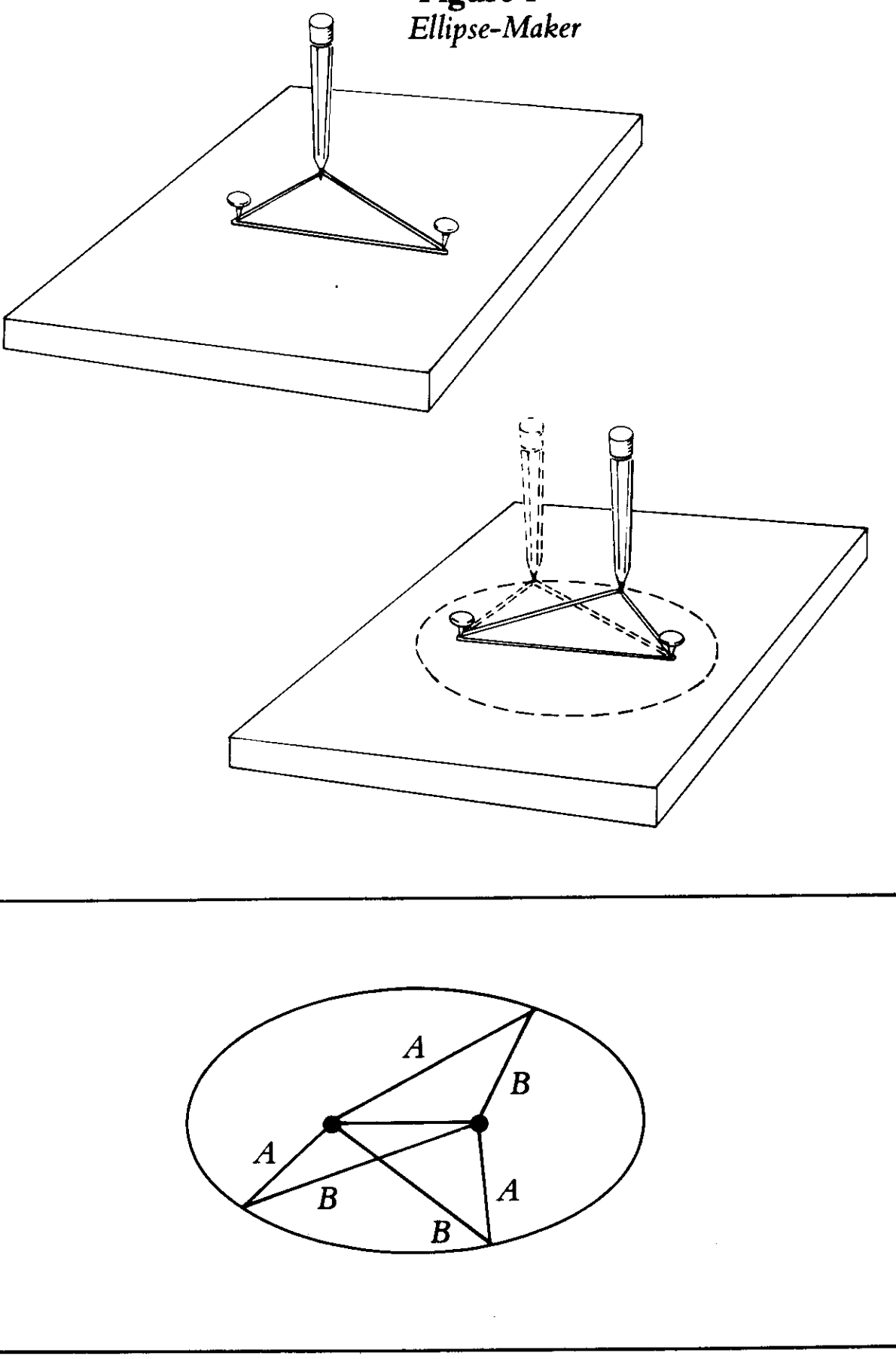
The efficiency of Monge's development of descriptive geometry should under no circumstances be underestimated. It gave the French armies, even before the development of mass armies under Carnot, a decided advantage and edge in the fortifications of warfare, which was very important. One of the major things to figure out in building a fortification is how to build it so that no cannonball can strike it at a right angle, because a right angle develops the greatest destructive force, whereas oblique angles leave the fortification relatively undamaged. This method was amended by Monge, who succeeded in making the French fortifications, both in the southwestern part of France and the Rhine area, quite insurmountable.

Teaching Children Geometry

The basic thing to get across in teaching children, in distinction to the Euclidean approach, is the idea that it is not the geometric object itself that's important, but rather that the geometrical object is actually, in first approximation, a locus of a number of points which all bear a certain definite relationship to each other. (Locus is the Latin word for place.) In order for the children to identify what the specific definite relationship is for themselves, the best thing to do is have them construct the machine or the tools which create the geometrical object.

For example, how do you make an ellipse? Every one of the children made the ellipse-maker shown in Figure 1. The ellipse-

Figure 1
Ellipse-Maker

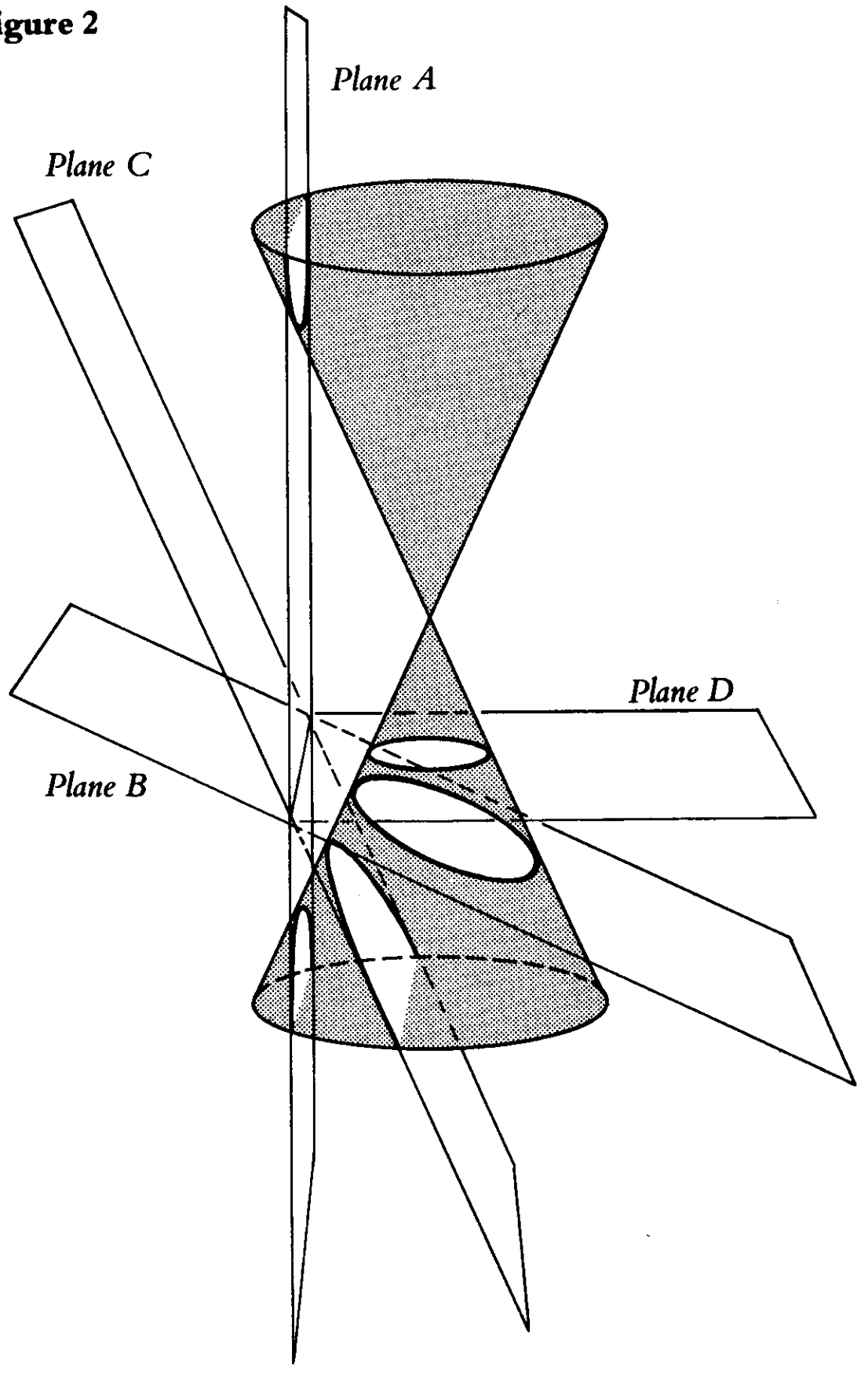


maker utilizes a principle that is inherent in the situation: attach a knotted string around two focal points (pins) on a piece of wood, pull tight, and lead the string around with a pencil, trying to make a circle. You end up with an ellipse. This not only gives you the way of defining an ellipse, but it also gives you an efficient relationship between a triangle and an ellipse, where the taut string always forms a triangle when the ellipse is being generated. The triangle, in itself, is not definable as a geometrical locus according to a specific method of generation, but the ellipse is, and for this reason a triangle is the subordinate object of an ellipse.

What is characteristic of an ellipse is that distance *A* and distance *B* always change as you move the pencil point around, but the sum of *A* and *B* always remains the same: it is invariant. And as you move all the way around, it becomes clear that you are generating a specific geometrical object which has a definite invariant quality, which has subsumed other geometrical objects, and which exemplifies a very simple physical action principle.

The broader environment, geometrically speaking, within which the simple idea of the ellipse is to be located is the encompassing idea of the conic section. It is important to understand, however, that the notion of the conic section in itself is not what is important: the cone is just a convenient three-dimensional object with respect to which we can define certain two-dimensional invariances. In other words, look at the double cone in Figure 2.

Figure 2



We are going to cut the double cone with a sequence of planes, just as would slice a clay model of the double cone. The plane labeled *Plane A*, that runs from the top all the way through the bottom and cuts both the top and bottom cones, creates a hyperbola on the cone's surface. *Plane B*, which is inclined at an oblique angle to the principal plane of the cone, creates an ellipse. If you incline *Plane B* a little bit further, to the position of *Plane C*, you get a parabola on the cone's surface. Finally, the cut parallel to the principal surface on which the cone is erected, *Plane D*, will give you a circle.

So you see that a double cone is a very efficient way of defining the invariant relationships between what are otherwise seemingly unrelated two-dimensional objects.

The importance of the conic section approach has to be identified precisely as we talked about the importance of the ellipse before. We did the following with the children. Imagine that the cone is not made of paper or clay, but of light. Any time you put a light through a pinhole, for example, you will form a sort of light cone. Cutting this light cone into sections gives you some very impor-

tant physical theorems for geometrical objects. In fact, most geometrical objects were co-invented with these developments in conic sections, and every one of these developments preceeds the time of Apollonius. They were invented during the period of Plato's Academy, and you will actually find several of them mentioned in the *Timaeus* if you read it with these kinds of problems in mind.

I said earlier that geometry relates to physics, at least in first approximation, by defining a kind of convenient pathway through an otherwise seemingly disorganized material universe. That is, geometry gives you a map whereby the very complicated landscape of reality is simplified; it gives you a way of finding your way around. Much as you have a scale in music, so you have these conic sections—basic, invariant qualities of certain aspects of physical existence.

To give you just a sense of how this translates and is utilized in the Mongeian approach to descriptive geometry, let me show you a problem in Figure 3. This is the situation where two tunnels intersect, or where arches meet in the ceilings of old cloisters. Look at this with an open mind and with an eye that has been trained by what we now know about ellipses and conic sections. What do you see here? You find a half-ellipse (EF); you can see a half-parabola that runs from *A* to *B*; you find a perfect parabola on the outside right (*CD*). You find other intersecting conic sections which become rather complicated, but basically this picture reduces itself alternately to a combination of intersections of conic sections, on the one hand, or a blueprint for a complex three-dimensional structure on the other.

Now, look at Figure 4. This one is interesting from an engi-

Figure 3

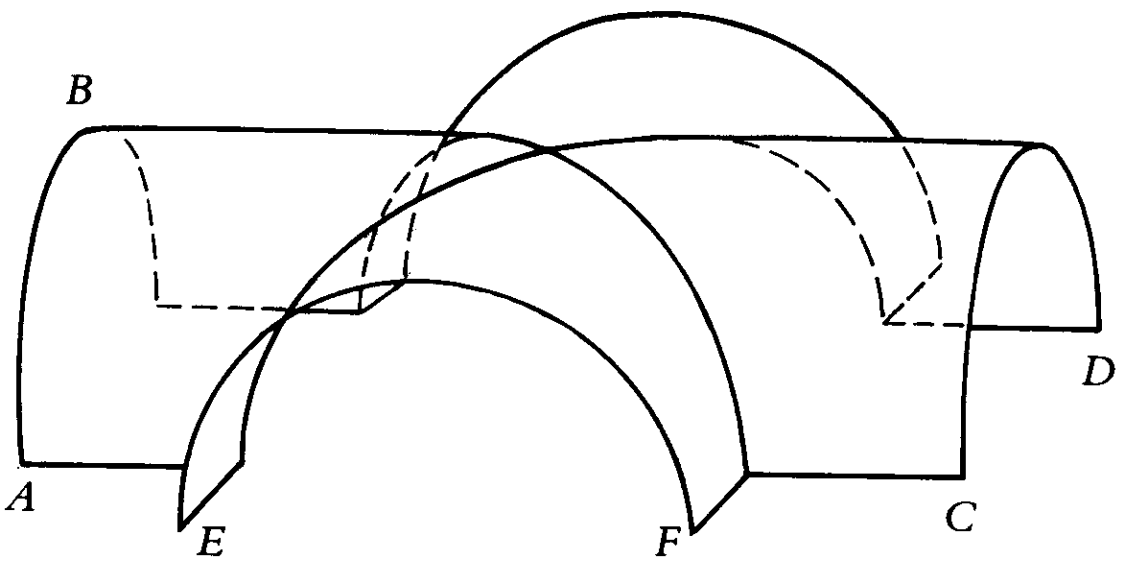


Figure 4

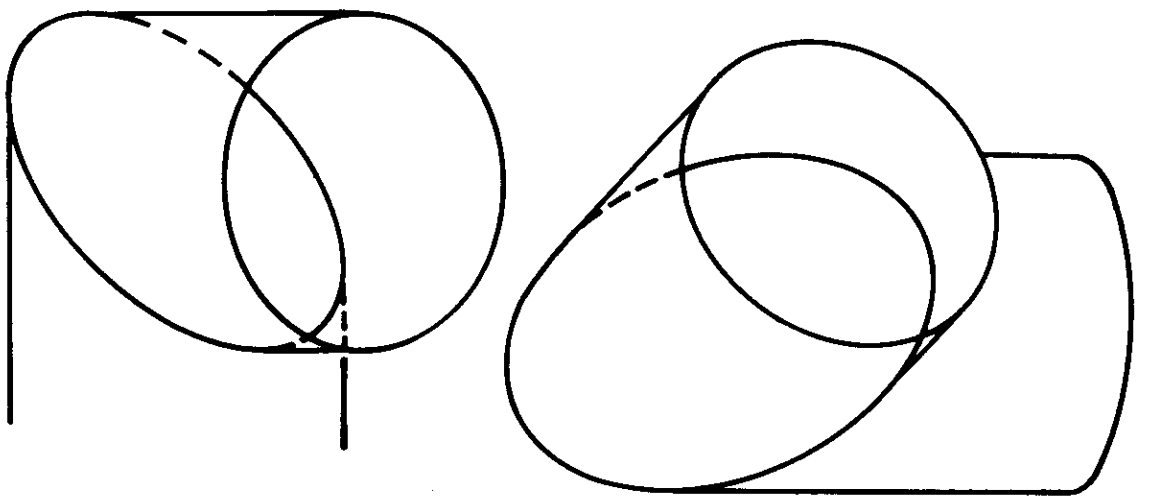


Figure 5

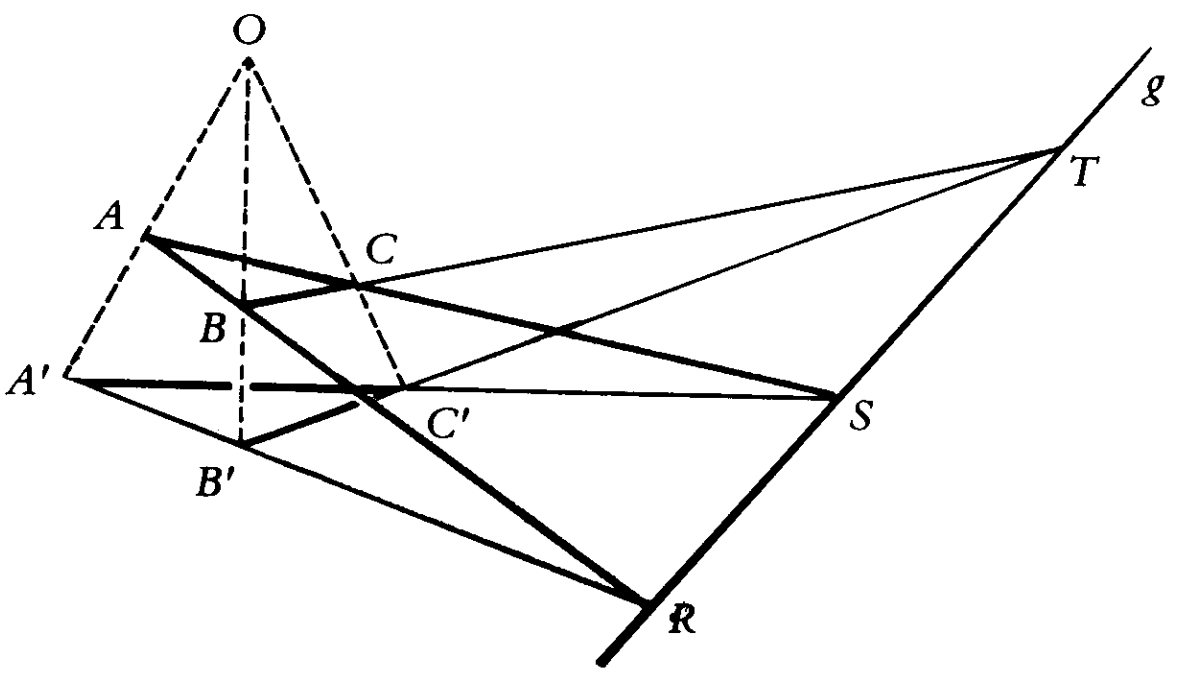
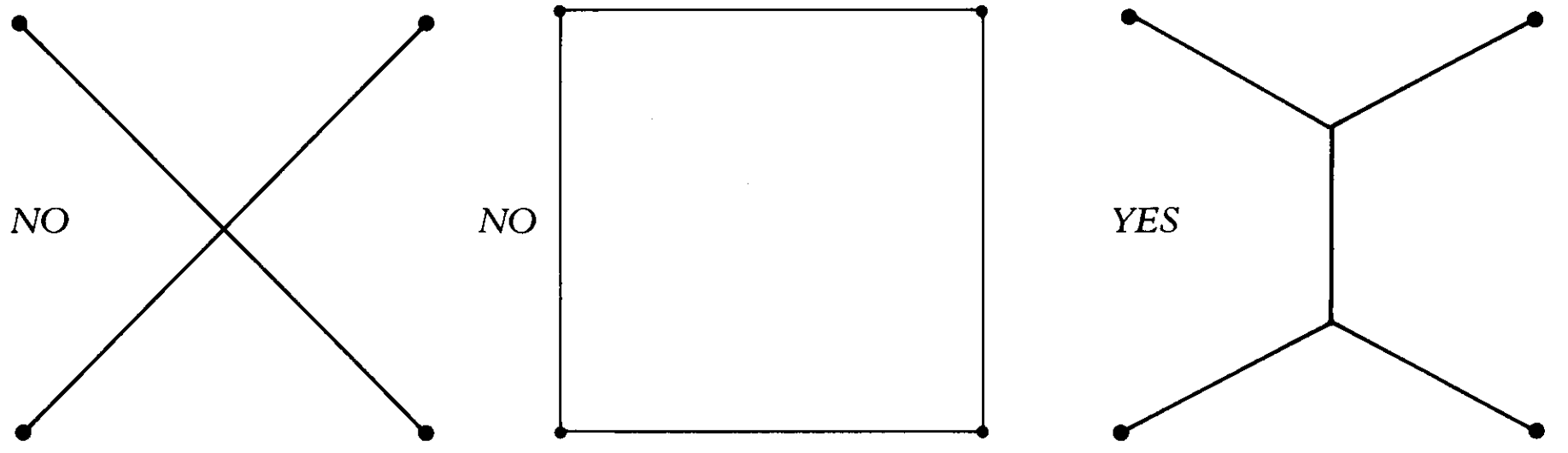


Figure 6
Plateau's Problem



neering standpoint. Often, to direct a flow at an angle or around a corner, you have to intersect a circular cross-section, and find a way to most efficiently fit two circular cross-sections together into one piece. Anyone who has experience as a plumber knows this. It is shown here, and if you follow the intersections, you get exactly the kind of outcome we saw in the previous example.

The basic principle of this type of descriptive geometry is a theorem that was developed almost a hundred years before Monge, by Desargues. It is one of the most beautiful theorems in mathematical physics. Although very simple, it is the foundation of all descriptive and projective geometry. This theorem says that if you have two triangles, ABC and $A'B'C'$ as shown in Figure 5, and if these triangles are situated with respect to one another such that the lines connecting their corresponding corners (AA', BB', CC') intersect at one point (O), then it will necessarily be the case that all the other lines that can be drawn connecting the triangles' corners will intersect. These lines not only intersect, but their intersection points, labeled R, S, and T in the figure, lie on the straight line g. This defines the basic invariant principle of all projective geometry. Although discovered by Desargues, the overall physical significance of this theorem was not identified until Monge.

In teaching children, you have to find the right way of looking at projections—for example, imitating conic sections by taking a paper cone and projecting its shadow with a light against the wall, in addition to building an actual cone out of clay and cutting it with a knife. A straight light projection might yield a shadow in the shape of a triangle; tilt the cone upside down and you get a circle; hold the cone into the light at an angle and you get an ellipse; hold it far enough away so that the actual cone widens out into infinity and you get a parabola; and so on. The fundamental idea, without which none of these things could conceivably be true, is the basic invariance of projective geometry identified in Desargues's theorem. (To merely indicate why this is so: the so-called cross-ratio which defines the relationship between all the different triangles possible in the configuration shown in Figure 5 and the lengths of the intersecting lines, is invariant.)

Soap Bubbles

The key to teaching geometry is to find a way of looking at it not simply from the standpoint of the specific method of generating one or another geometrical object in the classroom, but in a more profound sense, to identify the method of generation in which real physical action and processes generate geometrical objects. In this way, by inversion, you can look at these geometrical objects as certain kinds of invariances that identify physical processes. The best way of identifying that in analytical terms is the subject of Monge's second major treatise, namely, the application of analysis to geometry. In experimental terms, a very effective way to demonstrate this is through the so-called soap bubble solutions to Plateau's problem—the solution to problems concerning minimal surfaces or shortest paths.

First, let's identify what Plateau's problem is, and then we can define the more general ideas behind it, which leads us right back to reconnecting the whole train of thought with Leibniz's theorem.

Imagine for a moment that, in Figure 6, you were asked to draw the shortest path connecting the four pins to one another. How likely is it you would come up with the connection drawn in the Figure? There is nothing intuitively obvious about it; it appears to be a very complicated solution to what appears to be an extremely

trivial problem. Most people would probably come up with an idea like simply drawing two diagonals through the center of the square, or connecting its outside borders. None of these simple solutions would actually work, however. The minimal path solution is the one that is labeled 'yes' in the Figure.

Take the similar problem shown in Figure 7, which is called Steiner's problem. As soon as you go beyond four pins, the problem becomes hopelessly complex from an analytical standpoint. How was the solution arrived at? Well, we can replicate the method by making the object that looks like a book in Figure 8 out of a piece of bent plastic and inserting pins to connect the two parallel surfaces. Now, if you take this model and dunk it into a soap solution and pull it back out, the soap film will organize itself precisely as indicated in Figures 6 and 7. This is really quite extraordinary. Mind you, there are no pins at the connecting points such as *A*. The soap film knows exactly how far to go, where to stop, where to turn, and again how far to go, where to stop, and where to turn. This is something very interesting about physics.

If you look at this with regard to three-dimensional objects, the thing becomes even more extraordinary; and this is where the models made by the children and shown in Figure 9 of the so-called four-dimensional tetrahedron and the four-dimensional cube actually come into play.

To understand why it is called a four-dimensional cube, imagine the following. If you were at its center, no matter which way you turned, you would always be looking at a cube. The cube wouldn't have the right angles, but, in principle, if you looked forward or to the sides, you would be looking at a cube; if you had

Figure 7
Steiner's Problem

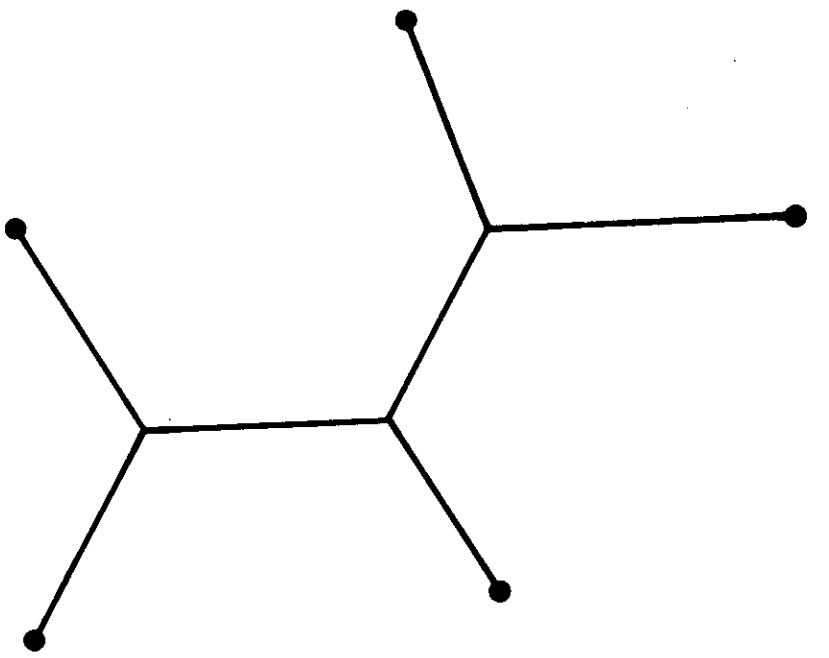
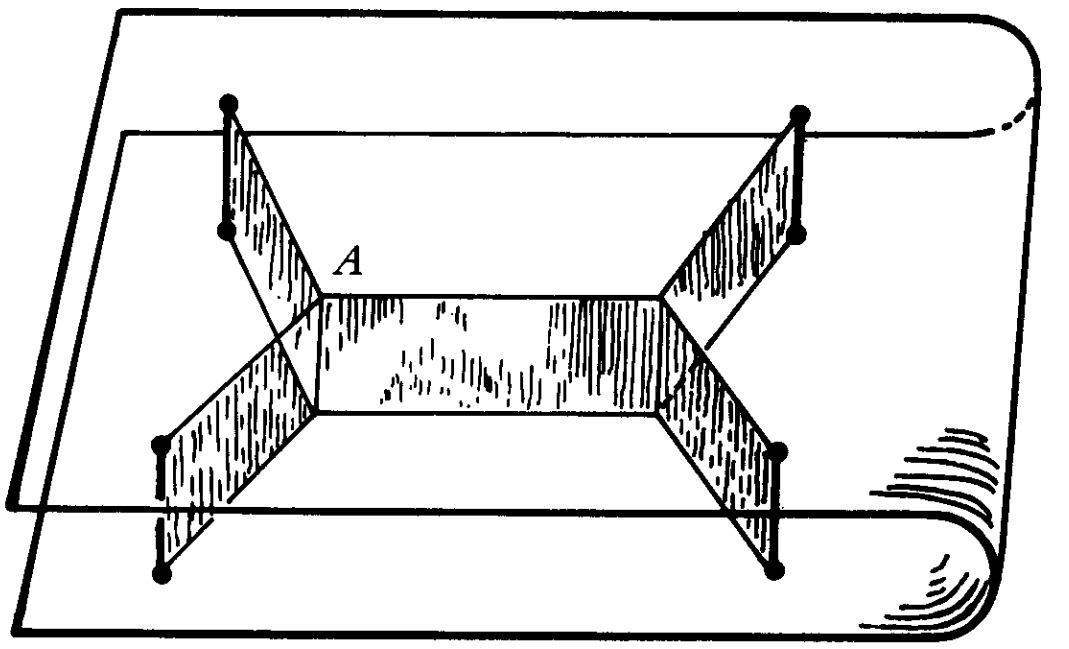


Figure 8



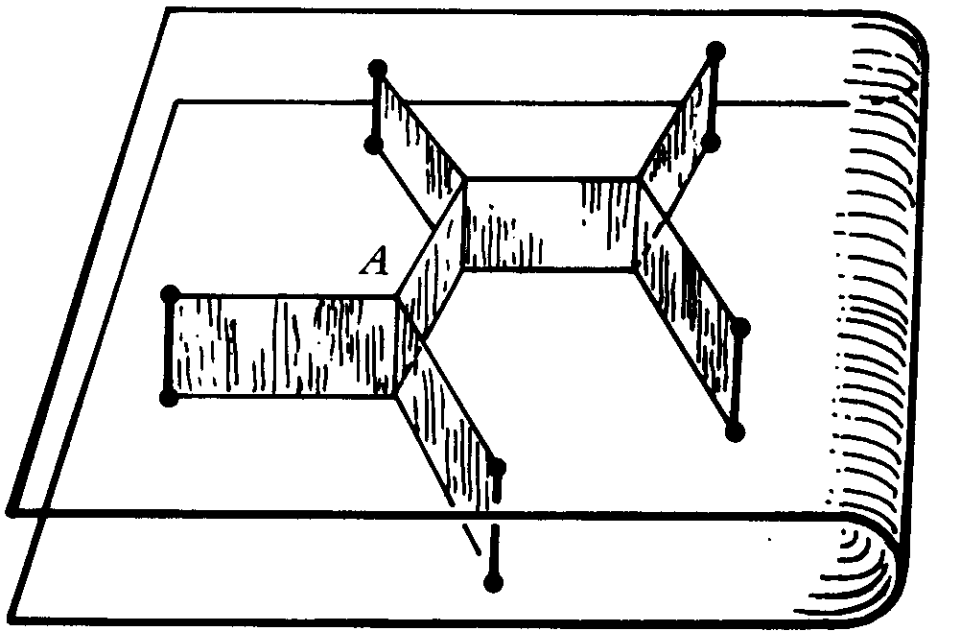
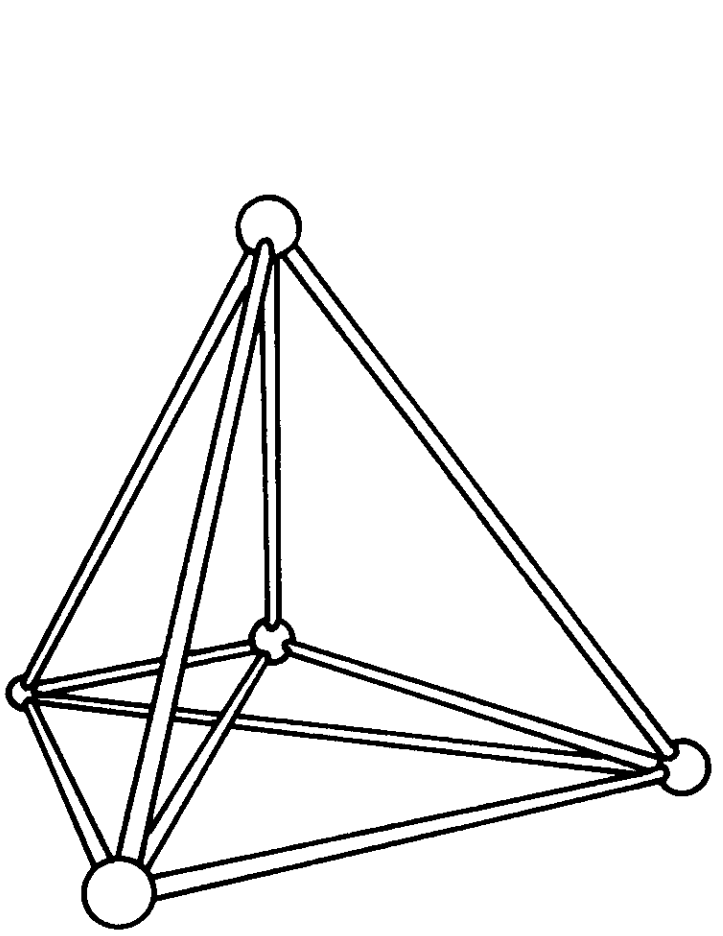
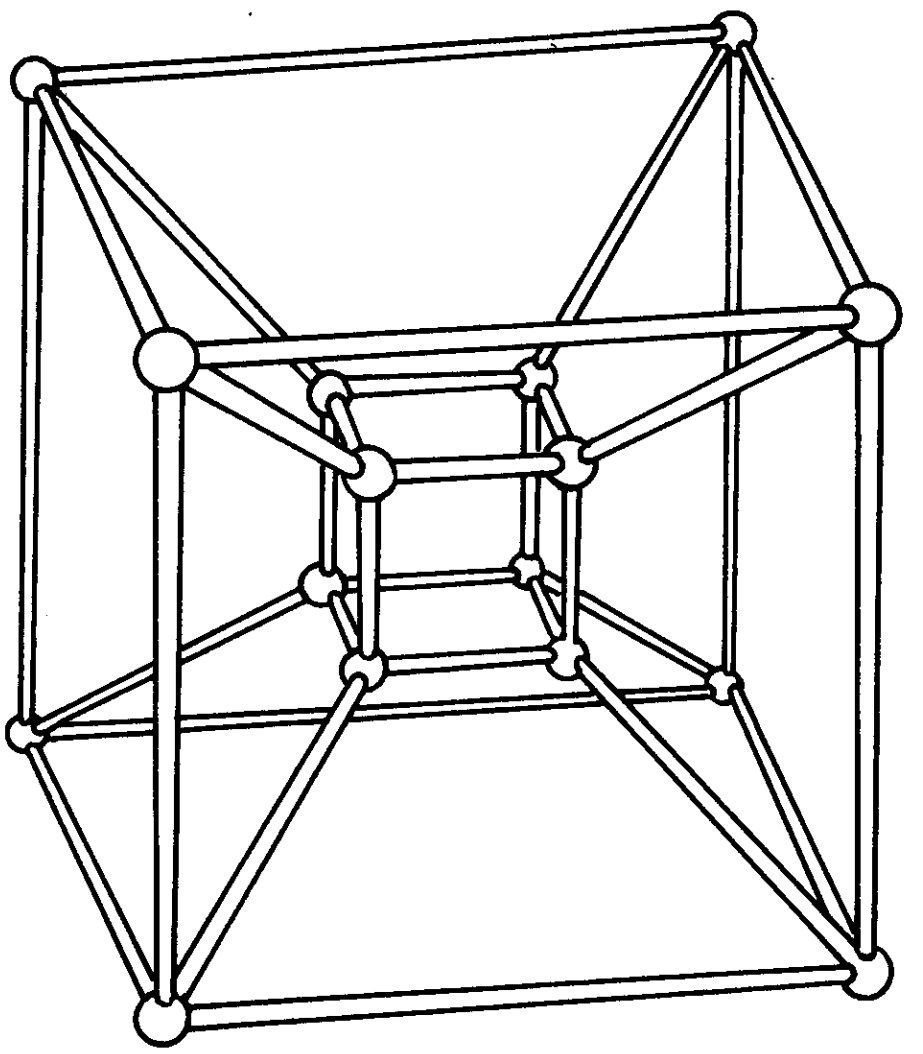


Figure 9



Four-Dimensional Tetrahedron



Four-Dimensional Cube

eyes in the back of your head you would be looking at a cube. In that sense it is essentially a four-dimensional object.

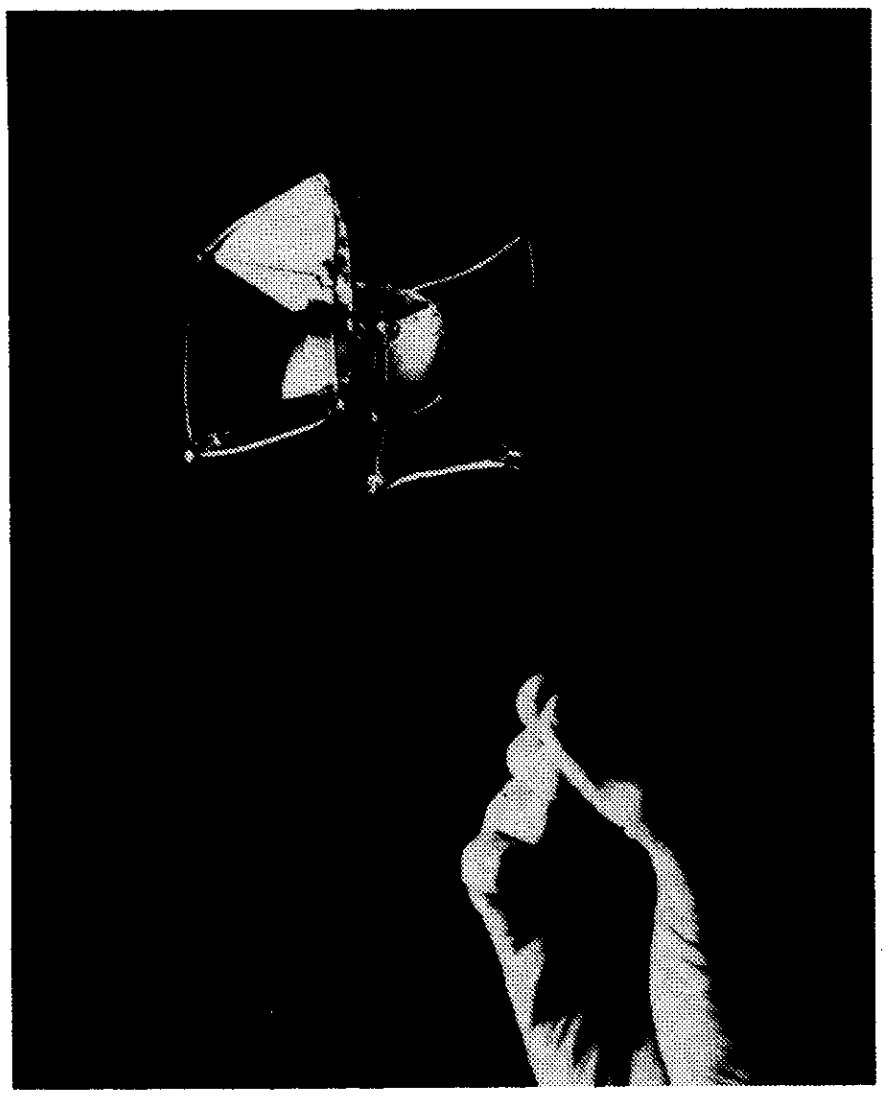
The following analogy may help clarify this idea. If, for a moment, you removed the inner cube while remaining at the center of the outer cube, and looked in any direction, what would you see? A square. And let's suppose you put yourself inside a square and looked toward the outside; what would you be looking at? A line! That is, from inside a three-dimensional object you'd be looking at a two-dimensional object; from inside a two-dimensional object you'd be looking at a one-dimensional object; if you put yourself "inside" the middle of a line and looked both ways, you'd be looking at a point.

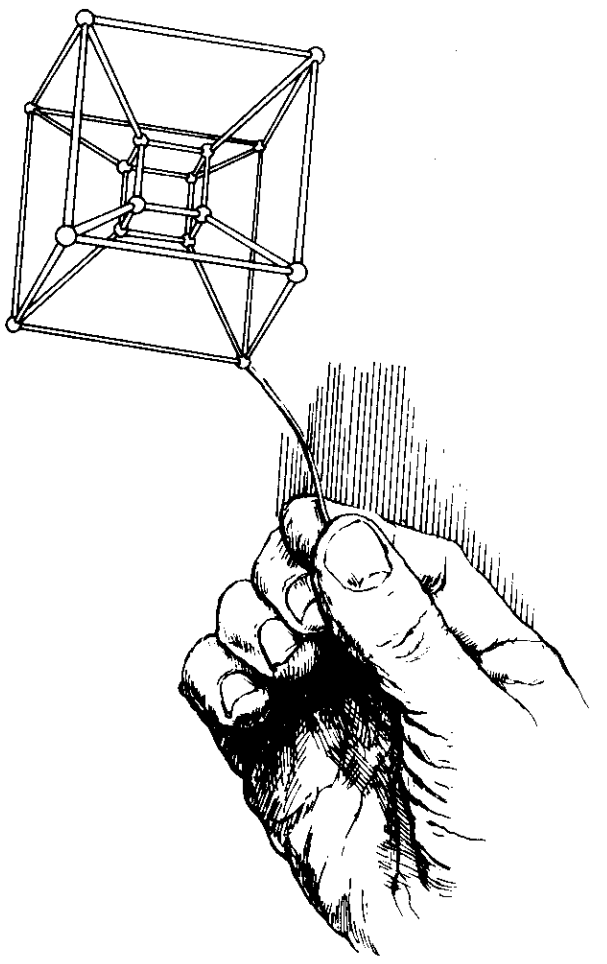
Now what is the significance of this? In what sense do we actually see four dimensions here? Again, look at the soap bubble experiment. Bend a piece of wire in the form of a cube, and put it into a soap solution and pull it back out: the soap film will organize itself into the precise form inside the four-dimensional cube shown in Figure 10 and the photograph. The soap bubble will know how to make a cube inside a cube. If you do it carefully, it will not only do that once, but, in principle, infinitely often, until it reaches a singularity. (By treating it carefully and bending the wire in a rather straight line I have succeeded in getting about five or six of these interior cubes—so it can be done!) This object is going to look like a spiderweb that narrows down further and further, and finally ends up with a very small cube which narrows down into a singularity in the center. We have drawn a picture of this in Figure 11.

This is a very exciting thing, because it shows you in an almost trivial experimental fashion what the principle of the higher hypothesis is all about. I am sure that, when most of you hear about four dimensions, you think that is the height of obscurity. The reason for this is Euclidean geometry. Otherwise, there is really nothing interesting about the fourth dimension. We know in physics that the basic thing about dimensionality is the way in which an organization to a higher form connects to a singularity and to a very definite, defined geometrical shape—there is nothing arbitrary about it. In each case, there is a definite form that this process has to take. In the simplest geometrical objects it takes precisely the very simple, very beautiful forms that we have seen here.

What happens is that the soap bubble organizes itself according to the principle of using the least amount of energy to spread itself around inside the cube. That's pre-

Figure 10





cisely how it works. Why does the soap film do that? This is an important and interesting question, because there is nothing about its answer that is at all obvious.

Least Action Principle

While these specific examples I have mentioned are not due to Plato, the actual principle can be easily discovered in Plato's writings. What occurs in this minimal surface problem—the problem of utilizing the minimal amount of energy, or so-called least physical action—is described by Plato in the *Timaeus*.

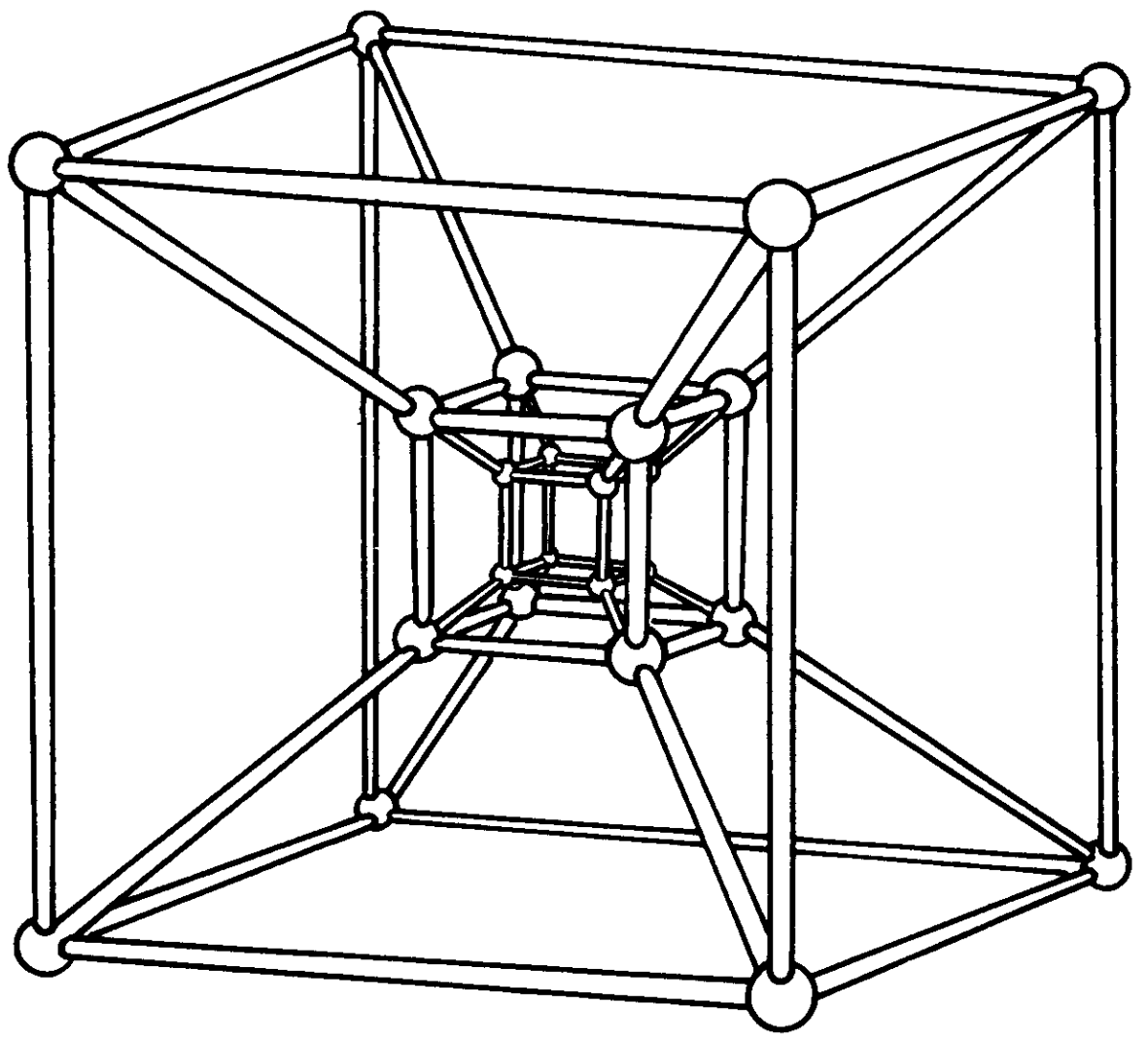
There must be specific, definite geometrical shapes in accordance with which the universe organizes itself so as to realize the most efficient way of progressing from one level of development to the next. It proceeds from one level of development to the next—from one dimension to the next, in this example—not arbitrarily, but in accordance with a definite, preassigned principle. This is the least action principle in today's physics.

The least action path, which is defined through a definite sequence of geometries, is simultaneously the path which maximizes negentropy. The significance of the least action path is the optimization of the principle of negentropy, because it is the fastest way to get the greatest amount of surplus from the smallest amount of energy. And that is Leibniz's theorem; that is what Leibniz means when he talks about this being the best of all possible worlds.

There is a hilarious passage in Plato's dialogue *Phaedo*, where Socrates reviews all of previous philosophy and physics. "There are people who have said that the basic principle, the way the universe is put together, is water—and this is often ascribed to Thales," Socrates says. "Then there are others who have said the basic idea, the basic matter, is air. And there are others who say it is other things. And," says Socrates, "I have finally come across this guy Anaxagoras, and he seemed to have the right idea: because while the rest were talking about water and fire and air and other such things, he talked about what I really thought was significant—namely, mind. But then I found out that he uses the word 'mind' exactly the same way that Thales uses 'water' and Anaxemander uses 'air'; for Anaxagoras, mind is simply another primary matter, and that will not do." Then Socrates says, "with this disappointment in mind, let us leave physics." Socrates leaves you suspended in midair.

The most profound question—namely, why should the universe be made of water, or of air?—goes unanswered.

Figure 11



It is to that question that Leibniz's theorem, and the theorem that Plato developed before him in epistemological terms, gives the principal answer. The physical universe functions in a certain way because there exists a *telos*, an end, in reason. There exists a goal for everything. Or, this is the best of all possible worlds. That is why the least action path is in fact the true path of physical processes.

According to modern physics, however, it is completely conceivable that the Hudson River might flow in the reverse direction tomorrow; and that in another instance, it might turn around again and flow straight up in the air. I'm not kidding. The world of modern physics is a very dangerous world to live in. Why, at any given moment the table you are sitting at might jump to the ceiling, and then virtually instantaneously reappear in the corner. Admittedly, it is statistically highly unlikely. . . but it is certainly possible. There is nothing whatsoever in the Second Law of Thermodynamics which says that this cannot happen. All the Second Law says is that it's not very probable.

Modern physics resolves the problem of freedom and necessity by introducing arbitrariness. It is confronted with the fact that some of the most profound problems and actual accomplishments that human beings can make utilizing the laws of physics do not follow simply from the dictates of necessity. Since necessity, strictly deterministically defined, does *not* make that possible, modern physics introduces arbitrariness. And if we get down to a small enough level, we can only make statistical judgments and predictions.

The question of freedom and necessity, and of lawfulness, is precisely what we have been discussing in the question of educating children. When you are talking about education, there is nothing arbitrary about how the human mind proceeds, how it develops. There is a physical necessity which has to occur; but at the same time, it cannot be the case that this ultimately and completely predetermines the course of events.

The way out of this dilemma, in the obvious sense, is demonstrated by the very simple example of the soap bubbles. The principle of negentropy forces the physical universe itself to invent, time and again, successively, the most efficient methods to organize and develop itself. Once that is clear, then we have made the final link between the simple geometrical circle—which is the locus of all points equidistant from its center point—or the ellipse—which has the invariant quality described in its method of generation—and physics in general. Because we have connected the efficacy of generating such geometrical objects with the more profound efficacy of the principle of negentropy, which has as its principal subsidiary theorem the principle of least action in material reality.

And you can find the same thing identifiable not just in physics, but in economic theory, one of the principle branches of physics as defined in Lyndon LaRouche's work on economics. Exactly the same thing is exemplified in developing from one economy defined by an array of various methods of production, to another array of different methods of production, where you must go through the singularity of the invention of a new technology. The same process occurs within the physical universe itself, and the principles are identical.

Calculus

I want to present a little bit more of what the children know—the so-called method of exhaustion.

I am fairly certain that if you were asked to define an *integral* in calculus and to talk coherently about it, most of you would not

be able to do so. This is probably one of the major scandals of our contemporary existence. The simplest, easiest, and at the same time most important concepts in mathematical physics are by and large not understood, or very badly understood, by most adults. Just before Christmas I taught the children some of the first principles of calculus; and by the end of January we will have succeeded in coming up with the basic notions that should be known by every educated person today.

This very simple point goes back to Archimedes. (Archimedes did not use a circle for his demonstration, as I do, but instead a parabola, which he needed for specific construction purposes.)

If you want to measure the area of a triangle, you reduce the problem to measuring the area of a rectangle, and reduce the rectangle's area to that of squares, and then you just count up squares and get the area in, for example, square feet. Everyone knows how to do this. With a rectangle you just multiply the two sides. But as soon as you get to curved two-dimensional objects this is no longer possible. A circle, for example, is not reducible to any other simple two-dimensional object for which we essentially know the area beforehand, like a rectangle.

So how do we find the area of a circle, or in the more complex but basically equivalent case, how do we find the size of the area beneath a curve like the one shown in Figure 12? The determination of this area is called *integration* in calculus.

Now the curve in Figure 12 could represent the path of a material particle; and, without being too precise about it, by representing this path in a three-dimensional phase-space sense, I could define an *integral* which describes the physical action or efficacy of motion of this particle. So this determination of area tells us something important about physical action.

Determining the size of the area under the curve is exactly the same problem Archimedes proposed to solve using the following approach. We have to superimpose a grid or reference framework to measure the area, so we start with the situation shown in Figure 13A.

Let's suppose that the sides of each square in the grid are one inch long, so that the area of each is one square inch. Then superimpose the grid on the circle and you can say that the area of the circle is definitely greater than two square inches, and less than four square inches.

Now, begin a process of zeroing in on what the area is. Cut the grid in half, as in figure 13B, so that the sides of each square are now one-half inch. Of course, the original two square inches are still inside the circle, but now four additional small squares fit inside, and they add up to form a third square inch. So at this point, by making the grid finer, you know that the area inside the circle is definitely greater than three square inches and less than four square inches.

Now, in Figure 13C, we cut the grid in half once more. You can see how the little squares fit into the empty space inside the perimeter of the circle. If you add those little squares together you get an additional three-quarters of a square inch. And so you now know that the area of the circle is greater than three and three-quarters and less than four square inches.

You see how I can narrow this down further and further by making the grid smaller and smaller, and as I do this, I actually successively define the area of the circle. The obvious assumption is that I will come closer and closer to defining that area, if the area is in fact the *transfinite point* for this process of construction, where transfinite point bears the same relationship to the process of construction as any transfinite point in arithmetic bears to a defined arithmetic sequence. So an integral,

Figure 12

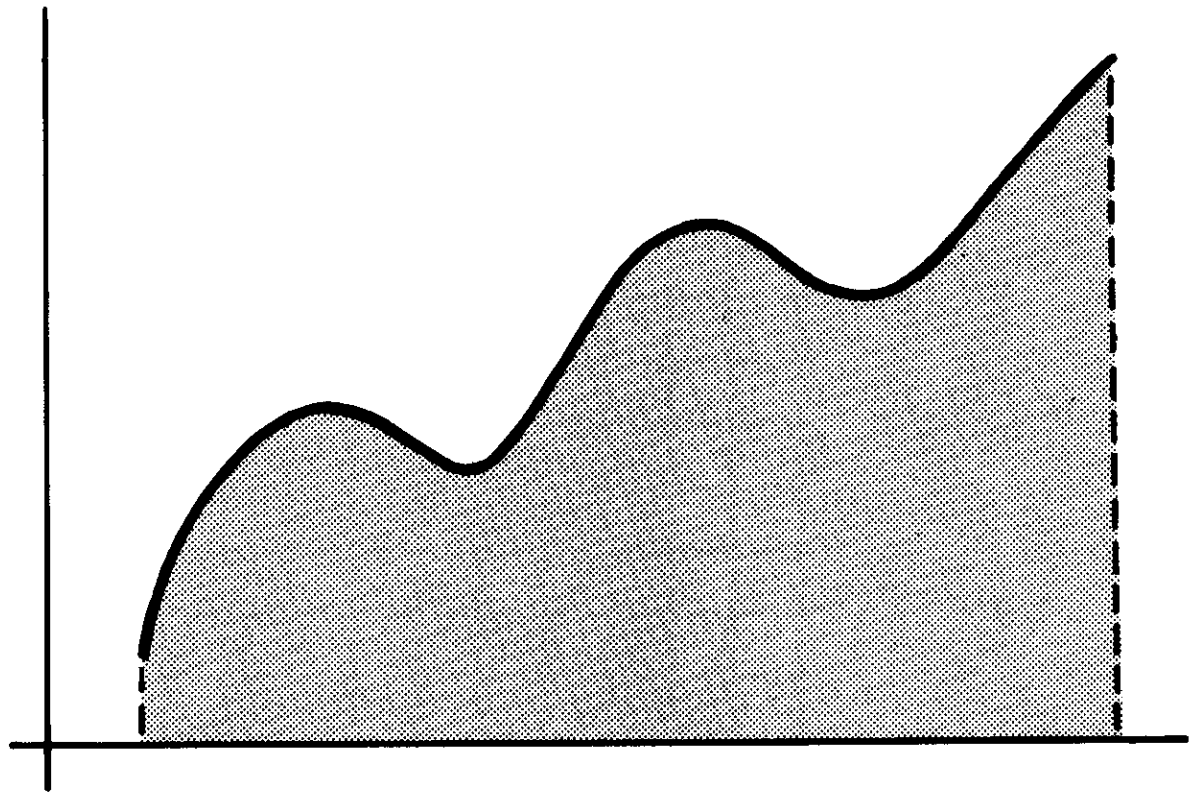
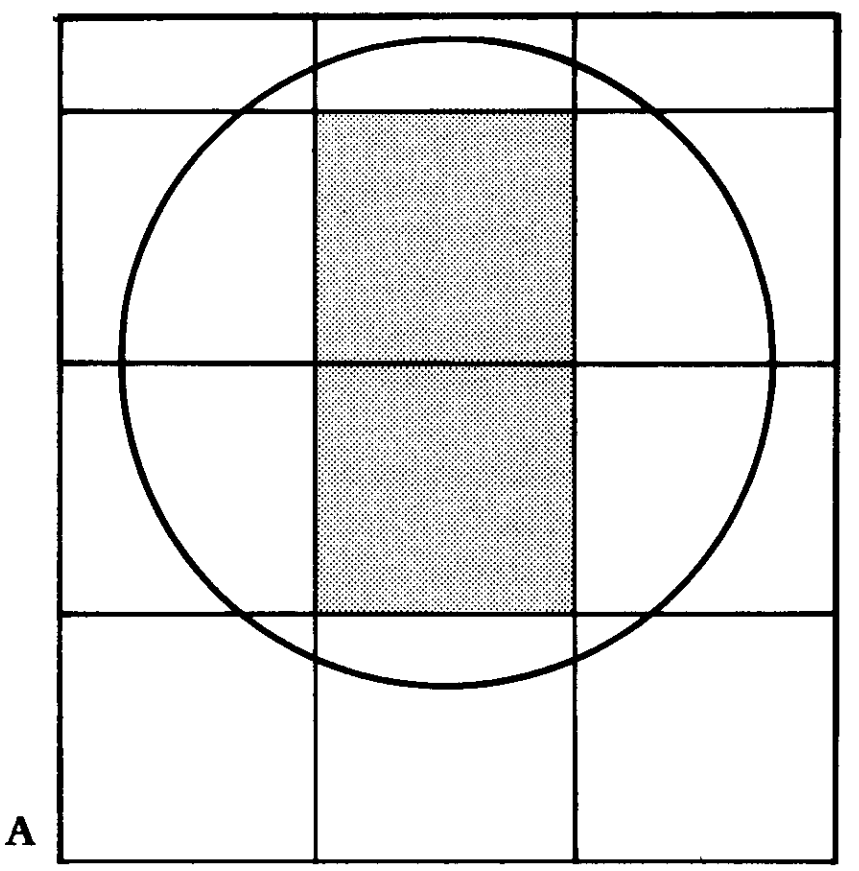
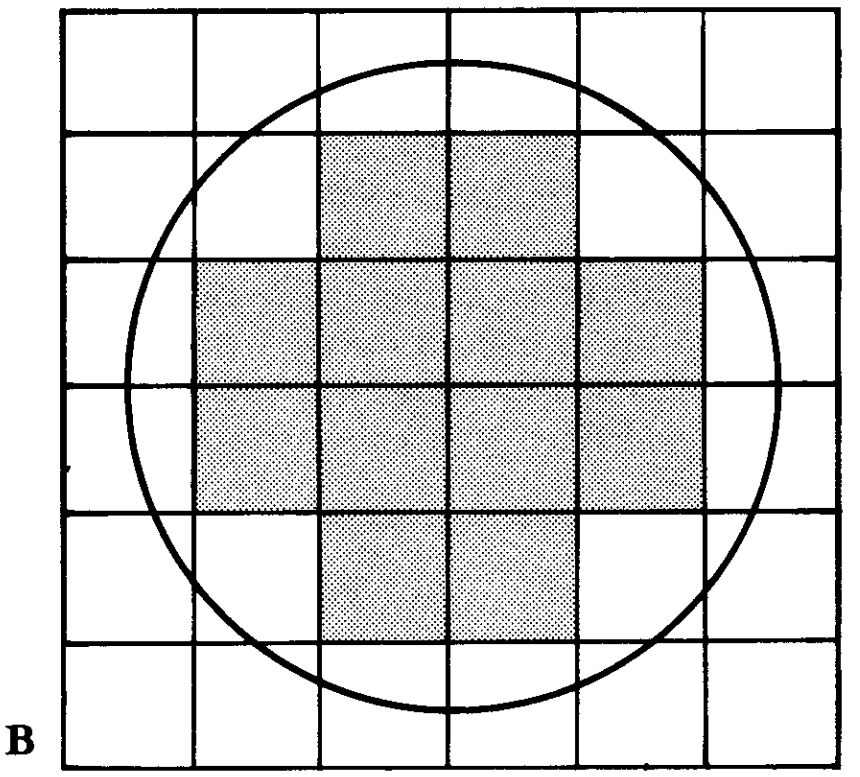
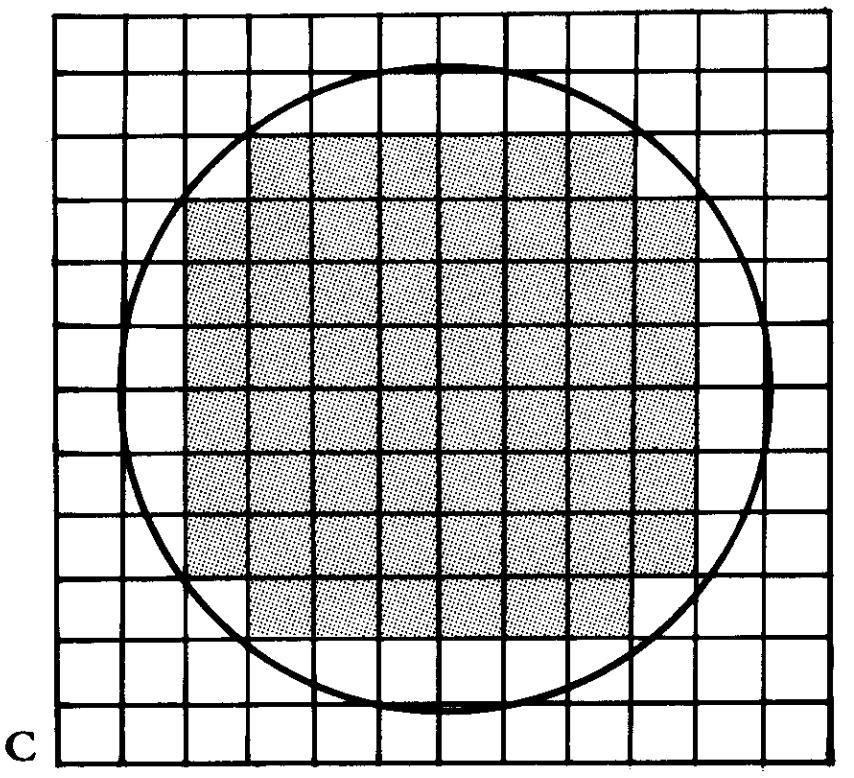


Figure 13







which defines a process of construction, is actually a higher-order object than the object which you started with; integration raises the dimension of the object under consideration by one. For example, we started out with a simple curve, and the integral gives us a two-dimensional object; if we had started out with a two-dimensional surface, the integral would have given us a three-dimensional object; and so on.

The principle here is basically identical to the case of the four-dimensional cube, and, in questions of least action, the integral is the most important tool we have developed to evaluate what goes on in the physical universe. It is very simple and straightforward. You now know what an integral is; there is nothing more to be known about it. Of course, it may be difficult for you to take an arbitrary function which has a complex curve and find out what the integral is in analytical terms; but at least in principle, through this method of construction, you now have it indelibly burned into your mind. So that, if someone were to ask you, "What is the integral of this curve?" you would say, "This is it. This is how you do it."

Riemann did precisely this in one of the treatises I mentioned earlier. He said, "Look, there is a lot of nonsense and obfuscation being written about integrals, but they are very simple." And then he defined precisely what they are. I have shown the original Archimedian method, rather than Riemann's, but it is just as effective and just as good.

In Conclusion

This is what the children know at this point. The further direction is indicated by the general principle used to open our discussion: namely, to use geometry to give our future physicists the sense of

comprehension and comprehensibility of the universe, so that education in physics does not become a horribly complex and impossible-to-understand process of learning such-and-so many different formulas and endlessly disparate ideas. But instead, the process of physics education is pulled together under one basic concept which I have called Leibniz's theorem—although Plato had already enunciated it in the *Timaeus*—the principle that God made this the best of all possible worlds.

Let me conclude by mentioning a few words about Lazare Carnot.

How effective is geometry? Well, Carnot taught the answer to this question to the European aristocracies in the 1790s in a very palpable, immediate, and effective manner.

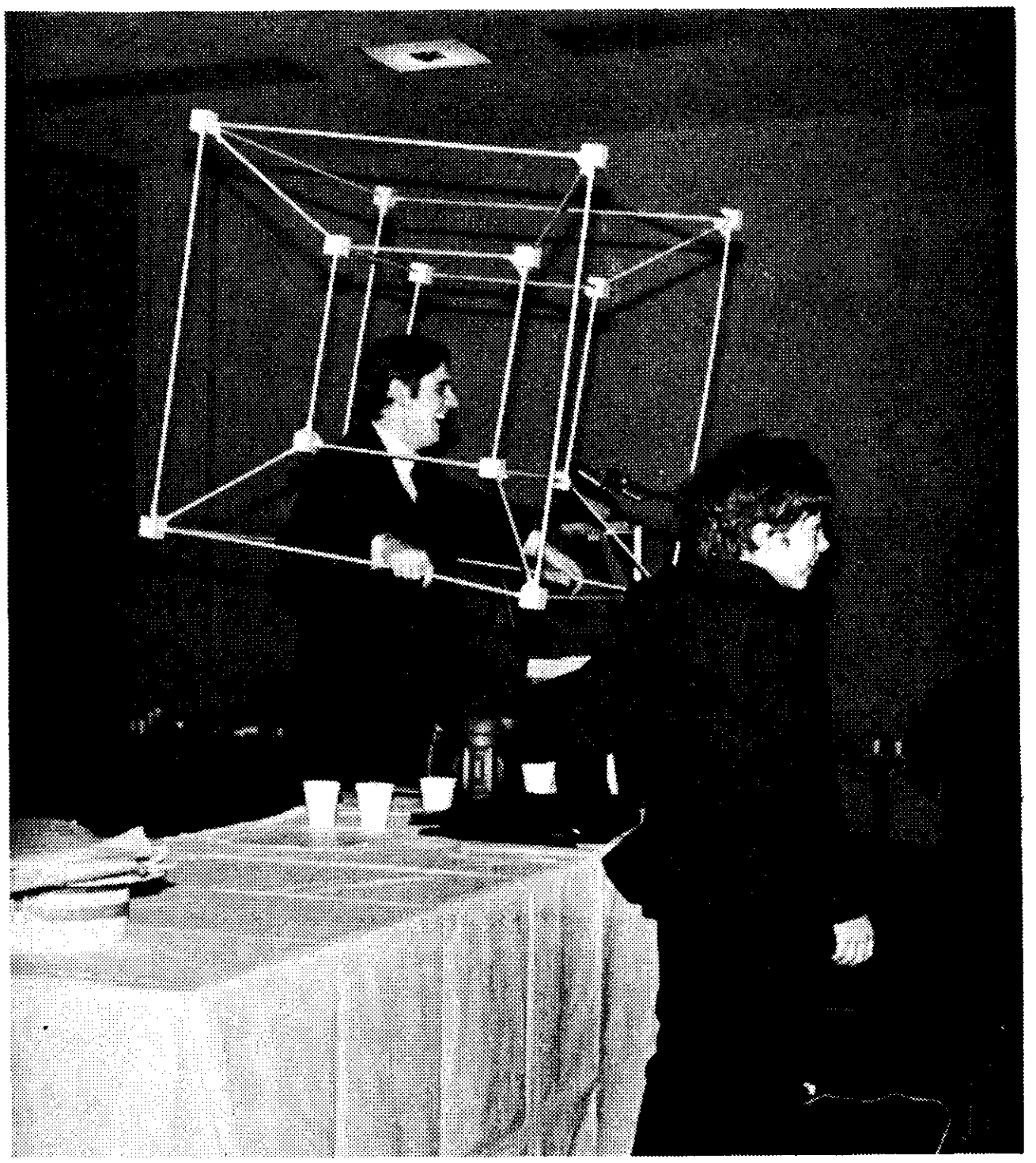
When Carnot took over as War Minister, before Thermidor, the French Republic was under attack by everyone—the Prussians, the Austrians, the British—and had exactly 17 modern cannon. Monge, Carnot, Berthollet, and a few other scientists got together and said, "This will never do, we can't win that way." And they started the type of mobilization that Lyndon LaRouche has talked about for the skilled labor power and industrial resources of our own country.

In a matter of 12 to 15 months they came up with what everybody regarded as a miracle. By pulling together the Ecole Polytechnique, they educated an engineering officers' cadre of about 1500 in less than a year to at least the level of the basic principles of geometry as I have presented them today. Monge, lecturing in public in Paris to people drawn together from everywhere in the country, taught for the first time the knowledge he had been forced to keep secret for the previous thirty years. At the same time, Berthollet and others defined efficient methods of making gunpowder, while Carnot wrote a treatise about how to build cannon; and he put it into action. After 15 months they had put together a coherent engineering officer corps which became the principal cadre of the French armies. They built not 17 cannon, but about 13,000. The result was predictable.

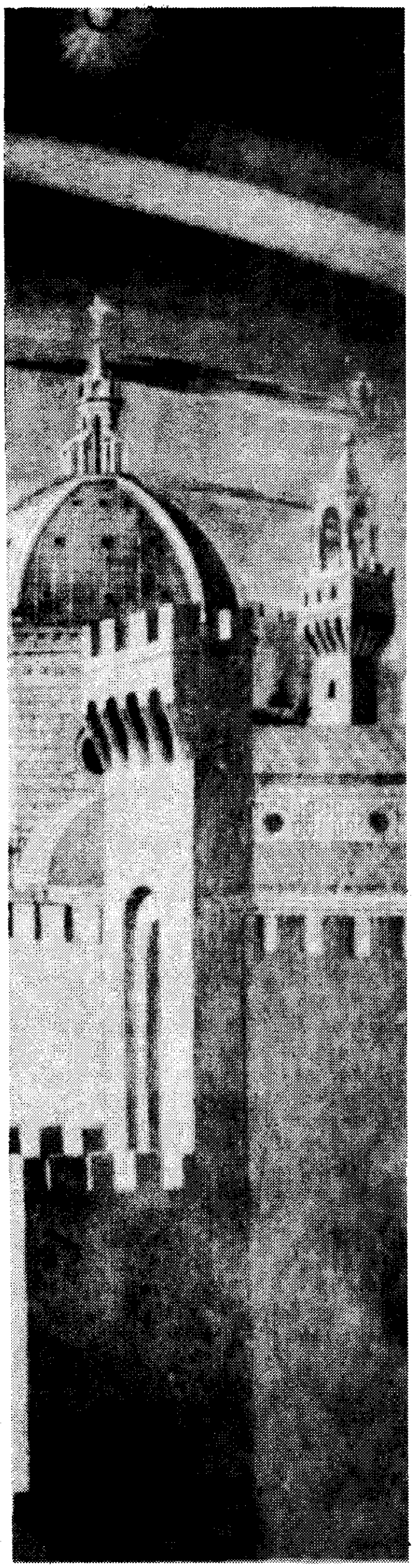
This was the birth of the modern artillery barrage. The Prussian, Austrian and British armies marched nicely in line in a bloc and stood there, waiting for the cannonade, just as they had always done throughout the 18th century. They hoped, of course, that the French with their 17 cannon and untrained soldiers, were going to be an easy prey. And after less than two hours, these armies were finished, totally wiped out. Very few Frenchmen lost their lives; a few cannons misfired, causing the major casualties. The 13,000-cannon artillery barrage was thought to have been even larger, since the Prussians *et al.* never knew where it came from or what hit them. Most of them never lived to find out.

That was the efficacy of geometry, demonstrated according to the method of Monge and Carnot.

Thank you.



The author and student assistant demonstrate what a four-dimensional cube looks like from the inside.



Dante before the city of Florence, in a painting by Domenico di Michelino. Prominently displayed is the cathedral dome designed by Filippo Brunelleschi.

How Dante Used Poetry To Start The Scientific Renaissance

by Muriel Mirak

In the midst of ongoing economic and political warfare against the sovereign nation of Italy, a most dastardly proposal has been aired to shatter its cultural heritage as well. Dante's *Commedia,* it is proposed, should be taken out of Italian high schools, on the trumped-up charge that the epic's language is too obscure for it to be meaningful to modern readers and students. The same spurious argument is being used to launch the imminent publication of a modern Italian version of the epic, and to publicize the terrorist grouplet Lotta Continua's installments of a vulgarized, pseudo-Dantesque modern political saga.

Thus Dante Alighieri, Italy's greatest poet and first political

Francesco Petrarch

Nicholas of Cusa

scientist, comes under an attack aimed at severing all ties with the nation's great humanist tradition. One could as well raze Renaissance Florence to the ground and unleash hordes of drugged counterculture freaks to roam through the rubble. The impact would be no different.

Dante was slandered during his lifetime, betrayed by his closest political associates, and exiled for the last twenty years of his life. After his death, his mortal remains were disinterred, contested, and removed. Now, after almost seven hundred years, the heirs of his fiercest enemies in the Black Guelph camp propose to blaspheme and annihilate his immortal remains as well.

One can hear Milton, old and blinded, cry out in wrath against the outrage: "Who kills a man kills a reasonable creature, God's image; but he who destroys a good book, kills reason itself, kills the image of God, as it were in the eye."

Dante's immediate followers would loudly agree. How could Boccaccio and Petrarch exclude Dante from their libraries? And Brunelleschi, Alberti, Massaccio and their circles: are they to respect the ban on the *Commedia*, on the work they rightly prize as the Bible of Reason, the guide to constructing the Florentine Renaissance, that most explosive celebration of human creativity yet known to man? Are they to shrug their shoulders and embrace defeat, leaving the great Cardinal Cusa alone, bequeathing a wasteland to Raphael, Leonardo, and Michelangelo? Are the humanist travelers from England, Colet, Lyly, and others, following in Chaucer's footsteps to Florence in search of the precious manuals of Reason—are they to be sent home empty-handed? Does that then mean there is to be no Tudor Renaissance, no Marlowe, no Shakespeare, no Milton? Is England to be denied its attempted republican revolution? And the rest of Europe condemned to never-ending Dark Ages? Will there be no revolution in America?

Keats would be tormented by the news, Foscolo indignant. Shelley

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* The translations of passages from the *Commedia* which are presented in this article have been selected and edited by Nora Hamerman from the earliest complete English translation, the 1814 edition by Rev. Henry Francis Cary.

Cary was a minor English literary figure of that period who joined a factional position in favor of Shakespeare, Milton, and Dante against the prevailing Enlightenment trend of Samuel Johnson and Voltare; he carried out his "faithful" translation of Dante using the ten-syllable heroic blank verse form of Milton's *Paradise Lost*. The editor has taken the liberty of improving Cary's version wherever it could easily be made to correspond more closely to the original Italian, or where the exigencies of lifting a short passage out of a canto necessitated some reshaping. Cary's translation is by no means perfect or even necessarily the best of the many attempts to date. But it has the virtue of being English most of the time—in contrast to many later nineteenth century efforts which carried literalness to the length of replicating Dante's word-order even when that was ridiculous in English—and of preserving, through the use of assonances and slant rhymes, at least an echo of the musical qualities which are wholly lost in any paragraphed prose rendering. It is employed here not in any sense as a model translation, but merely as a means of giving the non-Italian-speaking reader an aid to following the progression of Dante's thought as Muriel Mirak develops it through quoted passages from the original poem.

It should be noted that Cary not only did not attempt to replicate Dante's terza rima rhyme scheme, but also abandoned any grouping of the lines into threes, indenting from time to time to mark the introduction of a new voice—presumably following the model of *Paradise Lost*. Here the lines have been indented parallel to the Italian, in the interest of clarity. However, in Cary's translation, as in any translation, the corresponding thoughts often do not start and end at the same point in the line as in Dante's original Italian. Occasionally when this resulted in an egregious discrepancy in overall length the editor has retranslated for the purpose of closer correspondence with the facing Italian version.

would be thunderstruck and enraged. The moral condition of the world, he knew, would not have held had Dante, Boccaccio, Chaucer, Shakespeare, Milton et al. not lived. Banish Dante, and you banish Reason itself. Banish Dante, and you deny human existence as human over the course of the last seven centuries. Banish Dante, and you rob of human significance the lives of the greatest individuals humanity has produced, individuals whose lives made possible continued human progress. Abolish the *Commedia* and you might as well be dead.

Filippo Brunelleschi

This is no mere matter of taste. It is a question of moral survival and has direct political relevance as such. The fact that such a vile proposal could find currency testifies to the besieged state to which Italy has fallen—the state Dante fought to bring the country out of. The problem is as Dante characterized in a pained invective launched from Purgatory:

Ahi serva Italia, di dolore ostello,
nave senza nocchiere in gran tempesta,
non donna di provincie, ma bordello!

Ah, Italy enslaved! thou inn of grief!
Vessel without a pilot in great storm,
No queen of provinces, but brothelhouse!*
[VI, 76–78]

Italy is a rudderless ship, jostled about on hurricane winds, wracked by internecine warfare which prevents her from steering a definite course in a war-threatened world. The problem is that Italy has no leadership. Or better, that Italy's leadership refuses to provide leadership, to fight for what is in the national interest. As a result, the country has plunged into political and moral decay.

Had you, Italy's Ghibelline and White Guelph leaders in the Communist Party and Christian Democracy, broken earlier with the bordello mentality of compromise and submission, you would be leaders, not slaves, today. Had you named the names of your Black Guelph enemies, *as Dante did;* had you seized the rudder of leadership in the midst of crisis to inform and mobilize a frightened population around the real issues of the battle, you would not be cowering and trembling today. Had you not preferred the pathetic arrogance of misconceived "honor" to the fulfillment of civic duty, and not embraced hypocrisy and fraud over justice, you would not be betraying the interests of your country as you are today.

Geoffrey Chaucer

The mood of the country would be different. As it is, the Italian population is worn out, sickened by the stench of intrigue and mystery clouding political processes. The real issues have been hidden from the public eye, the life-or-death battle is being fought, as it were, under a blanket; thus all the general public can see is the outward form of physical struggle. Kidnappings, murders, scandals, and terror bombings—all apparently undecipherable, meaningless.

They see the war gaining momentum, but they do not know who is fighting. Thus the people fall into indifference and mistrust. They plug along day after day, merely trying to survive. The country's youth are demoralized and disgusted, easy prey to the hard-drug counterculture that has inundated the schools and universities. Existentialism reigns, and the sense of purpose in life has been lost.

Italy is losing its soul, its commitment to progress and perfection. Dante, indeed, still lingers in exile. Whites and Ghibellines of Italy! Now is the time to bring back the banished poet, not to dismiss him from the national consciousness! Bring back the honored poet, heed the words of Dante, read, read the *Commedia,* and learn the laws of Reason!

Poetry as political program

In the wake of the Congress of Vienna's establishment of British hegemony over continental Europe, hegemony imposed over the dead bodies of Europe's republican humanist elite, Percy Bysshe Shelley articulated his call for a general rebirth of poetry. This was no romanticist's swan song; it was a political program, a program to effect the moral improvement of man by awakening, through the unique means offered by poetry, that "inventive and creative faculty" lying at the source of science, morals, political economy, and government. Shelley knew that without such a poetic renaissance, the human race would be doomed to ignorance and misery. Lawfully, Shelley looked to Milton, and with Milton, directed his gaze to Dante.

It is no accident that today's greatest humanist thinker, Lyndon H. LaRouche, Jr., should harken to Shelley's impassioned plea and argue the case for poetry in more advanced terms.[1] In recent years LaRouche has elaborated his groundbreaking discovery of the poetic principle as the rigorous basis of Platonic method. Poetry functions, as LaRouche has shown, to bring to consciousness in the reader the preconscious mental processes that originate creative thought. By thus accessing preconscious processes, the individual mind acquires deliberative control over the hypothesis-formation capacity of creative thinking. Poetry thus functions, as does music, to generate the powers of mind required to make necessary fundamental breakthroughs in scientific knowledge.

It is not surprising that LaRouche, looking over the heads and shoulders of Shelley, Poe, Schiller, and Milton, should sight the towering frame of Dante Alighieri.

Pope Paul VI

Because Dante succeeded in rendering poetry the midwife of science. He succeeded in composing an epic capable, as the late Pope Paul VI identified, of "radically changing man," of bringing the reader up to superior modes of conceptual and therefore moral activity.[2] It is because generations of Florentines and Italians followed Dante's *Commedia* to effect such a radical transformation that the fifteenth-century Renaissance and the birth of modern science took place.

Had Dante not lived or written his *Commedia,* the Renaissance would not have taken place; Italy would not have been brought forcibly out of the ravages of the Black Death. Italy, and the world, would have had a different history, if any history at all.

Dante himself was, of course, conscious of the nature of his contribution. *That is why he wrote the* Commedia *in the first place!*

In his exile Dante realized that the failure of his lifelong battle to install a humanist republican government in Florence was not due to faulty conception. His political aim of a worldwide humanist empire, as elaborated in his groundbreaking *De Monarchia,* was conceptually and politically exact:

> The principal duty of all men, who by virtue of their superior nature are drawn towards loving truth, seems to be this: that as they have become enriched by the labors of the ancients, thus they labor to bequeath the same wealth to those who will come after them.[I, i].

Man, to fulfill the necessity of mediating the expanded reproduction of his species, or progress, must shape the political institutional means to do so. Dante saw the monarchy as the appropriate institution, insofar as the humanist monarch, dedicated uniquely to mediating a process of perfection to the community as a whole, would embody the universal interest. Human

society would be truly free, in that it would be a self-subsisting process of development serving nothing but its own development as its end ("the cause of itself and nothing other").

The problem in Florence at the turn of the fourteenth-century therefore had not been Dante's faulty reasoning or lack of coherent policy aims; the problem lay solely in the subjective realm, in the inability of Dante's leading associates to grasp and serve the universal interest. The leaders were incapable of being leaders, because they let themselves be engulfed in the pettiness of ill-conceived self-interest. To become leaders, Dante knew, they must be brought out of the little world of self and into the realm of Socratic reason. (One can see Milton nodding gravely.) That is the task Dante took on in writing the *Commedia.*

Dante's intention is manifest in the global structure of the work itself.

From a formal standpoint, the poem is divided into three *cantiche* (Hell, Purgatory, and Paradise) each of which contains thirty-three *canti* (Hell has thrity-four). The three cantiche are not, however, simple collections of canti strung together as a group of songs.

In Hell, one proceeds with the character Dante and his guide Virgil through an ordered succession of distinct poetic images (roughly identical to the single canti) portraying twenty-four classes of sinners' souls appearing progressively in as many downward-spiraling circles. The imagery cohering with definite emotional gestalts proceeds progressively according to an identifiable ordering principle or *hypothesis (n)* which orders the mode of succession.

In Purgatory, a similar progression of images unfolds, in depiction (on a narrative level) of Dante and Virgil's ascent ot the mountain of Purgatory. The succession betrays such formal similarities to the descent into Hell that the ascent itself causes reverberations of the earlier cantica to be "heard"; yet it is ordered by a distinctly different, identifiable ordering principle or hypothesis *(n+1).* As in Hell, the reader is forced to look back and reconceptualize each preceding canto *and* the emerging connective principle *(n→n+1)*, but the process in Purgatory is rendered more complex by virtue of the reverberations emanating from Hell. Thus, already in Purgatory one strains to grasp the coherence of the two apparently opposed worlds.

It is only in Paradise that the coherence can become manifest. Paradise, echoing the earlier cantiche, retreads the formal sense of progression, though in ways radically opposed to both previous parts. Formally, Paradise echoes Purgatory's ascent motif, but the ordering principle or hypothesis *(n+2)* governing the successive leaps upwards is of a higher order than that of the previous cantica.

Yet Paradise is coherent with both earlier parts, indeed must be so, since the mind of the character Dante proceeds, with the reader's, through all three parts in order, progressing according to the hypotheses governing each qualitative succession, and since a Purgatory is reached uniquely through Hell, and Paradise through Purgatory, then the three qualitatively distinct realms (n, $n+1$, $n+2$) must be susceptible of coherence. There is what Plato called a "higher hypothesis" (N) which not only subsumes the three successive hyptheses, but orders their qualitative, progressive transformation. It is as the reader, with the character Dante, reaches the last canto of Paradise that he comes to *know* the higher hypothesis (N); it is that knowledge which permits him to reconceptualize from this achieved higher level the entirety of the foregoing process as the process of self-perfection of the universe, and *therefore* of his own mind!

Percy Bysshe Shelley

There are several important considerations arising out of even this essentially formal description of the *Commedia's* overall structure.

Most obviously, the work must be read as a whole in the order in which it was written, in a series of lengthy, concentrated sittings. There is no way in hell that one can access the science of Paradise by plunging directly into its opening canti. Nor can one fulfill Dante's purpose by examining isolated canti, as is unfortunately the traditional method adopted in most schools and universities; one might as well isolate groups of phrases from single movements of Beethoven's Ninth Symphony and listen to them in lieu of the entire work. The meaning lies in the process, not in the single episode or image. Further, the meaning of the whole *Commedia*, located as it is in the entire process, can be grasped only to the extent that the reader enters that process, making it his own. A detached, pseudo-"critical" approach yields nothing but confusion and downright error.

The case in point is Francesco De Sanctis,[3] the British-controlled nineteenth-century literary critic, spiritual father to the infamous Benedetto Croce. It is certain that De Sanctis's intention to mystify Dante's accomplishment was facilitated by his supreme ignorance. Having read the *Commedia* from the standpoint of the mind particular to the lower reaches of Hell, De Sanctis was literally incapable of emerging. Thus his characterization of Hell as *poetically superior* to Paradise! That De Sanctis's pit-dwelling prejudice has been handed down to and adopted by even well-meaning readers is why the case merits attention here. The problem with such readers is that by blocking the fact that their own minds' profound internal change is the subject of the poem, they cling to preconceived notions of poetry, and of themselves. As a result, they undergo no change and consequently relate only to that part of the poem, Hell, which coheres with fixity of mind.

The problem of the epic

The case of Edgar Allan Poe takes us to the other end of the moral universe from that wherein the dull-witted De Sanctis squats. Given the extraordinary qualities of the man and his poetry, Poe's arguments against the long poem demand serious attention. Poe argues in "The Poetic Principle"

> . . . that a poem deserves its title only inasmuch as it excites, by elevating the soul. The value of the poem is in the ratio of this elevating excitement. But all excitements are, through a psychal necessity, transient. That degree of excitement which would entitle a poem to be so called at all, cannot be sustained throughout a composition of any great length. After the lapse of half an hour, at the very utmost, it flags, fails, a revulsion ensues, and then the poem is, in effect and in fact, no longer such.

Edgar Allan Poe

It follows, as he develops the case in "The Philosophy of Composition":

> What we term a long poem is, in fact, merely a succession of brief ones; that is to say, of brief poetical effects. It is needless to demonstrate that a poem is such, only inasmuch as it intensely excites, by elevating, the soul; and all intense excitements are, through a physical necessity, brief. For this reason, at least one half of the *Paradise Lost* is essentially prose, a succession of poetical excitements interspersed, inevitably, with corresponding depressions, the whole being deprived, through the extremeness of its length, of the vastly important artistic element, totality, or unity, of effect.

Does this mean that Poe would have reached similar conclusions regarding the *Commedia?* Would he have claimed the lack of "totality of effect"?

Poe is wrong here (emphatically so regarding Milton), but, like Shelley who carried a similar prejudice, he is wrong for the right reasons.[4] Why he is wrong is linked to the key concept of how the soul of man is elevated through poetry.

Man rightly distinguishes himself from all inferior beings by virtue of having a soul, or what Dante also called man's "intellectual virtue." That is, man historically reproduces his species not through genetic mutation, but through progressive revolutions in technology which mediate his increasing power of mastery of the laws of the physical universe.

LaRouche has shown how such development embodies exponential rates of increase for the total per capital energy throughput and for the ratio of free energy to it, manifested in quantitatively and qualitatively improved levels of material and cultural consumption. It is this negentropic social development that uniquely produces a growing population of human beings with increasingly greater powers of mastery over the laws of the universe. At the same time, it is individual human beings who uniquely mediate this process by their creative contributions to the invention, application, and assimilation of necessary technological innovation. Thus generalized progress of the human species generates higher qualities of single human beings, while it is such enhanced human beings that are necessary to further global progress. Although single human beings are mortal, they contribute to mankind's undying progress by virtue of their uniquely human capacity for creative thinking; thus they are truly human, and immortal.

It follows that knowledge of this man-directed developing universe cannot be articulated in terms of any one set of fixed physical laws governing any one mode or invariant of human development. If the characteristic of the universe, proven by human history, is the successive transformation from one *geometry* (or set of invariant laws) to a higher-ordered geometry, then human knowledge—which has permitted this development—must be of the same order as the Cantorian *transfinite* or *transinvariant* governing a nested succession of self-developing geometries. Knowledge must itself be self-perfecting, or it cannot be knowledge of the universe in which we live. And the foundation for knowledge must be what Plato called the higher hypothesis. The higher hypothesis itself, in rigorously Platonic terms, is a process of universal self-perfection which reflects the ontologically primary self-perfecting process of the universe (God).

To grasp the higher hypothesis as empirically real, the individual mind must participate in universal self-perfection, must itself *be* a continuing process of self-perfection.

Apostolic Christianity, in the tradition of the great Saint Augustine,[5] portrays this struggle for self-perfection as the human soul's deliberate struggle to reach atonement with God. It is as the human mind experiences development of its own capacities for creative thinking that it "knows God," because it experiences for itself that process of self-perfection which is the only coherent law of the universe, in the only way it can be experienced.

Which is why poetry is necessary. Poetry perfects the individual mind, and communicates the laws through which generalized human perfection occurs. Without poetry there could be no human history, because poetry is the knowledge of the creative human mind governing history. Poetry is the very soul of science.[6]

John Milton

Poetry enhances the creative mind, as Shelley and Poe knew, by "exciting the soul," exciting the essence of the creative capacity in the preconscious mind. (In this sense, Shelley is right to say that poetry is *divine*.) But how does this occur? Does poetry act like inspiration on the mind, stirring the embers of thought to brightness, to then let them fade and die? Is poetry's "excitation" of the soul necessarily a fleeting, transient thing? Or is that not the question at all?

Poe actually provides a hint of the required solution. In his discussion of Milton, he suggests that the impression of "excitement" and "depression" that one receives in reading *Paradise Lost* is altered if one begins again, from the second, not the first, book. Poe cites this hypothetical case to prove that the epic is a "nullity," but what he actually proves is that the problem is not one of duration or length, as he had posed it. If the effect of reading any one part of the long poem in isolation differs according to when the reader reaches that part (beginning from Book I or from Book II), then this proves that the total unifying effect of the epic necessarily lies *in the progress of its own unfolding development*.

But how, Poe would object, can the mind grasp that progress if it necessarily unfolds over extended time? Is not the "excitement" of the soul still transient?

The mind can grasp it with those powers for concentration which are developed and strengthened through the poem itself—concentration, without which creative thinking would be an empty ideal, a dream. It is concentration (or "meditation," in religious guise) which allows the mind, once motivated for thought, to reach into its preconscious recesses and bring hypothesis-creating into consciousness. The nature of poetry is to enhance precisely this faculty, not through duration per se, but through the special intensity characteristic of the epic, which also entails duration.

Poe was correct in lambasting the pitiful critical attempts to justify a bad poem by lauding its "sustained effort." The epics attempted in Poe's lifetime were no epics, but sad imitations. But it would be downright wrong to identify such failures with the nature of epic poetry. History has proven the contrary: that Homer and Virgil's epics, not Greek lyrics or Latin love poetry; Dante's *Commedia* and Milton's *Paradise Lost,* not Petrarch's single canzoni or Elizabethan sonnets; that these have provided the means for human history to make bold thrusts forward.

Dante and Milton knew what they were doing. They knew they were not addressing only the developed, creative mind. Their stated intention (and this has nothing to do with the "didactic" intent in poetry that Poe justly abhors) was to create creative minds. Their intent was the same that motivated Plato's dialogues, as well as Poe's own best poetry and short stories. It was to raise the consciousness of the mind from the state of Plato's bronze soul to that of the silver soul and finally to reach the state of Socratic Reason characteristic of the golden soul. Dante was addressing bronze souls. He resolved to bring his reader's mind out of its infantile object fixation and consequently reduced attention span, to raise it to a capacity for rational, formal thought, and thence to force a breakthrough into the heights of Reason. Although the quality of creative thinking of Paradise dependent on conceptualizing the ontological primacy of processes demands the deepest powers for intensive concentration, which the reader manifestly lacks at the onset of Hell, it is precisely the function of the poem as a whole to develop those concentration powers.

This is how the *Commedia* "excites the soul."

INFERNO

Illustrations to the Commedia *by Sandro Botticelli (1447?-1515)*

Nel mezzo del cammin di nostra vita
mi ritrovai per una selva oscura,
ché la dirittavia era smarrita.

In the midway of this our mortal life,
I found me in a gloomy wood, astray,
Gone from the path direct.. . .
[Inferno I, 1-3]

At the turning point in his life, Dante finds himself lost in the forest. His escape is barred by the menacing presence of three fierce beasts, a lion, a leopard, and a wolf. Virgil appears to lead him out to the eternal place

ov'udirai le disperate strida,
vedrai li antichi spiriti dolenti,
che la seconda morte ciascun grida;

Where thou shalt hear despairing shrieks, and see
The spirits of the past's tormented souls
Bewail their second death. . . .
[I, 115-117]

Dante is initially reassured and agrees to follow the tortuous path through hell to heaven. But soon self-doubt assails him.

Ma io perché venirvi? o chi 'l concede?
Io non Enea, io non Paolo sono:
me degno a ciò né io né altri crede.

But I, why should I there presume? and who
Permits it? I'm no Aeneas, not a Paul.
Myself I deem not worthy, and none else
So deems me.
[II, 31-33]

The mind hesitates, terrified by the monumental task awaiting it, and seeks refuge in consoling self-denigration. Virgil answers with a rebuke of Dante's cowardly soul, "by vileness stained," and explains who has deemed him worthy of salvation; "three blessed women" (Mary, Beatrice, and Lucy) have concurred to rescue Dante from perdition. Dante is spurred by Virgil's uncompromising demand and moved by Beatrice's loving solicitude and,

Quali i fioretti, dal notturno gelo
chinati e chiusi, poi che 'l sol li 'mbianca
si drizzan tutti aperti in loro stelo

As flow'rets, by the frosty air of night
Bent down and closed, when day has blanched
their leaves,
Rise all unfolded on their spiry stems
[II, 127-129]

he wins over his weariness, recovering the strength to move.

Entering Hell requires moral decision and emotional fortitude. It is no easy task. Its very signposts are an enigma to the frightened, forlorn soul.

"Per me si va ne la città dolente,
per me si va ne l'etterno dolore,
per me si va tra la perduta gente.
Giustizia mosse il mio alto fattore;
fecemi la divina potestate,
la somma sapienza e 'l primo amore.
Dinanzi a me non fuor cose create
se non etterne, e io etterna duro.
Lasciate ogni speranza, voi ch'entrate."

"Through me you pass into the city of woe;
Through me you pass into eternal pain:
Through me among the people lost for aye.
Justice the founder of my fabric moved:
To rear me was the task for power divine,
Supremest Wisdom, and Primeval Love.
Before me, things create were none, save things
Eternal, and eternal I endure.
All hope abandon, ye who enter here."

[III, 1-9]

Dante begins to discern meaning in Virgil's explanation of these cryptic words inscribed over the gate to Hell as he spies amid inchoate, doleful cries in divers tongues, the "sad souls of those who lived with neither infamy nor praise" ("l'anime triste di coloro/che visser sanza infamia e sanza lodo") *[III, 35-36]*. These are the souls of those who never really lived ("che mai non fur vivi"), those unwilling to commit themselves to a cause; the souls of those who, faced with events determining the life or death of the human species, retire into the wretched anonymity of personal life; those who, like Pope Celestino V, abdicate rather than fulfill their assigned responsibilities. Even Hell rejects such ignominious nullities, and consigns them to an infernal nowhere, where in numberless swarms they race behind a standard-bearer, himself eternally circling and unable to ground his ensign in one place.

After Charon ferries them across the Acheron, Dante and Virgil begin their descent into the "blind world" ("cieco mondo"). In Limbo, where the souls of the unbaptized abide, a host of poets led by Homer welcomes Virgil and, after brief consultation, also Dante. Honored to be numbered among the greatest names in poetry (among them Horace, Ovid, and Lucan), Dante discreetly converses with his peers and, passing through the seven gates surrounding a noble castle, reaches a verdant lawn peopled with the souls of antiquity. Here he is greeted by the "philosophical family" ("filosofica famiglia") including Socrates, Plato, Democritus, Diogenes, Anaxagoras, Thales, Empedocles, Heraclitus and Zeno, Euclid, Ptolemy, Hippocrates, ibn-Sina, Galen, and Averroes. These are Dante's philosophical and poetical forebears, barred from heaven solely because they lived before the revelation of Christ.[7]

The monster Minos guards the entrance to the second circle; as each damned soul approaches, the terrible Minos judges him and winds his tail round as many times as corresponds to the number of the circle of Hell the soul is thus assigned to. Minos attempts to bar Dante's entrance (as had Charon), but Virgil's almost magical phrase

"vuolsi così colà dove si puote
ciò che si vuole, e più non dimandare"

". . .So 'tis willed,
Where Will and Power are one. Ask thou no more."

[V, 23-24]

unlocks the beast's resistance, and they enter, met by the blast of an infernal tempest.

Whirling winds ceaselessly drive on, as they turn and beat the souls of the lustful therein entwined, wailing and swearing against God:

E come li stornei ne portan l'ali
nel freddo tempo a schiera larga e piena,
così quel fiato li spiriti mali:
di quà, di là, di giù, di su li mena;
nella speranza li conforta mai,
non che di posa, ma di minor pena.
E come i gru van cantando lor lai,
faccendo in aere di sé lunga riga,
così vidi venir, traendo guai,
ombre portate da la detta briga:
per ch'i' dissi: "Maestro, chi son quelle
genti che l'aura nera sì gastiga?"

And as in wintertime the starling troops
Are borne abroad on multitudinous wing,
So bears that tyrannous gust the evil souls;
It drives them to and fro, and up, and down,
And never comforts them with any hope
Of rest, or even of diminished pain.
And like the cranes stretched out in long array
That chanting their lament go through the sky,
So I beheld the shades of that brigade
Whipped forward, moaning as they came.
So then I said, "Teacher, who are those
People whom the blackened air so scourges?"
[V, 40–51]

Dante is moved as he hears Virgil identify Dido, Cleopatra, Helen, and Achilles, and he asks leave to speak to two lovers wafting towards them. In answer to his call,

Quali colombe dal disio chiamate,
con l'ali alzate e ferme al dolce nido
vegnon per l'aere dal voler portate;
cotali uscir de la schiera ov'è Dido,
a noi venendo per l'aere maligno,
sì forte fu l'affettuoso grido.

. . .As doves
By fond desire invited, on wide wings
And firm, to their sweet nest returning home,
Cleave the air, wafted by their will along;
Thus issued, from that troop where Dido ranks,
They, through the ill air speeding; with such force
My loving cry prevailed.
[V, 82–87]

Dante implores the soul of Francesca to tell the tale of how she and Paolo were overwhelmed by desire; she comments

"Nessum maggior dolore
che ricordarsi del tempo felice
ne la miseria: e ciò sa 'l tuo dottore"

"No greater grief than to remember days
Of joy, when misery is at hand. That kens
Thy learn'd instructor,"
[V, 121–123]

and then begins her painful tale:

"Noi leggevamo un giorno per diletto
di Lancialotto come amor lo strinse:
soli eravamo e sanza alcun sospetto.
Per più fiate li occhi ci sospinse
quella lettura, e scolorocci il viso;
ma solo un punto fu quel che ci vinse.
Quando leggemmo il disiato riso
esser baciato da cotanto amante,
questi, che mai da me non fia diviso,
la bocca mi baciò tutto tremante.
Galeotto fu il libro e chi lo scrisse:
quel giorno più non vi leggemmo avante."

"One day, to pass the time, we sat and read
Of Lancelot, and how love wrung his heart:
We were alone, with no suspicion near.
And many times that reading made us lift
Our eyes, and gazing, drained our cheeks of hue;
But it was only at one point we fell.
When we read how the much desirèd smile
Was kissed by such a valiant lover, then
This one, who never shall divided be
From me, at once my lips all trembling kissed.
That book, and he who wrote it, was a pimp:
We read no further in its leaves that day."
[V, 127–138]

Dante is so overpowered by her tale that he falls "como corpo morto cade," losing all consciousness.

The dramatic confrontation with Francesca and Paolo has shattered the

mind, unlocking emotions so deep as to render it helpless. What happens after the mind effects this first crucial release of guilt-colored emotion, as consciousness returns, is the onset of confusion and sadness, broken by the onrush of further images, emerging as if from the depths of memory.[8]

. . . novi tormenti e novi tormentati
mi veggio intorno, come ch'io mi mova
e ch'io mi volga, e come che io guati.

. . . straight around I see
New torments, new tormented souls, which way
Soe'er I move, or turn, or bend my sight.

[VI, 4-6]

Here, in the third circle, spirits of gluttons lie prostrate, groveling on the stinking ground that hail, dark rain, and snow fill with their stench. Three-headed Cerberus uses his cruel nails to claw and rend and quarter the screaming sinners, and menaces Dante and Virgil until the latter quiets him by thrusting fistfuls of rotten earth into his three voracious mouths.

After conversing with the glutton Ciacco, who predicts a future White victory in Florence, Dante and his guide proceed ever downwards, passing the "damned wolf" Pluto who guards the fourth circle, where the hoarders and spendthrifts are crowded:

Qui vidi più ch'altrove troppa,
e d'una parte e d'altra, con grand'urli,
voltando pesi per forza di poppa.
Percoteansi incontro; e poscia pur lì
gridando: "Perché tieni?" e "Perché burli?"

The wretched here here more numerous I found
And from both sides with mighty shouts they came
Rolling great weights with only their breasts' force.
They smashed into each other, and then turned
Each one against the next, as they rolled back
Screaming: "You pinchfist!" and "You squanderer!"

[VII, 25-30]

Crossing through the masses of sinners blinded by money, they descend to the muddy, swampy river of Styx, within whose mire the souls of the wrathful bump and clash with hands, heads, feet and chests, rending each other's flesh with their teeth. "Under the water," Virgil explains,

"ha gente che sospira,
e fanno pullular quest' acqua al summo,
como l'occhio ti dice, u' che s'aggira."

". . . there swells a multitude, whose sighs
Make this water heave and burp up bubbles,
As you can see, whichever way you turn."

[VII, 118-120]

Boiling, infantile rage, yearning for the outlet of pure, irrational frenzy is plunged beneath the muddy waters, suffocated for all eternity. Yet rage demands its outlet. While Flegias, fuming with anger, ferries them across the Styx, Filippo Argenti reaches out his muddied arms to grab at Dante until Virgil repulses him. Dante, infuriated, longs to see the disgusting wretch submerged beneath the muddy waters, a desire Virgil promptly assures him will be respected. Sweet vengeance!

They arrive at the burning city of Dis, where guardian demons impede their entrance. Dante panics and wants to turn back, but Virgil holds firm. Before them the city towers are in flames, and there appear

tre furie infernal di sangue tinte,
che membra femminine avieno e atto,
e con idre verdissime eran cinte;

At once three hellish Furies stained with blood;
In limb and motion feminine they seemed;
Around them greenest hydras twisting rolled

serpentelli e ceraste avean per crine,
onde le fiere tempie erano avvinte.

And little adders and cerastes crept,
Instead of hair, and their fierce temples bound.
[IX, 38–42]

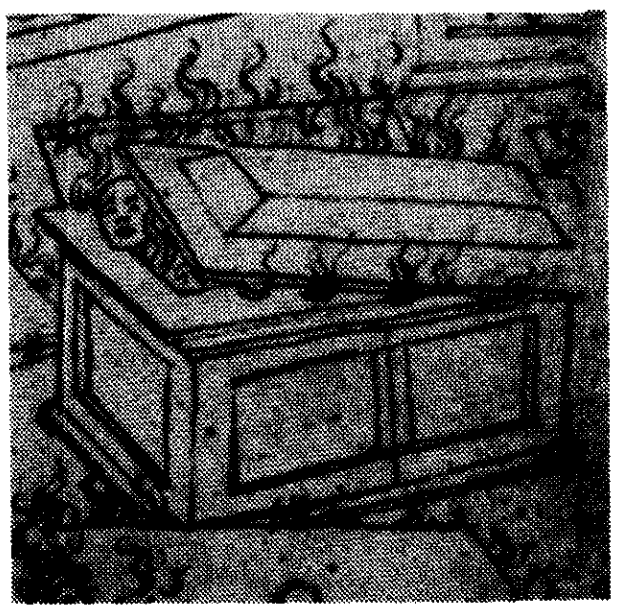
Virgil checks their vicious threat to unloose Medusa. Then, with the force of a thunderbolt devastating a forest, a messenger from heaven appears, forcing open the gates to the city with the flutter of a wand. Dante and Virgil enter the field of torment and flaming tombs; emerging among them are the monumental figures of Farinata and Cavalcanti, damned to the eternal obsession of things past. Dante is summoned to listen:

"O Tosco che per la città del foco
vivo ten vai così parlando onesto,
piacciati di restare in questo loco.
La tua loquela ti fa manifesto
di quella nobil patria natio
a la qual forse fui troppo molesto."
Subitamente questo suono uscio
d'una de l'arche; però m'accostai,
temendo, un poco più al duca mio.
Ed el mi disse: "Volgiti: che fai?
Vedi là Farinata che s'è dritto:
da la cintola in su tutto 'l vedrai."
I' avea già il mio viso nel suo fitto;
s'ergea col petto e con la fronte
com'avesse l'inferno in gran dispitto.
E l'animose man del duca e pronte
mi pinser tra le sepulture a lui,
dicendo: "Le tue parole sien conte."
Com'io al piè de la sua tomba fui,
guardommi un poco, e poi, quasi sdegnoso,
mi dimandò: "Chi fuor li maggior tui?"
Io ch'era d'ubidir disideroso,
non gliel celai, ma tutto gliel'apersi;
ond'ei lev'ò le ciglia un poco in soso;
poi disse: "Fieramente furo avversi
a me e a miei primi e a mia parte,
sì che per due fiate li dispersi."
"S'ei fur cacciati, ei tornar d'ogni parte"
rispuosi lui "l'una e l'altra fiata;
ma i vostri non appreser ben quell'arte."
Allor surse a la vista scoperchiata
un'ombra lungo questa infino al mento:
credo che s'era in ginocchie levata.
Dintorno mi guardò, come talento
avesse di veder s'altri era meco;
e poi che il sospecciar fu tutto spento,
piangendo disse: "Se per questo cieco
carcere vai per altezza d'ingegno,
mio figlio ov'è? perchè non è ei teco?"
E io a lui: "Da me stesso non vegno:
Colui ch'attende là, per qui mi mena,
forse cui Guido vostro ebbe a disdegno."

"Oh Tuscan, thou, who through the city of fire
Alive art passing, so discreet of speech:
Here, please thee, stay awhile. Thy utterance
Declares the place of thy nativity
To be that noble land, with which perchance
I too severely dealt." Sudden this voice
Forth issued from a vault, and I, in fear,
On hearing it drew closer to my guide.
But he spoke to me: "Turn! What dost thou do?
Lo! Farinata lifts himself amain,
You'll view him from the waist on up entire."
Already I'd fixed my countenance on his;
He thrust his breast and brow so grandly up
As if all Hell he held in high contempt.
Thereat, with fearless hands and prompt, my guide
Shoved me toward Farinata through the graves,
This warning added: "Mind thy words be clear."
He, soon as I there stood at the tomb's foot,
Eyed me a bit, then in disdainful mood
Addressed me: "Say what ancestors were thine."
I, willing to obey him, straight revealed
The whole, nor kept back aught: this caused his brow
To rise somewhat; then he came back with this:
"Fiercely were they adverse to me and mine,
My party and my forebears—so, abroad
I scattered them not once but twice." "Although
They were chased out, they came back from all parts,"
I answered him, "the first time and the next;
Yours did not show the skill to learn that art."
Then surging from its tomb's lid next to this,
A shade rose to my sight, high as the chin:
I think he raised himself upon his knees.
He looked all 'round me, as his wish it were
To see if any other came with me;
Then weeping, his suspicions spent without
Result, he asked, "If you this sightless jail
Traverse by means of high intelligence,
Then where's my son? Why is he not with you?"
I straight replied: "Not of myself I come;
By him, who there expects me, I am led,
Whom your son Guido might have held in scorn."
The words and mode of punishment of him

Le sue parole e 'l modo de la pena
m'avean di costui già letto il nome;
però fu la risposta così piena.
Di subito drizzato gridò: "Come
dicesti? elli ebbe? non viv'elli ancora?
non fiere li occhi suoi il dolce lome?"
Quando s'accorse d'alcuna dimora
ch'io facea dinanzi a la risposta,
supin ricadde e più non parve fora.
Ma quell'altro magnanimo a cui posta
restato m'era, non mutò aspetto,
né mosse collo, né piegò sua costa;
e sé continuando al primo detto,
"S'egli han quell'arte" disse "male appresa,
ciò mi tormenta più che questo letto."

Already had his name read out to me,
Whence I so fully answered. Suddenly
He started up and yelled, "What did you say?
He *had*? Does he not live today? Does not
The sun's sweet light still strike upon his eyes?"
When he became aware of some delay
I made before responding to his plea,
This shade fell supine, no more to appear.
Meanwhile the other, great of soul, near whom
I yet was stationed, changed not countenance stern,
Nor moved his neck, nor bent his ribbéd side;
But went right on with what was said before.
"If they've been poor to learn that art," he said,
"That torments me far more than this ill bed."
[X, 22–78]



Enraged, obstinate, and heretical, the infantile mind pulsates with its own uncontrollable irrationality, fixated obsessively on past events and shattered by the world of change. Impelled by lustful, gluttonous appetites, the infantile mind longs to clutch and possess the objects and ideas it fixates on, objects which then enslave the mind in endless fixity and sterility.

The bestialized mind, wading into the waters of simple sin, muddies itself in degradation, only to plunge further and faster into the entropic, self-feeding whirlpool of deeper sin. He who feeds his own untempered appetites soon finds himself unsated, longing for the perverse pleasure of violent deeds. There seems to be no end, no limit, no measure to identify the unfathomable depths of heinous crime in once-human beings.

Yet Hell's degradations can be measured. As Virgil explains, though Hell is the very paradigm of this disorder, there is an order imposed on its chaos: order exemplified by the pitiful Aristotelian categories of immorality. Hell is organized, rationalized Hell. Below the upper Hell of incontinence, Virgil explains, the city of Dis leads to the circle of violence and frauds; violence subdivided into three smaller circles, according to the victim of violence: whether God, oneself, or another person. Further down in infamy is Malebolge, the nether Hell grouping, in ten subdivisions, panderers and seducers, flatterers, simoniacs, sorcerers and witches, grafters, hypocrites, thieves, fraudulent advisors, sowers of discord, and falsifiers (of persons and things). And in the lower circle, the pit holds the most despicable of men, traitors to their families, their countries, their guests, and the Lord *[XI]*.

Armed with this parody of a concept to rationalize the irrational, Dante rallies his forces to begin the descent into Malebolge, towards the abominable pit.

Escaping the wrath of the minotaur, Dante and Virgil reach the Phlegethon,

la riviera del sangue in la qual bolle
qual che per violenza in altrui noccia.

. . . the river of blood
Approaches, in which all those are steeped
Who have by violence injured.
[XII, 47–48.]

Here they see murderers and tyrants hunted like beasts and struck by the fierce blows of the minotaur's arrows. Fording the boiling bloody river at its

lowest point, Dante proceeds with Virgil to enter a wood populated by harpies:

Ali hanno late, e colli e visi umani,
piè con artigli, e pennuto il gran ventre;
fanno lamenti in su li alberi strani.

Wide of wing, and human of face and neck,
Claw-footed, their huge belly plumed below,
They sit and wail on the outlandish trees.
[XIII, 13-15]

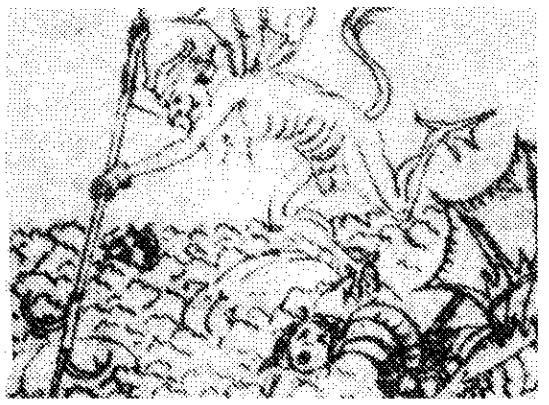
Hearing mournful cries issuing as if from nowhere, Dante follows Virgil's prompting to grab one of the truncated branches growing in the wood, and the branch cries out in pain: "Why do you break me? . . . Why do you rip me?/Have you no trace of pity in your soul?" ("Perché mi schiante?. . . Perché mi scerpi?/ Non hai tu spirito di pietà alcuno?") *[XIII, 33, 35-36]*. It is the soul of the suicide Pier della Vigna who heaves and sighs as he tells Dante how the souls of suicides sprout into sapling trees, to be harassed by the vicious harpies. A horde of hounds races by pursuing the souls of profligate gamblers and wreckers, rending their nude forms to pitiless bits. Further on, they spy the souls of those who have wrought violence against God through blasphemy, against nature through sodomy, and against art through usury; they are condemned to populate a burning desert exposed to the perpetual rain of fire. Through the burning sands pass Dante and Virgil, to descend, borne by the winged beast Geryon, down into Malebolge.

The voyage down into the lower, most articulated region of the underworld involves a qualitative descent, because it leads not only to baser sins but to the core of baseness itself. Gripped by terror, Dante clings to Geryon, and Virgil to him; the beast turns on itself to move away from the bank, his paws gathering in the empty air. Blackness covers all, and the slow, slow downward swim is perceptible only through the blasts of air striking Dante's face, the sound of the rushing cascades, and then the faint cries emanating from among dim glimmers of tiny flames. Like a falcon called in by his master, Geryon alights on the nether land, placing first one foot and then the other firmly on the rocky terrain; after Dante and Virgil dismount, Geryon shoots away. This, then, is the "luogo . . . in inferno detto Malebolge," the eighth circle subdivided into ten concentric circles of frauds.

Here the panderers and seducers run incessantly in opposite directions, whipped and scourged by horned demons; the flatterers, in the second *bowge,* swim about in human excrement and fuming stench. The simoniacs, churchmen who sell out the church for profit, are thrust upside down in holes the size of baptismal fonts, their toes wriggling in tiny flames. As Dante passes aboveground, the subverted Pope Nicholas III cries out, thinking him Pope Boniface VIII, the next pontiff expected to arrive, who will thrust Nicholas one slot further down. The magicians and sorcerers, who had fraudulently gazed into the future, occupy the fourth *bowge,* their heads wrenched round backwards, unable to look or walk ahead. In the fifth *bowge,* crooked politicians guilty of graft and corruption swim frenziedly in a lake of boiling pitch, while a band of demons subjects them to brutal attacks with pointed pitchforks.

Non altrimenti i cuochi a' lor vassalli
fanno attuffare in mezzo la caldaia
la carne con li uncin, perché non galli

E'en thus the cook bestirs him, with his grooms,
To thrust the flesh into the caldron down
With meat-hooks, that it float not on the top.
[XXI, 55-57]



As they cross over to the next trench in the company of ten such uncouth fiends, Dante fixates on the grafters, who rise above the surface of the pitch like dolphins, and pause, like frogs at a pond's edge, with their noses above water, until thrust back under by the assailant demons. In the sixth trench they find the hypocrites,

una gente dipinta
che giva intorno assai con lenti passi,
piangendo e nel sembiante stanca e vinta.
Elli avean cappe con cappucci bassi
dinanzi a li occhi, fatte de la taglia
che in Clugnì per li monaci fassi.
Di fuor dorate son sì ch'elli abbaglia;
ma dentro tutto piombo. . .

a painted tribe,
Who paced with tardy steps around, and wept,
Faint in appearance and o'ercome with toil.
Cloaks they had on, with hoods, that fell low down
Before their eyes, in fashion like to those
Worn by the monks in Cluny. Their outside was
Overlaid with gold, dazzling to view,
But leaden all within . . .

[XXIII, 58-65]

The next circle houses the naked souls of thieves running in a pit of snakes that, biting them, transform them to dust and back into themselves; others undergo continuous metamorphoses into snakes and back. Passing the souls of those who provided fraudulent advice to political leaders and in retribution are engulfed in flames, Dante and Virgil move further downward, to those damned for having sown discord among mankind; their bodies are rent by demons' swords, their members transformed into bloody stumps, their heads, like that of Bertram de Born, held in hand like a bloody lantern.

The falsifiers inhabit the tenth circle of Malebolge, which embraces the gamut of physical suffering. Disease wracks the bodies of the damned souls, who produce such horrendous laments that Dante has to cover his ears with his hands. Crawling on their bellies, seated, writhing, the falsifiers are heaped up in mounds of bodily suffering and decay. Leprosy, rabies, dropsy, and malaria fever plague their tormented bodies.

io vidi due sedere a sé poggiati,
com'a scaldar si poggia tegghia a tegghia,
dal capo al piè di schianze macolate;
e non vidi già mai menare stregghia
a ragazzo aspettato dal segnorso,
né a colui che mal volentier vegghia,
come ciascun menava spesso il morso
de l'unghie sopra sé per la gran rabbia
del pizzicor, che non ha più soccorso;
e sì traevan giù l'unghie la scabbia,
come coltel di scardova le scaglie
o d'altro pesce che più larghe l'abbia.

Then two I marked, that sat
Propped 'gainst each other, as two brazen pans
Set to retain the heat. From head to foot
Their hides abloomed with scabs. Nor saw I e'er
Groom currying so fast, for whom his lord
Impatient waited, or himself perchance
Tired with long watching, as of these each one
Plied quickly his keen nails, the raving itch
Still never to appease. The scabby crust
Came down from underneath in flakes, like scales
Scraped from the bream, or fish of broader mail.

[XXIX, 73-84]

Reaching down into the depths of Hell, Dante and Virgil arrive at the innermost, lowest circle, where the most despicable sinners, the traitors, lie immobile, their heads fixed this way or that in the frozen lake of Cocytus that imprisons them. Traitors who had betrayed their own country, despicable wretches who held no loyalty even to their families or benefactors, shudder in the infernal ice:

E come a gracidar si sta la rana
col muso fuor de l'acqua, quando sogna
di spigolar sovente la villana;
livide, insin là dove appar vergogna
eran l'ombre dolenti ne la ghiaccia,
mettendo i denti in nota di cicogna.

As frogs peep above the wave and croak
And squat that hour when village maid oft dreams
She still is bent to glean the summer field,
So to the level of their shameful parts
Blue pinched and shrined in ice the spirits stood,
Clacking their teeth in shrill note like the stork.
[XXXII, 31-36]

Among them sits Count Ugolino della Gherardesca, eternally gnawing on a skull. Ugolino had allied with Bishop Ruggieri to betray his own grandson Nino, only to be imprisoned with his children by the double traitor Ruggieri. Killed by starvation with the children, Ugolino now gnaws on Ruggieri's skull.

Is there anything more base in the spectrum of human degradation? Can suffering exceed Ugolino's, feeding on the skull of his partner in betrayal, tormented by the memory of his children, dying of starvation and offering up their bodies for his survival? Can horror exceed this horror? The mind boggles at the attempt to figure greater misery, to imagine more heinous sin. It asks, near delirious, is this not enough?

Yet it is not enough. In the center of the ghastly pit, surrounded by giants, is the arch-traitor, he who betrayed God Himself. Lucifer, the fallen angel, stands massive at Hell's center, with three giant heads and six giant wings, rivers of tears and blood pouring out of his six eyes, and in each of his terrible mouths a traitor, Judas Iscariot in the center with his head submerged and his legs dangling helplessly out.

Dante and Virgil climb down the scraggy, hairy body of Lucifer until, reaching the thigh, Virgil

volse la testa ov'elli avea le zanche,
e aggrappossi al pel com'uom che sale,
sì che 'n inferno i' credea tornar anche.

Turned round his head where his feet stood before,
And grappled at the fur like one who mounts;
That into Hell methought we'd turned again.
[XXXIV, 79-81]

Which leads them out through a rocky opening. From here Dante looks back on Lucifer and sees the beast upside down, with his legs seemingly in the air.

What has happened?

We have reached the Pit. We have explored the mind of infantile, Hobbesian man enslaved to irrational passion. We have tried with him to access reality through the avenues of brute sense perception. We have heard, smelled, felt, and now touched the array of seemingly chaotic objects the existentialist mind throws onto the stage of reality. Hell is that mind, informing, perverting the objective reality of human history.

We have experienced the chaos and have struggled to impose an Aristotelian rationalization on it. Looking back, we begin to spy some other, more fundamental order emerging. From the blurry images of moral indifference, through the whirling winds of lust, to the gluttons pelted by rain and hail, we have seen sin take on a more graphic, plastic solidity; as the mind gropes into the recesses of its own exposed unconscious, it comes to grips with the ever more plastic, sensuous reality of heteronomy. Sin becomes concrete and historical; it stands out in bold relief through the increasingly powerful forms of towering, historical personages; from the nebulous shapes of those who rejected history and their role in it, we have passed to those

who betrayed history through heteronomy and sin; Filippo Argenti and Farinata, Pier della Vigne and Brunetto Latini, and on down to Ugolino and Judas, to Lucifer himself.

Sin's plasticity increases as one descends into Hell, parallel to the increasing precision with which Aristotelianism catalogues its moral entropy. In Malebolge the categories fan out to subsume still more subcategories and degrees; sin multiplies its faces and types, each one challenging the preceding in plastic tangibility. Yet the categories do not aid understanding, they defy it, mocking it with their scrupulous detail. In the mental state proper to Hell, thought itself is out of reach. One applies categories, but one cannot think. One can only *feel* and *react.* Dante faints at Francesca's torment, explodes in rage at Filippo Argenti's assault and seeks cold revenge; he is indignant at Farinata's arrogance, terrified by Pier della Vigne's response, frightened by the vulgarity of the demons. He weeps, faints, gapes, and clings to Virgil for protection. He forms no questions beyond a generic "what's that?" Like an impotent child, he feels and reacts.

Thought, and the fountainhead of thought, moral purpose, are impotent; the Hobbesian mind cannot think, concentrate, but only respond irrationally to the stimuli of abhorrent reality. It can only free-associate, stumbling from one dreadful vision of madness to the next, prey to the multiple reverberations of fear's bastard offspring:

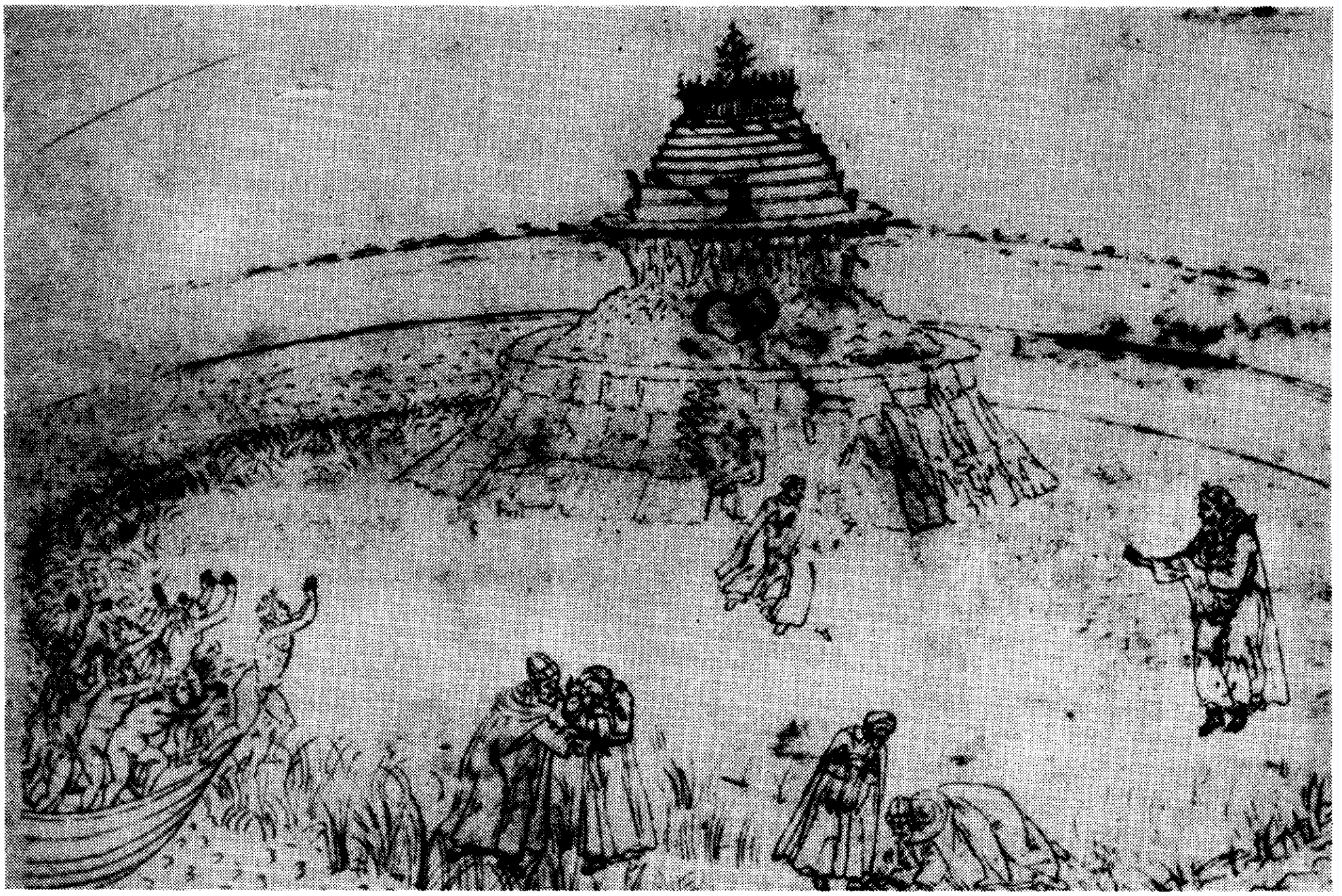
E come l'un pensier de l'altro scoppia,
così nacque di quello un altro poi,
che la prima paura mi fe' doppia.

And as one thought bursts from the other forth,
So afterward another from that sprang,
That doubled my first fear. . . .
[XXIII, 10-12]

And yet not all is in vain. There is a method in the madness. As the mind traverses its own Hell, two processes unfold. First, by facing the successive forms of sin in their increasing vividness and multiplicity, the mind begins to intuit the heteronomic principle of sin lurking behind the myriad categories. And second, by so doing, the mind in fact distances itself from what it confronts as sin. A kind of moral strength is developed by the mind that rallies the courage required to stand and stare the insanity in the face. It is by traversing the tortuous road down into the depths of insanity that one establishes a grip on simple self-consciousness, mooring oneself firmly in the conviction that, despite the fact that the horror witnessed is a product of one's own infantile irrationalism, yet the self *is not identified* with the insanity. The self is looking at it.

As you look boldly into the faces of that madness, from Francesca to Farinata and Ugolino, yes, you are frightened by the recognition that what you see is not alien to the recesses of your own degraded feelings; but you know, as you progress deeper into those recesses of infantilism, that that is not your unique human identity. You reject the very suggestion that such should be the case and, recoiling in horror and recognition, you prove that that is not your *self.* You touch the nadir of human sin, Lucifer, and as your skin, touching his, creeps with horror, you recoil. You wrest yourself forcefully free and in so doing *invert Hell's very order.* You see Sin now overturned, Lucifer's legs in air, his heads thrust downward; you have overcome it and are above it. You know now that you are capable of shedding off the mire of degradation and becoming human.

With that precious bit of achieved knowledge, and only with that knowledge, can you begin to nurture hope of salvation.



PURGATORIO

Dante emerges out of Hell's blackness to gaze again on the light shed by the stars. Virgil initiates the process of Dante's purification by bathing his face with fresh dewy grass.

Glancing down at the firm ground beneath his feet, the first thing that Dante sees is the shadow his form casts on the ground, a shadow that will accompany him and only him on the exhausting climb up Mount Purgatory. He stares awestruck at this shadow, the first sign of self-reflection, and is fascinated. Like him, the sinners he meets fixate on the curious shadow:

una gridò: "Ve' che non par che luca
lo raggio da sinistra a quel di sotto,
e come vivo par che si conduca!"
Gli occhi rivolsi al suon di questo motto,
e vidile guardar per maraviglia
pur me, pur me, e'l lume ch'era rotto.

"See," one shouted, "there seems not to shine
Below, the ray that strikes him from the left,
And like a living man he seems to walk!"
Mine eyes averting at this sudden sound,
I saw them gaze in wonder right at me,
Yes, right at me, and at the broken light.
[Purgatory V, 4–9]

Until Virgil jars him out of his daze:

"Perché l'animo tuo tanto s'impiglia?"
disse 'l maestro, "che l'andare allenti?
che ti fa ciò che quivi si pispiglia?
Vien dietro a me, e lascia dir le genti;
sta come torre ferma, che non crolla
già mai la cima per soffiar de'venti;

"Why are thy thoughts thus riveted," my guide
Exclaimed, "that thou hast slacked thy pace? or how
Imports it thee, what thing is whispered here?
Come after me, and to their babblings leave
The crowd. Be as a tower, that, firmly set,
Shakes not its top for any blast that blows.

ché sempre l'uomo in cui pensier rampolla
sovra pensier, da sé dilunga il segno,
perché la foga l'un dell'altro insolla."

He, in whose bosom thought on thought shoots out,
Still of his aim is wide, in that the one
Sicklies and wastes to nought the other's strength."
[V, 10–18]

To be sure, one must reflect and one must self-reflect, but this is not the nature and end of thought. To mature, the mind must be firm and move relentlessly onward toward its goal lest it be entrapped by solipsistic wiles.

Pushing upward toward the door of Purgatory, Dante and Virgil pass by a group of souls who had repented only at the moment of death. They request that Dante, on return to Florence, solicit prayers for their salvation. This leads Dante to ask Virgil a question: how can prayers effect any change in God's predetermined will? Virgil answers that if insincere, prayer is of no avail. But the answer is only partially satisfactory, as the guide himself admits:

"Veramente a così alto sospetto
non ti fermar, se quella nol ti dice
che lume fia tra 'l vero e lo 'ntelletto:
non so se intendi; io dico di Beatrice:
tu la vedrai di sopra, in su la vetta
di questo monte, ridere e felice."

"Yet in this deep suspicion rest thou not
contented, unless she assure thee so,
Who betwixt truth and mind infuses light:
I know not if thou take me right; I mean
Beatrice. Her thou shalt behold above,
Smiling and glad, upon this mountain's crown."
[VI, 43–48]

Formal understanding thus signals a beginning but is not yet true knowledge.

As he approaches Purgatory's door, Dante sees three different-colored steps leading up to the guardian angel stationed there:

E come l'occhio più e più v'apersi,
vidil seder sovra 'l grado soprano,
tal ne la faccia ch'io non lo soffersi;
e una spada nuda avea in mano,
che reflettea i raggi sì ver noi,
ch'io drizzava spesso il viso in vano.

As more and more mine eye did stretch its view,
I marked him seated on the highest step,
In visage such, as past my power to bear.
Grasped in his hand, a naked sword glanced back
The rays so toward me, that I oft in vain
My sight directed.
[IX, 79–84]

Dante mounts the steps of reflection, confession, and repentance and the angel describes seven P's on Dante's forehead with the tip of his sword, saying "Look. . ./when entered, that thou wash these scars away" ("Fa che lavi,/quando se' dentro, queste piaghe") *[IX, 113–114]*. Burdened thus with the weight of seven deadly sins, Dante enters into Purgatory seeking purification.

With the sound of *Te deum laudamus* in his ear, Dante climbs up the first circle, and on the white marble wall he sees bas-reliefs carved by the hand of a classical sculptor, the first depicting the Annunciation:

L'angel che venne in terra col decreto
de la molt'anni lacrimata pace,
ch'aperse il ciel del suo lungo divieto,
dinanzi a noi pareva sì verace
quivi intagliato in un atto soave,
che non sembiava imagine che tace.

The angel who brought tidings down to earth
Of peace so many years wept for in vain,
That oped the heavens from their long interdict,
Before our eyes so to the life he seemed
There sculptured in his gentle act, he looked
No silent image. Yea, one could have sworn

Giurato si saria ch'el dicesse "Ave!";
Perché iv'era imaginata quella
ch'ad aprir l'alto amor volse la chiave;
e avea in atto impressa esta favella
"Ecce ancilla Dei," propriamente
come figura in cera si suggella.[9]

That he said "Hail!" for figured there was she,
Who turned the key that opened for mankind
The love of God. And in her act she had
As sensibly impressed this speech: "Behold
The handmaid of the Lord," as if, in sooth,
These words were stamped by seal in molten wax.
[X, 34–45]

Dante stares fixedly at the relief until Virgil's words

"Non tener pur ad un loco la mente"

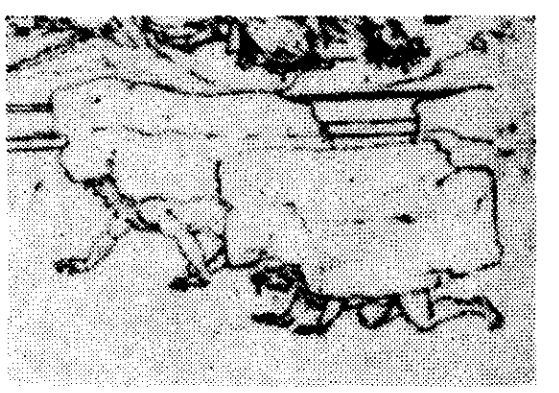
"Fix not thy mind on one place only"
[X, 46]

awaken him to the presence of other beautiful works of sculpture depicting similar biblical scenes of humility. He examines each scene carefully and, looking up at the sound of sinners approaching, addresses the reader with these words:

Non vo' peró, lettor, che tu ti smaghi
di buon proponimento per udire
come Dio vuol che 'l debito si paghi.
Non attender la forma del martire:
pensa la succession; pensa ch'al peggio,
oltre la gran sentenza non può ire.

Reader! I would not that amazed thou miss
Of thy good purpose, hearing how just God
Decrees our debts be cancelled. *Ponder not*
The form of suffering. Think on what succeeds;
Think that, at worst, it cannot pass beyond
The final sentence of the Judgment Day.
[X, 106–110]

Do not fixate (as the character Dante tended to do) on the single discrete image shown you, but mark the succession and grasp, comprehend this reality as the process unfolds before you.



The sinners approaching are those who did not know humility; on the contrary and in ironic contrast to the preceding pictorial images of humility, they have sinned the sin of pride. Men once filled with arrogance, heads held high in the air, now drag their weary bodies slowly, weighed down by the burden of massive stones pressing down on their shoulders.

Come per sostentar solaio o tetto,
per mensola tal volta una figura
si vede giugner le ginocchia al petto,
la qual fa del non ver vera rancura
nascere in chi la vede; così fatti
vid'io color, quando puosi ben cura.
Vero è che più o meno eran contratti
secondo ch'avean più o meno a dosso;
e qual più pazienza avea ne li atti,
piangendo parea dicer: "Più non posso."

As, to support incumbent floor or roof,
Sometimes for corbel is a figure seen,
That crumples up its knees unto its breast;
With the feigned posture, stirring ruth unfeigned
In the beholder's fancy; so I saw
These fashioned, when I noted well their plight.
'Tis true that each, as his back was laden,
Came more or less contracted; and it seemed
The one who most showed patience in his look
Still wailing cried: "I can endure no more."
[X, 130–139]

Among them Dante recognizes Odirisi, the once-famous miniaturist from Paris, who tells him of the vanity of personal glory.

Credette Cimabue ne la pittura
tener lo campo, e ora ha Giotto il grido,

. . .Cimabue thought
To lord it over painting's field, and now

sì che la fama di colui è scura.
Così ha tolto l'uno a l'altro Guido
la gloria de la lingua; e forse è nato
chi l'uno e l'altro caccerà del nido.
Non è il mondan romore altro ch'un fiato
di vento . . .

The cry is Giotto's, and his name eclipsed.
Thus hath one Guido from the other snatched
The lettered prize: and he, perhaps, is born,
Who shall drive either from their nest. The noise
Of worldly fame is but a blast of wind.
[XI, 94-101]

The implications of Odirisi's words cannot escape Dante's self-reflection. It is of course Dante himself who will supersede both Guidos (Guinicelli and Cavalcanti) in Italian letters. But what sinfulness can reside herein? Why should excellence in art, letters, or science entail the guilt of pride?

Achievement itself, in fact, is not the sin. Sin lies in the kind of mind reaching for that achievement. The mind of Kantian man, the mind of Purgatory, is formally rational; thus, it is capable of articulating thoughts and systematizing those thoughts into the semblance of creative work. It can attain excellence in a specific field and, in so doing, can taste the reward of real accomplishment. But the thrust motivating this achievement of the Kantian mind is the notion of mere duty, duty which, once scrupulously fulfilled, yearns for its reward: recognition, praise, and—ah!—sweet fame! The good Kantian, urged on by the quest for personal recognition, thus perverts the significance of human creative accomplishment, both for himself and others; he wants not achievement *for* generalized human progress, but the transient fruits of self-importance, recognition, superiority. All others involved in the quest for achievement become his rivals, fierce competitors for a morsel of public acclaim. As a result, whether the Kantian knows it or not, the fame he so fervently sought is quickly superseded, subsumed in the unbrakeable process of human progress. Progress which by definition must be the progressive superseding of creative innovations. In reality, the individual who truly gains immortality is he who contributes qualitative advances in and for human knowledge. But since that knowledge, to be real, must be characterized by continuous advancement, the creative man's contribution must in fact lead to its own overcoming. The greatest contributions to science are those which not only answer hitherto unsolved problems but open the doors to posing hitherto unasked questions. Thus Cimabue's greatness lies not in his particular achievement but in his having made Giotto's breakthroughs necessary and possible. If Cimabue had no Giotto to follow and supersede him, that would merely mean that culture and science were dead.

"Oh vana gloria de l'umane posse!
com poco verde in su la cima dura,
se non è giunta da l'etati grosse!"

"O powers of man! how vain your glory, nipt
E'en in its height of verdure, if an age
Of darkness does not follow close thereon."
[XI, 91-93]

But who could wish this new dark age on humanity? Would you want science to die after you, to leave your epitaph shining in the solitude of a cultural wasteland? Could you prefer fame bought at such a price? Can you sincerely wish failure on your colleagues and posterity merely to assure your own wretched "prominence"?

"Thy sayings true/Breathe meekness to my heart, its tumors soothe," Dante replies to Odirisi's considerations ("Teo vero dir m'incora, bona

umiltà, e gran tumor m'appiani") *[XI, 118-119]*. Dante can grasp the relevance of the problem, even for himself. In fact, it is Dante's capacity to participate in Odirisi's penitance that earns him the slow steady conquest of salvation. An angel appears to lead the way to the next ridge, and, with a gentle touch of the wing and a flash of light, brushes off the first of Dante's inscribed P's. Suddenly he feels lighter and, incredulous about what has occurred, puts his hand to his forehead to make sure only six P's remain. He glances at Virgil with a reassured smile, and plods dutifully onward.

Thus through the remaining six circles upwards, Dante reenacts the drama of contrition in emulation[10] of the penitent sinners he beholds step by step. And each time, as he is confronted with a company of sinners, he also apprehends the glimmering image or sound of virtue. On approaching the assembly of invidious souls, whose eyes are sealed shut with wire, Dante hears voices dramatizing acts of love and generosity; while in the cornice of the wrathful, who are enveloped in smoke, Dante envisions scenes of meekness, and so on. And each time, an angel appears to him in an unbearable flash of light to whisk away the marks of sin from his forehead.

Thus the slow methodical Kantian mind plods on with discipline and perseverance in its determined quest for salvation. This is the mind of the relatively good, moral person; the person who, knowing and rejecting the irrational impulses simmering beneath consciousness, dutifully acts to control them through methodical virtuous practice. One draws up lists à la Benjamin Franklin of "do's" and "don'ts" to guide daily social practice into the categories of moral behavior. One imposes on reality a set of rigid, albeit laudable, mores reflecting the contours of some fixed universal law. And one follows such law to the letter.

To such a formalist mind, the world is susceptible of rationality. Yet the balance is precarious: irrationality is neither defeated nor eliminated, but merely subjected to control through the Kantian "negation of the negation." "If that impulse is sinful, I must repress it; I must practice the corresponding virtue." "I hate that person's guts, but I will love him, I *will,* I *will!*" "I will check off my seven P's, one by one, in the 'sin' column of my moral accounting books, and I will reach virtue."

All well and good for a stable society. Fortunately for humanity's survival, society is made up largely of such Kantian beings. They rise in the morning, wash, go to work; put in eight hours, return home to dine; drink beer, watch television, kiss the children goodnight, and go to bed. On Sundays they go to church or the football game; in Germany, they wash their cars. And society tends to function; offices work, production and trade continue, people live, marry, and have children.

But where is knowledge? Where is the science needed to organize society's forward progress, to lend meaning to those millions of lives? The moral, *gründliche* Kantian does not know. He is entrapped by the very symmetry of those categories that permit his moral behavior. Science, real knowledge, eludes him. The nagging antinomies of reason taunt and mock his inflexibility. How can prayers influence God's will, Dante asks, if God's will is eternally fixed above the variations of human longing and desire? How is it possible, he demands, that a greater number of souls, when sharing God's grace in heaven, could receive more of this wealth than if their total number were smaller *[XV]*? And how is it that man falls into sin, if God has ordered His universe around goodness and love? Does the exercise of man's free will then mean that God is not omnipotent *[XVI]*?

The Kantian mind can be active, aggressive, seeking to untie the knots of devastating contradiction. It can discover certain formal responses to nagging doubts, but no definitive answer exists; each doubt opens the door to an answer, and each answer unlocks new doubts.

"Le tue parole e 'l mio seguace ingegno"
rispuos'io lui "m'hanno amor discoverto,
ma ciò m'ha fatto di dubbiar più pregno . . ."

"What love is," I returned, "thy words, oh guide,
And my attentive mind reveal. Yet thence
New doubts have sprung . . ."

[XVIII, 40-43]

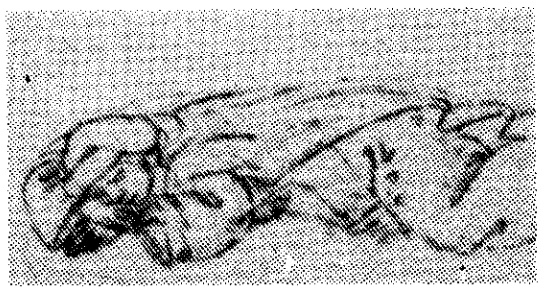
The Kantian mind can discover a set of universal laws as definitions; through questioning and logical reasoning, it strips the veils of unclarity off a fixed universe. It can categorize, organize logical "points," and describe general processes. But it cannot "get inside" reality, cannot move with the self-motion of those universal processes it forces into static categories. The Kantian is a good, moral logician, but he is not *creative*.

Virgil has stated that it is *love* that moves universal processes. The Kantian does not know love, and that is his problem. He may know *about* love; in fact, he is usually *very much interested in the subject*. So interested, that he begs Virgil to provide him with an adequate definition of this thing, love:

"Però ti priego, dolce padre, caro,
che mi dimostri amore, a cui reduci
ogni buon operare e 'l suo contraro."

"Wherefore I pray thee, father, dear to me,
Thou wouldst by proof unfold that love from which
Derive all good deeds and their opposites."

[XVIII, 13-15]



What is this new category, he wants to know. What is this secret that moves the universe? Virgil obliges his eager student with a formal definition, but Dante is not yet satisfied. Like a good Kantian, he decides to formulate the concept for himself, to imagine what love must be.

But what happens when the formalist tries to conceptualize love? First of all, he sleeps! And in his sleep, of course, he dreams.

mi venne in sogno una femmina balba,
ne li occhi guercia, e sovra i piè distorta,
con le man monche, e di colore scialba.

There came to me a woman in a dream,
All stuttering, cross-eyed and lame of foot,
With mutilated hands, and sallow face.

[XIX, 7-9]

The image is grotesque, a cruel parody of love. But the Kantian mind will not desist, it will force the vision to adhere to the desired category:

Io la mirava; e come il sol conforta
le fredde membra che la notte aggrava,
così lo sguardo mio le facea scorta
la lingua, e poscia tutta la sdrizzava
in poco d'ora, e lo smarrito volto,
com'amor vuol, così le colorava.
Poi ch'ell'avea il parlar così disciolto,
cominciava a cantar sì che con pena
da lei avrei mio intento rivolto.

I looked upon her: and, as sunshine cheers
Limbs numbed by nightly cold, e'en thus my look
Unloosed her tongue; next, in brief space, her form
Decrepit raised erect, and faded face
With love's own hue illumined. Recovering speech,
She forthwith, warbling, such a strain began,
That I, however loath, could scarce have held
Attention from the song. "I," thus she sang,
"I am the Syren sweet, whom mariners,

"Io son" cantava, "io son dolce serena,
che i marinari in mezzo mar dismago;
tanto son di piacere a sentir piena!
Io volsi Ulisse del suo cammino vago
al canto mio; e qual meco si ausa,
rado sen parte; sì tutto l'appago!"

On the wide sea, lose bearings when they hear;
wide sea, lose bearings when they hear;
Such fullness of delight the listener feels.
I, from his course, Ulysses by my lay
Enchanted drew. Whoe'er once frequents me,
Parts seldom; so I sate his every want."
[XIX, 10-24]

And in so doing it is caught, captured by the creature of its fantasy until outside aid wakes it out of its fascination:

Ancor non era sua bocca richiusa,
quand'una donna apparve santa e presta
lunghesso me per far colei confusa.
"O Virgilio, o Virgilio, chi è questa?"
fieramente diceve; ed el venia
con gli occhi fitti pur in quella onesta.
L'altra prendea, e dinanzi l'apria
fendendo i drappi, e mostravami il ventre:
quel mi svegliò col puzzo che n'uscia.

Her mouth was not yet closed, when at my side,
To shame her, suddenly appeared a dame
Of holy semblance. With stern voice she said,
"Oh Virgil, say, oh Virgil! Who is this?"
Which hearing, he approached, with eyes still bent
Toward that goodly presence: the other seized her,
And, her robes tearing, opened her before,
And showed the belly to me, whence a stench,
Exhaling loathesome, wakened me again.
[XIX, 25-33]

Why should the stench remain, unhid by dogged fantasy? Why is the concept faulty, pornographic? Dante should know by now what love is; he should at least know it by negation. In fact all of Purgatory has been the progressive definition of what love is not.

He has seen the suffering of defective love throughout. He has witnessed the perversion of love in the form of the proud, the invidious, and the wrathful sinners; he has empathized with the plight of the slothful, who, lacking the will to love, are sentenced to run incessantly in Purgatory until their defect is overcome. He has seen the covetous and the gluttonous who had oriented their excessive desires in inappropriate direction, and he has repented with them. He has encountered the unnaturally lustful sinners, running to and fro in opposite directions, and has recognized his companion love poets, Guinicelli, Guittone, and Daniel Arnaut among them. He has heeded the words of Guido in all their relevance:

Versi d'amore e prose di romanzi
soverchiò tutti. . . .
A voce più ch'al ver drizzan li volti,
e così ferman sua oppinione
prima ch'arte o ragion per lor s'ascolti.

Ditties of love and romances of prose,
He all of those surpassed. . . .
To rumors, more than truth, they turn their heads,
And thus they make their minds up long before
The voice of art or reason can be heard.
[XXVI, 118-119, 121-123]

and realized that the bestiality of their sodomy is merely the expression of the intellectual self-conception these poets formed for themselves, caring more about favorable opinion than about truth.

This Dante has grasped; he has purged himself of the sins deriving from defective love and has been lightened of his burden as the last of the seven P's is removed from his forehead. *But he has not yet reached love.*

Love evidently requires more than the negation of such defects. Love is not simple observance of formal virtue. Love means breaking the mind loose

of the harness of categorical imperatives, moving the mind forward in discovery, through and with the Other. To love, one must leave behind categorical self-regulation; one must break free of this fearful obsession with controlling one's threatening irrational self.

For Dante, this means going through a wall of fire.

The angel of God, singing *Beati mundo corde,* addresses Dante:

. . ."Più non si va, se pria non morde,
anime sante, il foco: intrate in esso,
ed al cantar di là non siate sorde."

"Go ye not further, holy spirits," he cried,
"Ere the fire pierce you: enter in; and be
Not deaf unto the song you hear from thence."
[XXVII, 10-12]

But Dante, looking at the fire, is struck by terror and the recollection of "burning bodies seen before" ("umani corpi già veduti accesi") *[XXVII, 18].*

Volsersi verso me le buone scorte;
e Virgilio mi disse: "Figliol mio,
qui può esser tormento, ma non morte."

The escorting spirits turned with gentle looks
Toward me, and then Virgil spoke: "My son,
Here torment thou mayest feel, but canst not death."
[XXVII, 19-21]

Virgil encourages him, recalling how many times he had protected Dante through the terrors of hell and urging him to confidently overcome his fears.

"Pon giù omai, pon giù ogni temenza:
volgiti in qua; vieni ed entra sicuro!"

"Lay now all fear, oh! lay all fear aside.
Turn hither, and come onward undismayed."
[XXVII, 31-32]

But Dante does not, cannot move:

E io pur fermo e contr'a coscienza.

I still, though conscience urged, no step advanced.
[XXVII, 33]

The Kantian mind knows what it should and must do. Dante knows Virgil speaks the truth, that he must cross through the wall of fire. His conscience tells him so, but despite this knowledge, he cannot will that perceived necessity to inform his emotions. His ideas are clearly defined and agreed upon at the rational level, but his emotions are worlds away.

This is the crux of the Kantian problem. The mind desires in all sincerity to bring forth new ideas, to create, but the emotions block the concept, preventing it from reaching fruition. You know that to carry the germ of an idea to fruition you must not only abandon all previous, defective notions of self but merge identity emotionally with the developing conception, bring it forth socially with the sole consideration that that idea is a necessary contribution to generalized human progress. You must plunge into the wall of fire and leave all *fear* behind. But how?

Quando mi vide star pur fermo e duro,
turbato un poco, disse: "Or vedi, figlio:
tra Beatrice e te è questo muro. "

When still he saw me fixed and obstinate,
Somewhat disturbed he cried: "Mark now, my son,
This wall divideth thee from Beatrice."
[XXVII, 34-36]

Beatrice! the name for that universal purpose! Beatrice is the focus, Beatrice, the reason why the agonizing journey has begun. Beatrice, not your obsessive, selfish fear, is where the mind must reach; act not *against* fear, but *for* Beatrice.

Come al nome di Tisbe aperse il ciglio
    Piramo in su la morte, e riguardolla,
    allor che'l gelso diventò vermiglio;
così, la mia durezza fatta solla,
    mi volsi al savio duca, udendo il nome
    che ne la mente sempre mi rampolla.

As at Thisbe's name the eye
    of Pyramus was open'd, when life ebbed
    Fast from his veins, and took one parting glance,
While vermeil dyed the mulberry, thus I turned
    To my sage guide, relenting, when I heard
    The name that springs forever in my mind.
[XXVII, 37-42]

Enter the fire, fearless, let it burn:

Sì com fui dentro, in un bogliente vetro
    gittato mi sarei per rinfrescarmi,
    tant'era ivi lo 'ncendio sanza metro.

I would have cast me into molten glass
    To cool me, when I entered; so intense
    Raged the conflagrant mass. . . .
[XXVII, 49-51]

No matter what the agony, you know what you are thinking *for*:

Lo dolce padre mio, per confortarmi;
    pur di Beatrice ragionando andava,
    dicendo: "Li occhi suoi già veder parmi."

To comfort me, my loving father still
    Discoursed of Beatrice as he went on,
    Saying: "Her eyes e'en now I seem to see."
[XXVII, 52-54]

You know you are becoming human and you have the initial glimmerings of what love is. Dante again sleeps, but the dream has changed. He sees:

giovane e bella in sogno mi parea
    donna vedere andar per una landa
    cogliendo fiori; e cantando dicea:
"Sappia qualunque il mio nome dimanda
    ch'i' mi son Lia, e vo movendo intorno
    le belle mani a farmi una ghirlanda.
Per piacermi a lo specchio, qui m'adorno;
    ma mia suora Rachel mai non si smaga
    dal suo miraglio, e siede tutto giorno.
Ell'è de' suoi belli occhi veder vaga,
    com'io de l'adornarmi con le mani;
    lei lo vedere, e me l'ovrare appaga."

A lady young and beautiful, I dreamed,
    Was passing o'er a lea; and, as she came,
    Methought I saw her ever and anon
Bending to cull the flowers; and thus she sang:
    "Know ye, whoever of my name would ask,
    That I am Leah; for my brow to weave
a garland, these fair hands unwearied ply.
    To please me at the crystal mirror, here
    I deck me. But my sister Rachel, she
Before her glass abides the livelong day,
    Her beauteous eyes beholding, charmed no less
    Than I with this delightful task. Her joy
In contemplation, as in labor mine."
[XXVII, 97-108]

He sees it while roaming through the earthly paradise:

una donna soletta che si gìa
    cantando e scegliendo fior da fiore
    ond'era pinta tutta la sua via.

A lady all alone, who, singing, went
    And culling flower from flower, wherewith her way
    Was all o'er painted.
[XXVIII, 40-42]

Leah, Rachel, Mathilde, all young beautiful women, progressive approximations leading Dante's newly awakened capacity for love to embrace the vision of love herself.

Unfolding before his eyes then is the bril'iantly colored pageant of the sacrament: seven golden chandeliers lead a procession of elders and winged creatures, followed by a griffon-drawn chariot with three dancing women, red, emerald, and white, at one side, and four purple-clad figures on the other, with seven elders following behind. Crowning the vision is Beatrice herself, who appears with the brilliance of the sun rising on the east:

. . .così dentro una nuvola di fiori
che da le mani angeliche saliva
e ricadeva in giù dentro e di fori,
sovra candido vel cinta d'uliva
donna m'apparve, sotto verde manto
vestita di color di fiamma viva.

. . .thus, in a cloud
Of flowers, that from those hands angelic rose,
And down within and outside of the car
Fell showering, in white veil with olive wreathed,
A lady in my view appeared beneath
Green mantle, robed in hue of living flame.
[XXX, 28-33]

The vision of Beatrice evokes the full recollection of Dante's love, which so overwhelms the mind that he seeks aid from Virgil. But Virgil is no longer here to guide him. The terror of facing this love alone grips him, and the mind slips back into tearful self-commiseration.

Love is not an easy fairy-tale gift that, once clutched, is kept; love is a tough intellectual fight demanding perseverance. Beatrice vigorously polemicizes with Dante's frailty and demands that he lift his teary eyes to meet her gaze:

"Guardaci ben! Ben son, ben son Beatrice.
Come degnasti d'accedere al monte?
Non sapei tu che qui è l'uom felice?"

"Look on me well. I am indeed, I am
Beatrice. How hast thou deigned to approach
The mount? Know'st not man's happiness is here?"
[XXX, 73-75]

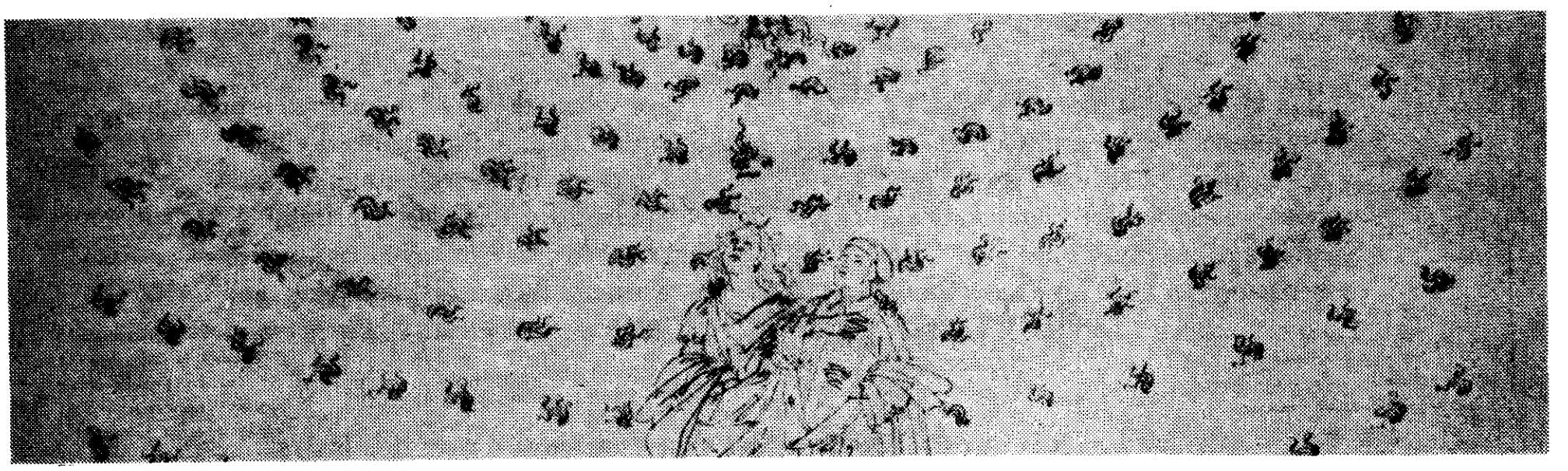
She demands that Dante reflect on his emotions. He must force himself now to articulate the reasons why, years back, he had abandoned his pursuit of Beatrice and fallen into sin. He must confess, he who has reached his vision of love must explicitly and self-consciously identify what in his own mind had led him astray. This Dante struggles to do:

Piangendo dissi: "Le presenti cose
col falso lor piacer volser miei passi,
tosto che 'l vostro viso si nascose."

Wailing, I said: "Thy fair looks once withdrawn,
Things present, with deceitful pleasures, turned
My steps aside."
[XXXI, 34-36]

Things present! (*Le presenti cose!*) That is what led him from Reason, the petty selfish concern for transient, mundane affairs. Now he has grasped the truth about himself, conceptualized it, socialized it. By so doing, the mind affirms its own self-consciousness, which is its embryonic human identity. From this achieved standpoint, the memory of sin can be washed away in the waters of Lethe and baptism in the river Eunoè can strengthen the power of memory to retain truth.

Dante now can enter Paradise.



PARADISO

Paradise is not the end of the journey, it is the proper beginning. It is here that the mind, freed of infantile obsession and Kantian formalism, begins to participate in the self-movement of a self-developing universe. But it is neither automatic nor easy; the joy of creative discovery which rings throughout Paradise comes only as we struggle relentlessly to expand and fortify our developing capacity for love and concentration.

Dante warns the reader at the opening of Canto II that the maximum powers of mind are required:

O voi che siete in piccioletta barca,
desiderosi d'ascoltar, seguiti
dietro al mio legno che cantando varca,
tornate a riveder li vostri liti:
non vi mettete in pelago, ché, forse,
perdendo me rimarreste smarriti.

All ye, who in small bark have following sailed,
Eager to listen, on the adventurous track
Of my proud keel, that singing cuts her way,
Now backward turn with speed to your own shores,
Nor put out to the open sea, to lose
Perchance my course, and there remain adrift.
[Paradise II, 1–6]

What is required is concentration, the intellectual expression of love. Dante concentrates his gaze on Beatrice, whose face is directed to the sun:

E sì come secondo raggio suole
uscir del primo e risalire in suso,
pur come pellegrin che tornar vuole,
così de l'atto suo, per li occhi infuso
ne l'immagine mia, il mio si fece,
e fissi li occhi al sole oltre nostr'uso.

As from the first a second beam is wont
To issue, and reflected upwards rise,
Even as a pilgrim bent on his return;
So of her act, that through the eyesight passed
Into my fancy, mine was formed: mine eyes,
Beyond our wont, I then fixed on the sun.
[I, 49–54]

It is this concentrated gaze into Beatrice's eyes and, through imitation of her gaze, into the sun's blinding light, that establishes the "I-thou" relationship between my mind and the mind of the other. Thought moves towards consciousness as I willfully reflect the image of my thought in your mind, mirroring it in your thought and grasping it as reflected. This first level of dialoguing self-consciousness creates the process leading to Dante's ascent to knowledge.[11]

But how, Dante wonders, can we ascend against the known laws of gravity? Beatrice explains how God's universe is ordered to allow this:

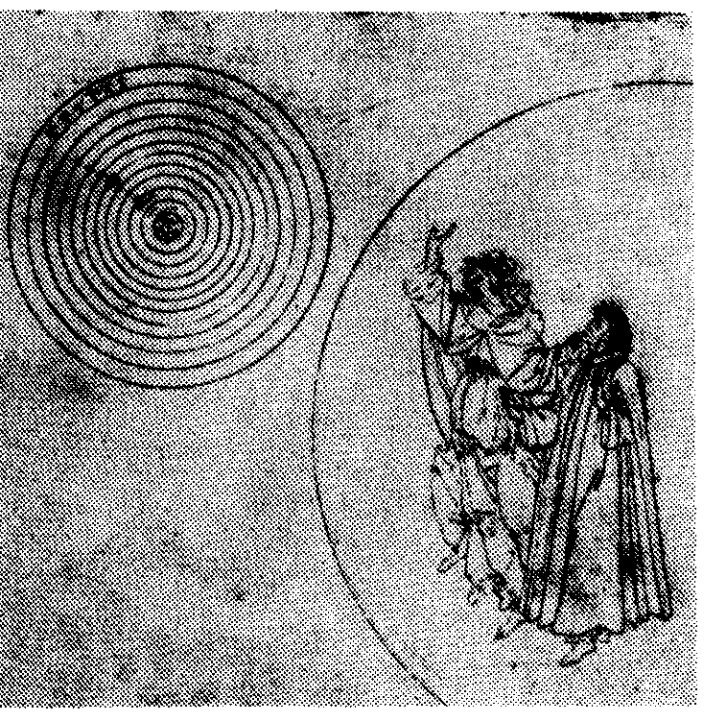
"Qui veggion l'alte creature l'orma
de l'etterno valore, il quale è fine

"Here higher creatures see the printed steps
Of that eternal worth, which is the end

al quale è fatta la toccata norma.
Ne l'ordine ch'io dico sono accline
tutte nature, per diverse sorti,
più al principio loro e men vicine;
onde si muovon a diversi porti
per lo gran mar de l'essere, e ciascuna
con istinto a lei dato che la porti."

For which the law I mentioned is prescribed.
All natures lean, in this their ordering,
Diversely by their destinies inclined;
Some more, some less approaching to their source;
Thus they to different havens are moved on
Through the great sea of being, and each one
With instinct given, that bears it on its course."

[I, 106–114]



It is not strange therefore that they should rise; it is lawful, because they are not apples fallen from some Newtonian tree, they are creatures "who have intellect and love" *[I, 120]*. Thus we have risen to the moon, the first of the nine spheres leading up to God.

Dante is received into the moon's sphere "as water receives a ray of light, remaining unified" *[II, 35–36]*, and he asks why the moon's surface has darkened areas. Why is it not unified? Is it because the material substance of the moon is thicker in some places and thinner in others? Or is there another reason? Beatrice rejoices: Dante, no longer self-obsessed, is plunging into inquiry of the laws of the physical universe. However, she does not embrace his empiricist hypothesis; she refutes it by explaining the differentiation of *virtù* in God's universe. If Dante's hypothesis were correct and the moon had varying densities, this would become apparent to the naked eye during an eclipse, as the sun's rays would shine through the thinner, transparent areas. If the dark spots on the moon denoted indentations on the surface, Dante might thing that these depressed areas reflected less intense light, thus causing the appearance of dark spots. But this too is false, as the experiment described by Beatrice demonstrates:

"Tre specchi prenderai; e i due rimovi
da te d'un modo, e l'altro, più rimosso,
tr'ambo li primi li occhi tuoi ritrovi.
Rivolto ad essi, fa che dopo il dosso
ti stea un lume che i tre specchi accenda
e torni a te da tutti ripercosso.
Ben che nel quanto tanto non si stenda
la vista più lontana, lì vedrai
come convien ch'igualmente risplenda."

"Three mirrors shalt thou take, and two remove
From thee alike; and more remote the third,
Between the former pair, shall meet thine eyes:
Then turned toward them, cause behind thy back
A light to stand, that on the three shall shine,
And thus reflected come to thee from all.
Though that, beheld most distant, do not stretch
A space so ample, yet in brightness thou
Wilt own it equaling the rest."

[II, 97–105]

Why then the dark spots? Within the ninth sphere there moves a body containing all, such that the eighth sphere, distinct from it, is yet contained in it. And so on throughout the remaining spheres of the universe. The movement and *virtù* of the heavenly bodies comes from God, whose mind impresses its image on all.

E come l'alma dentro a vostra polve
per differenti membra e conformate
a diverse potenze si risolve,
così l'intelligenza sua bontate
multiplicata per le stelle spiega,
girando sé sovra sua unitate.
Virtù diversa fa diversa lega
col prezioso corpo ch'ella avviva,

And as the soul, that dwells within your dust,
Through members different, yet together formed,
Resolves itself into its different powers;
E'en so divine intelligence unfolds
Its goodness multiplied throughout the stars;
On its own unity revolving still.
Different virtue compact different
Makes with the previous body it enlivens,

nel qual, sì come vita in voi, si lega.

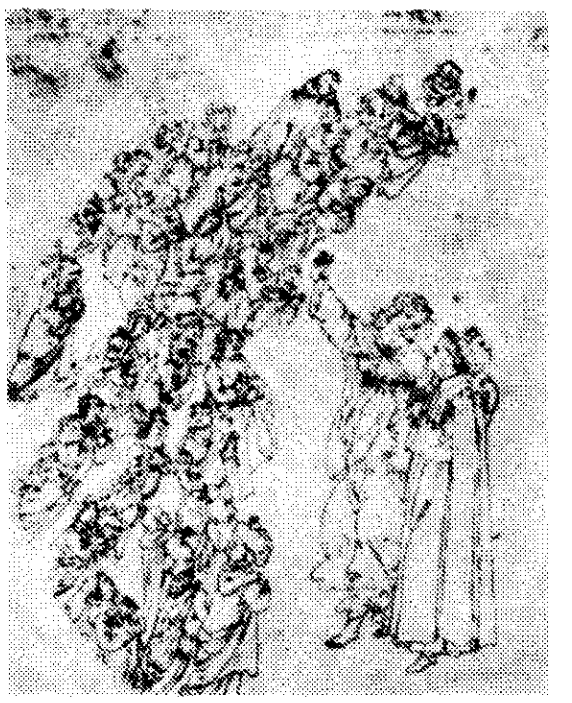
With which it knits, as life in you is knit.
[II, 133-141]

Which explains the dark spots. Reflecting on this newly acquired truth, Dante's vision is moved by the approach of blessed souls.

Quali per vetri trasparenti e tersi,
o ver per acque nitide e tranquille,
non sì profonde che i fondi sien persi,
tornan di nostri visi le postille
debili sì, che perla in bianca fronte
non vien men tosto a le nostre pupille;
tal vid'io più facce a parlar pronte:
per ch'io dentro a l'error contrario corsi
a quel ch'accese amor tra l'omo e 'l fonte.

As through translucent and clear panes of glass,
Or as in waters limpid and serene,
Yet not so deep the bed is out of sight,
The traces of our lineaments return
So faint, our eye as soon would see a pearl
On snowy brow; such saw I many a face,
All stretched to speak; from which I straight conceived
Delusion opposite to that which raised
Between the man and fountain amorous flame.
[III, 10-18]

Dante has mistaken the souls of the inconstant for a mere reflection! Beatrice laughs at his sense deception, and encourages him to speak to Piccarda, who is one of the souls who had broken a vow to God. Dante asks her if she and her company are happy in this sphere of inconstancy, or if they desire to rise higher in the heavenly hierarchy. She answers with a smile that they desire no more that what they have, because any desire contrary to God's will would be impossible in heaven. Thus Dante sees that "everywhere/in heaven is paradise" *[III, 88-89]*, but his appetite for knowledge, rather than being sated, has grown still more voracious. He yearns to know what vow Piccarda broke and, hearing how she was forced to leave her convent to accept a politically motivated marriage, he wonders how she could be held responsible for this, an action forced on her. And if this has merited "punishment," does that explain why Piccarda is here in the lowest sphere instead of being with God?



Beatrice's clarification of the last question underlines the methodology governing paradise:

Qui si mostraro, non perché sortita
sia questa spera lor, ma per far segno
de la celestial c'ha men salita.

Here were they shown thee, not that fate assigns
This for their sphere, but for a sign to thee
Of that celestial furthest from the height.
[IV, 37-39]

Paradise is hierarchical, indeed, but there is no real hierarchy; Piccarda and the other inconstant souls *appear* on the moon merely to manifest the process of ascent to the sense-perceiving Dante. For the same reason, Beatrice explains, it was necessary for the Scripture to condescend to man's sense faculty, attributing human features to God and the angels.[12]

Now Dante understands! Reality does not lie in the image perceived through the sense; reality lies elsewhere! Not only does he grasp the concept of a self-developing universal process underlying ephemeral reality, but he begins to grasp the notion that the process of knowing truth is of the same nature:

Io veggio ben che giá mai non si sazia
nostro intelletto, se 'l ver non lo illustra
di fuor dal qual nessun vero si spazia.
Posasi in esso come fera in lustra,

Well I discern, that by that Truth alone
Enlightened, beyond which no truth may roam,
Our mind can satisfy its thirst to know;
Therein it finds repose, as in his lair

tosto che giunto l'ha; e giugner puollo:
se non, ciascun disio sarebbe frustra.
Nasce per quello, a guisa di rampollo,
a piè del vero il dubbio; ed è natura
ch'al sommo pinge noi di collo in collo.

The savage beast, soon as it reached that bound.
And it hath power to reach it; else desire
Were given to no end. And thence doth doubt
Spring, like a shoot, around the stock of truth;
And it is nature which, from height to height
On to the summit thrusts us.

[IV, 124–132]

Knowledge lies not in the ephemeral notion, but in the process of developing successive hypotheses. Which leads Dante to pose yet another question, about how man can repair the damage of a broken vow. Beatrice glows at him with such joy and brilliance that his senses are nearly blinded; it is the joy of discovering his own capacity for creative discovery that fills her with effulgent splendor.

"Io veggio ben sì como già risplende
ne l'intelletto tuo l'etterna luce,
che, vista, sola e sempre amor accende. . ."

"I well discern how in thine intellect
Already shines the light eternal, which
Once seen, alone and always kindles love. . ."

[V, 7–9]

She readily quenches his new thirst for truth. Vows indeed can be mended, but only in the case that the reparation exceeds the fault. It were better, she concludes, that men be men "and not crazy sheep" *[V, 80]* and take their vows seriously so as not to break them.

This new concept brings us up to Mercury, the second sphere, which grows in luminosity as Beatrice, rising, increases her own shining brightness. Here, the ambitious souls come into Dante's view like fish rising to the surface of a pond to bite a morsel, and Dante meets Justinian dazzling in a nest of light. Justinian relates the history of the Roman Empire down to the present and predicts that God's justice will be done on earth.

This leads Dante to formulate questions that, before he can articulate them, Beatrice has perceived:

"Secondo mio infallibile avviso,
come giusta vendetta giustamente
punita fosse, t'ha in pensier miso;
ma io ti solverò tosto la mente;
e tu ascolta, ché le mie parole
di gran sentenza ti faran presente."

"According to my thought, which cannot err,
How vengeance that is just can justly be
Chastised, has set thee deep in pondering doubt;
But quickly I'll untie this mental knot;
So listen well, and mark thou here my words;
The gift of doctrine high they shall bestow."

[VII, 19–24]

She explains how Adam, damning himself, damned the human species to centuries of error, until God deliberated to send his son, God incarnate, among mankind.

"Or drizza il viso quel ch'or si ragiona."

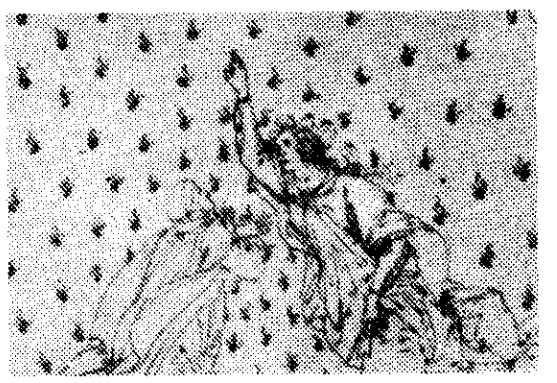
"Direct thy sight now to this reasoning."

[VII, 34]

Since Adam's nature was created good, he was driven from Paradise as a result of his own doing. It was he who broke the vow. The punishment that Christ took on himself was not an unjust act against the person of Christ; it was just, if measured with the nature that he assumed. But this, Beatrice intuits, creates great conceptual problems for Dante:

"Ma io veggi' or la tua mente ristretta
di pensier in pensier dentro ad un nodo,
del qual con gran disio solver s'aspetta.
Tu dici: 'Ben discerno ciò ch'io odo;
ma perché Dio volesse, m'é occulto,
a nostra redenzion pur questo modo.' "

". . . But yet I see thy mind,
By thought on thought arising, sore perplexed;
And how, with vehement desire, it asks
Solution of the maze. 'What I have heard
Is plain,' thou sayest; 'but why God just this way
For our redemption chose, eludes my search.' "
[VII, 52-57]



This problem she promises to solve, explaining "why this manner was more worthy" *[VII, 63]*. Divine goodness, burning in itself, sparks forth unfolding itself in eternal beauties. Whatever is directly created thus, is eternal and is free, especially the human creature. It is only through sin, freely deliberated, that man is disenfranchised and expelled from the dignity of Paradise. The only way man can redeem himself, clearly, is either through God's spontaneous forgiveness or through man's independent reparation.

"Ficca mo l'occhio per entro l'abisso
de l'etterno consiglio, quanto puoi
al mio parlar distrettamente fisso."

"Fix now thine eye, intently as thou canst,
On the everlasting counsel, and explore,
Instructed by my words, that vast abyss."
[VII, 94-96]

But man could never by himself repair the fault, as he would be incapable of reaching the depths of humility greater than the heights of his rebellion. His reparation therefore could never exceed his broken vow. Thus God must intervene, accomplishing the most magnificent act of eternity:

". . . ché più largo fu Dio a dar se stesso
per far l'uom sufficiente a rilevarsi,
che s'elli avesse sol da sé dimesso. . ."

". . . For God more bounty showed
Giving himself to make man capable
To raise himself again, than had the terms
been mere and unconditional release. . ."
[VII, 115-117]

Any other manner would have been insufficient justice, if the son of God were not humiliated through incarnation.

Does this satisfy Dante's question? Or does he, as Beatrice intuits, now need to see *how* man, through Christ, can reach eternity? How, if the world of earth, fire, air, and water is subjected to decay, can man rise above this entropy and taste immortality? Beatrice explains: the elements are indeed subject to corruption, but that is due to their having been created indirectly. Man is different:

"ma vostra vita sanza mezzo spira
la somma beninanza, e la innamora
di sé, sì che poi sempre la disira."

"Your human life, though, Highest Good inspires
Directly, and enamors of itself,
So that forever its desires are here."
[VII, 142-144]

Man, the product of direct divine creation, is eternal. If you have grasped that, you have reached Venus, aware of it or not:

Io non m'accorsi del salire in ella;
ma d'esservi entro mi fe' assai fede
la donna mia ch'i' vidi far più bella.

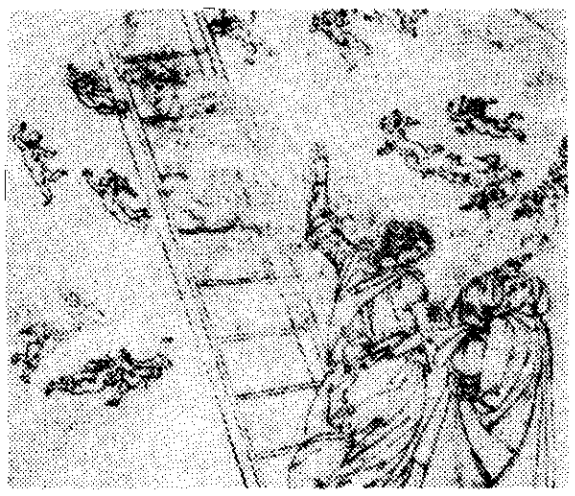
I was not 'ware that I was wafted up
That graced my lady gave me ample proof
That we were there.
[VIII, 13-15]

How do you know you have ascended to the third heaven? You know by the expanding luminous beauty of Beatrice, by the light and motion growing in your own mind as you see it reflected in Beatrice and in the blessed souls emerging into your vision:

E come in fiamma favilla si vede,
e come in voce voce si discerne,
quand'una é ferma e l'altra va e riede;
vid'io in essa luce altre lucerne
muoversi in giro più e men correnti,
al modo, credi, di lor viste interne.

. . . And as in flame
A sparkle is distinct, or voice in voice
Discerned, when one its even tenor keeps,
The other comes and goes; so in that light
I other luminaries saw, that coursed
In circling motion, rapid more or less,
I ween, as each their inner sight impels.

[VIII, 16-21]



You know that you are ascending the ladder of Paradise, because you are discovering powers of conceptualization in yourself that you never dreamed could exist. And you discover that with each newer, higher conceptual victory, you expand your further powers for creative thinking. In that knowledge you rejoice, as Beatrice bursts forth in ever-increasing splendor and the concentric circles of blessed souls, angelic flames, move and sing forth, filling Paradise with contrapuntal harmonies never heard by mortal ears.

You know that now you can look on the miracles of the universe and prize their perfection:

Leva dunque, lettore, a l'alte rote
meco la vista, dritto a quella parte
dove l'un moto e l'altro si percuote;
e lì comincia a vagheggiar ne l'arte
di quel maestro che dentro a sé l'ama,
tanto che mai da lei l'occhio non parte.

Raise then,
Oh Reader! to the lofty wheels, with me
Thy ken directed to the point, whereat
One motion strikes the other: there begin
Thy wonder of the mighty Architect
Who loves His work so inwardly, His Eye
doth ever watch it.

[X, 7-12]

Gaze on the equinoctial points and marvel at the perfect motions of the planets, without whose perfection all order in the universe would be vain. Gaze on it and grasp its internal workings.

Or ti riman, lettor, sovra 'l tuo banco,
dietro pensando a ciò che si preliba,
s'esser vuoi lieto assai prima che stanco.
Messo t'ho innanzi: omai per te ti ciba;

Now rest thee, Reader! on thy bench, and muse
Anticipative of the feast to come;
So shall delight make thee not feel thy toil.
Lo! I have set before thee; for thyself
Feed now;

[X, 22-25]

and rise thus to the sun.

e io era con lui; ma del salire
non m'accors'io, se non com'uom s'accorge,
anzi 'l primo pensier, del suo venire.

And I was with him; but of my ascent
I did not know, except as one perceives
The coming of a thought, ere thinking it.

[X, 33-36]

Rise with the mind, where thought makes itself known before arriving to consciousness. Grasp your own creative preconscious and make the mind move.

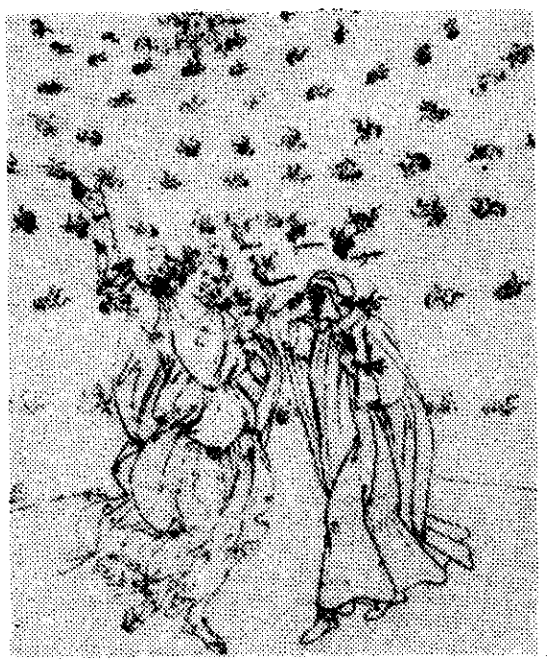
Thus Dante moves upwards through the spheres, through the sun populated by an Aquinas surrounded by Platonists, to Mars, where the blessed warriors form a cross of brilliant flames; to Jupiter, where speech becomes vision as the souls of the just rulers transform themselves into the heavenly command of Solomon, then celebrate the empire in the emblem of the eagle; to Saturn where the contemplative souls abide.

He moves with increasingly strengthened concentration and opens up ever newer capacities of vision. On Saturn, Beatrice prepares him for the ascent up the celestial ladder:

"Ficca di retro a li occhi tuoi la mente,
e fa di quelli specchi a la figura
che'n questo specchio ti sarà parvente."
Dentro al cristallo che 'l vocabol porta,
cerchiando il mondo, del suo caro duce
sotto cui giacque ogni malizia morta,
di color d'oro in che raggio traluce
vid'io uno scaleo eretto in suso
tanto, che nol seguiva la mia luce.
Vidi anche per li gradi scender guiso
tanti splendor, chi'io pensai ch'ogni lume
che par nel ciel quindi fosse diffuso.

"Then concentrate your mind within your eyes
And make your eyes as mirrors for the shape
That in this mirror shall be shown to you."
Within the crystal, which records the name
(As its remoter circle girds the world)
Of that loved monarch, in whose happy reign
No ill had power to harm, I saw reared up,
In color like to sun-illumined gold
A ladder, which my eye pursued in vain,
So lofty was the summit; down whose steps
I saw the splendors in such multitude
Descending, every light in Heaven, methought,
Was shed thence.
[XXI, 16-18; 25-33]

Climbing the celestial ladder, whose highest rung reaches beyond the mind's eye, Dante ascends to the eighth sphere of the fixed stars; here the live light of triumphant Christ almost blinds him, until Beatrice reinforces his vision by meeting his eyes. Dante gazes on the garden of the blessed souls flowering under the light of Christ and views the shafts of lightning splendors there, but he can not perceive the source of that light. Passing through the eighth sphere Dante sustains the examinations put to him by St. Peter and St. James. At the sight of St. John, he again attempts to penetrate the blinding light and loses his sight. To restore it, he must answer the saint's examination on love.[13] He succeeds, and recovers sight. But he has still not reached the source of that light.



With renewed vision Dante prepares his ascent to the highest heaven, the *Primum Mobile*, his mind pulsating to the strains of celestial harmonies:

"Al Padre, al Figlio, a lo Spirito Santo"
cominciò "gloria!" tutto il paradiso,
sì che mi'inebriava il dolce canto.
Ciò ch'io vedeva mi sembiava un riso
de l'universo; per che mia ebbrezza
intrava per l'udire e per lo viso.
Oh gioia! oh ineffabile allegrezza!
oh vita integra d'amore e di pace!
oh sanza brama sicura ricchezza!"

Then "Glory to the Father, to the Son,
And to the Holy Spirit," sang aloud
All Paradise; that with so sweet a strain
My spirit reeled. And what I saw, methought
Seemed like a smile of all the universe;
Thus both my ears and vision opened me
To ecstasy. Oh joy! bliss beyond words!
Imperishable life of love and peace!
Exhaustless riches, from åll wanting free!
[XXVII, 1-9]

He listens to St. Peter's violent condemnation of those who have usurped his seat in the papacy and stands dazed as Peter turns fiery red before ascending, with the company of saints, back to the Empyrean.

Dante rises to the *Primum Mobile,* impelled by Beatrice's gaze, and yearns to know what place it is. Beatrice explains:

"La natura del mondo, che quieta
il mezzo e tutto l'altro intorno move,
quinci comincia come da sua meta.
E questo ciel non ha altro dove
che la mente divina, in che s'accende
l'amor che il volge a la virtù ch'ei piove."

"The essence of the world, that stills the hub,
And makes all else in orbit round it move,
Begins from this point here as from its end.
And no location does this heaven possess
Except God's mind, wherein ignites the love
That turns it, and the virtue that it sheds."

[XXVII, 106-11]

Dante peers into her eyes to seek the source of this light and love that moves the universe. And in her eyes *reflected*

un punto vidi che raggiava lume
acuto sì, che 'l viso ch'elli affoca
chiuder conviensi per lo forte acume . . .

I saw a point that radiated light
So sharp, that to bear up against its dart,
The eye it drenches with its light must close . . .

[XXVIII, 16-18]

The point he sees is encircled by a fiery sphere, in turn encircled by another and another; nine concentric revolving spheres, each larger and moving more slowly as they are farther from the point—

". . . Da quel punto
dipende il cielo e tutta la natura.

"Heaven,
and all nature, hangs upon that point."

[XXVIII, 41-42]

But if this is the principle of universal order, Dante asks, why do the spheres decrease in velocity according to their increasing dimensions and their distance from the center? Why is this so in the divine cosmos when earthly experience would tend to prove the contrary? Beatrice answers:

"Li cerchi corporai sono ampi e arti
secondo il più e 'l men de la virtute
che si distende per tutte lor parti.
Maggior bontà vuol far maggior salute;
maggior salute maggior corpo cape,
s'elli ha le parti igualmente compiute."

"Each orb corporeal wide or narrow grows
By reason of the virtue, more or less,
Diffused in all its parts. The greater good
Will lead to greater blessedness, and this
Encompassed in a greater body is,
When all the parts are equally complete."

[XXVIII, 64-69]

The greater the *virtù*, the greater the body. But then where is the *virtù* actually "greatest"?

"Dunque costui che tutto quanto rape
l'altro universo seco, corrisponde
al cerchio che più ama e che più sape.
Per che, se tu a la virtù circonde
la tua misura, non a la parvenza
de le sustanze che t'appaion tonde,
tu vederai mirabil consequenza
di maggio a più e di minore a meno,
in ciascun cielo, a sua intelligenza."

"Therefore the circle whose swift course enwheels
The universal frame, answers to that
Which is supreme in knowledge and in love.
Thus by the virtue, not the seeming girth
Of substance, measuring, thou shalt see the Heavens,
Each to the intelligence that ruleth it,
Greater to more, and smaller unto less,
Suited in strict and wondrous harmony."

[XXVIII,70-78]

No matter how great in apparent physical, material size the outermost spheres may appear, the greatest sphere is actually the innermost or *smallest,* as it is the source or subject from which all the others emanate as predicates! Thus the miracle of the creation becomes clear; God, "so that his splendor might, reflecting, say 'I am'/ . . . Eternal love unfolded in new loves" ("perchè suo splendore/potesse, risplendendo, dir 'Subsisto' . . . s'aperse in nuovi amor l'etterno amore") *[XXIX, 14–18].* God the point of light on which Beatrice's and Dante's eyes have been fixed, reflected Himself and in so doing and existing, manifested His self-reflection in the creation of the physical universe, distinct from Him but contained by Him. Thus, too, the hierarchy of Paradise shines forth in divine coherence.

"Vedi l'eccelso omai e la larghezza
del l'etterno valor, poscia che tanti
speculi fatti s'ha in che si spezza,
uno manendo in sè come davanti."

"Look then how lofty and how huge in breadth
The eternal Might, which, broken and dispersed,
Over such countless mirrors, yet remains
Whole in itself and one, as at the first."
[XXIX, 142-145]

Piccarda, Thomas, Justinian, and all the other souls are therefore but the mirrored reflections of God's infinite light, at once distributed throughout the hierarchical heavens and yet with God eternally in the Empyrean.[14]

Thus we too have entered the Empyrean, the "Heaven that is unbodied light:/Light intellectual, replete with love. . . ." ("ciel ch'è pura luce:/ luce intellettual, piena d'amore") *[XXX, 39-40].* We continue to ascend, realizing, as Dante does, that we "surpass my former virtue [potency]" ("sormontar di sopra [mia] virtute") *[XXX, 57].* Light appears in its fundamental essence, "in the likeness of a river, light flowing/With golden flashes" ("lume in forma di rivera/fluvido di fulgore") *[XXX, 62–62]* light that is a river but is also a sphere, unfolding into the flowing petals of a celestial rose where the multitudes of the blessed move, golden and white. Light that allows us to grasp paradise in its infinity:

La forma general di paradiso
già tutta mio sguardo avea compreso,
in nulla parte ancor fermato fiso.

So roved my ken, and in its general form,
All Paradise already had surveyed,
Not stopping anywhere to fix my gaze.
[XXXI, 52-54]

Light into which Beatrice ascends, her task fulfilled; light infinite to which Dante directs the intensity and totality of his being, struggling for the words to express the vision:

Oh abbondante grazia ond'io presunsi
ficcar lo viso per la luce etterna,
tanto che la veduta vi consunsi.
Nel suo profondo vidi che s'interna,
legato con amore in un volume,
ciò che per l' universo si squaderna;
sustanze e accidenti e lor costume,
quasi conflati insieme, per tal modo
che ciò chi'i' dico è un semplice lume.

O grace, unenvying of Thy boon! that gavest
Boldness to fix so earnestly my ken
On the everlasting splendor, that I looked,
Till sight became consumed, and, in that depth,
Saw in one volume clasped of love, whate'er
The universe unfolds; all properties
Of substance and of accident, beheld,
And their relations there compounded such
That all I name was in a single light.
[XXXIII, 82-90]

Fixing totally on the perfect light, the mind itself begins to change, and discerns a consequent transformation in the light:

Ne la profonda e chiara sussistenza
de l'alto lume parvemi tre giri
di tre colori e d'una contenenza;
e l'un da l'altro come iri da iri
parea riflesso, e 'l terzo parea foco
che quinci e quindi igualmente si spiri.

. . . In that abyss
Of radiance, clear and lofty, seemed, methought,
Three orbs of triple hue, clipt in one bound;
And, from another, one reflected seemed,
As rainbow is from rainbow: and the third
Seemed fire, breathed equally from both. . . .
[XXXIII, 115-120]

Three concentric spheres, differentiated by color and yet one unified trinity of light. How can it be? How can the poet transmit it? Behold the light of the Trinity:

O luce etterna che sola in te sidi,
sola t'intendi, e da te intelletta
e intendente te ami e arridi!
Quella circulazion che sì concetta
pareva in te come lume riflesso,
da li occhi miei alquanto circunspetta,
dentro da sé, del suo colore stesso,
mi parve pinta de la nostra effige;
per che 'l mio viso in lei tutto era messo.

Eternal light! Sole in thyself that dwellst,
And of thyself sole understanding, known
And understood by thee, thou lovest thee
And smilest on thyself! Thy circling then,
That, so conceived, appeared reflected light,
When I had set mine eyes intent thereon,
Within it, in its very color deep,
I seemed to see our image pictured there;
So fully in that circling was my gaze.
[XXXIII, 124-132]

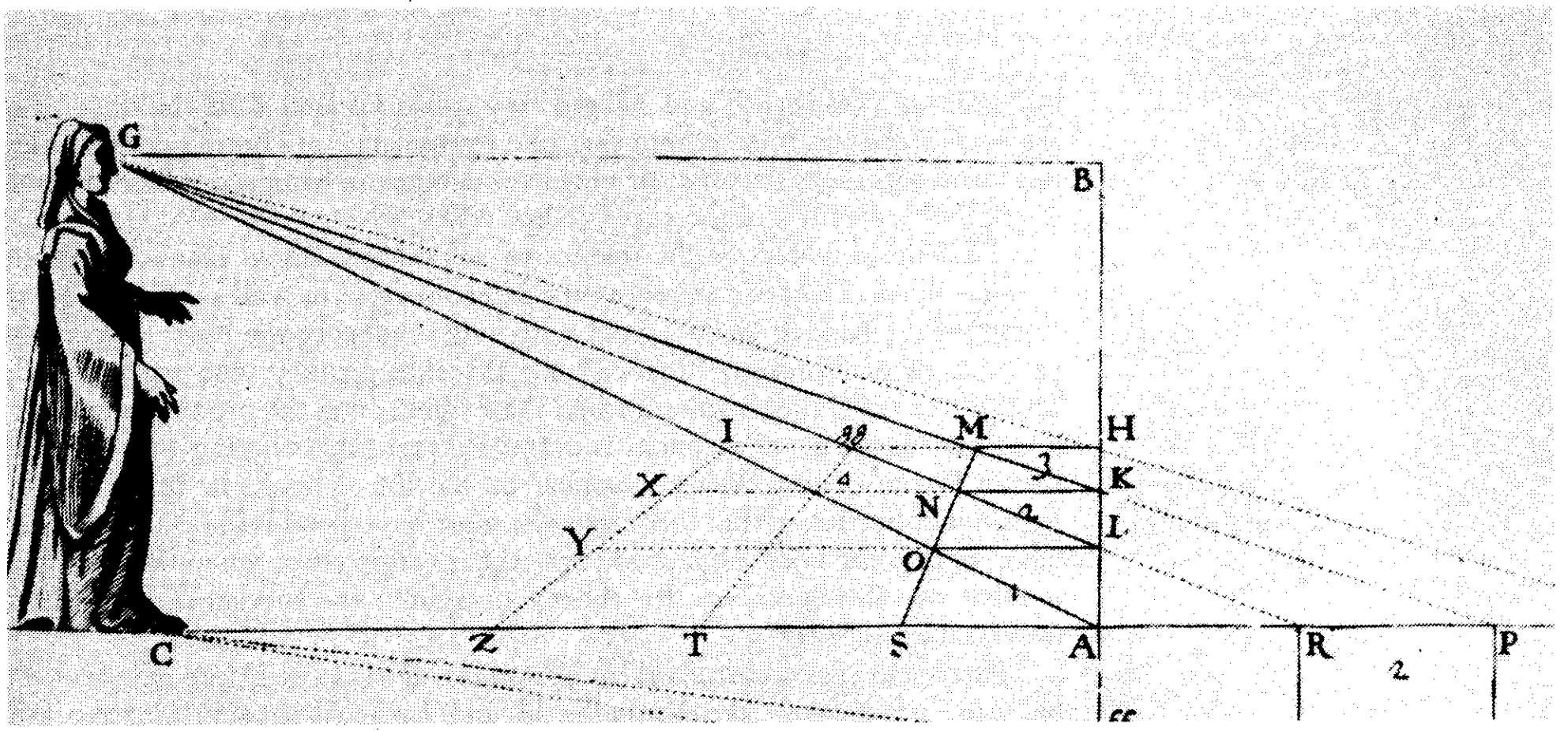
You have reached the final vision. You look into the light of the mind of God, and what must you see? Emerging from within itself, you begin to discern the image of a human face, Christ's image, the image of your own mind.

Think hard and intensely of what is happening.

You have traversed the underworld of bestiality and have freed yourself of insanity. You have gained rational logic and, imprisoned by its formalistic shackles, you have broken free. In a fight for your mind, you have plunged through the wall of fire and, leaving Virgil behind, you have entered into the realm of light and love. You have acquired your mind and developed it, moving with its dialoguing love up into the spheres of pure conceptualization. You have tackled the most fundamental concepts concerning the workings of the physical universe in its creation and development. From breakthrough to breakthrough, you have mounted from star to star, eagerly, joyfully exploring the accelerating discoveries of universal processes through the ever-expanding powers of your thinking mind.

What does that mean? It means that with each conceptual advance, you have augmented your powers for further advance and you have tasted the joy, the love of creative thinking. You have pushed further, unalone, to face the fundamental mystery of the Trinity, the *source* of universal lawfulness. And you have grasped it. By conceptualizing at progressively higher levels the fundamental nature of the physical universe as self-developing, and reflecting simultaneously that your own mind's process of perfecting Reason to comprehend that universe is a universal process, you know that the fundamental nature of the universe is that of your own mind.

You know too that that is the only way through which you could ever come to know that fundamental truth. You have looked into the eye of God and seen your self. And you cry out with joy: *I am human!*



POETRY & SCIENCE

Scientific drawings from the period of Dante and the scientific renaissance.

The Italian Renaissance would not have occurred without Dante. It was on the basis of the political science formulated in Dante's *De Monarchia* that the humanist princes of fifteenth-century Florence shaped their lives. It was the epistemology mediated through the *Commedia* that informed the world-view and humanist self-conception of Florence's civil servants, artists, and philosophers.

This was not a matter of simple "inspiration." Although the figure of Dante rightly acquired the value of a symbol for the political struggle for republicanism in the early Renaissance, the truth of the matter lies deeper. Dante's poem was more than a fountain of inspiration and moral purpose; in itself it embodied the most advanced conceptions yet formulated by the physical sciences.

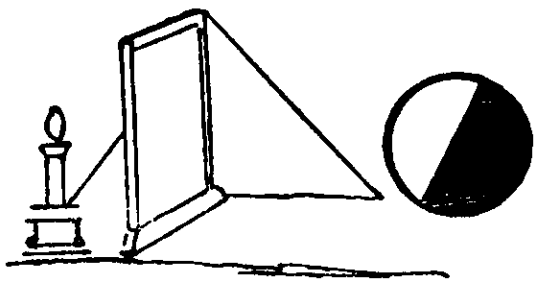
Most emphatically, this was the case of the science of perspective.[15] Perspective, as formulated by the great Brunelleschi, is the science of the conceptual organization of space (pictorial and architectonic) according to the laws of human vision and cognition. As Judith Wyer has stressed,[16] both optics and perspective developed historically as modes of inquiry into the physical properties of light, because it is the behavior of light which unifies and defines the process through which visual perception and its "artificial" correlative (that is, perspective) can obtain. Light is the well-spring of vision and as such must be the organizing principle of perspective.

Professor Alessandro Parronchi[17] has documented how Dante's profound understanding of the behavior of light resulted from close study of the Neoplatonic scientists who had tackled the problem before him: from the tenth-century Arab scholar Alhazen's *De Aspectibus* in Gerardo da Cremona's Latin translation, to Roger Bacon's and the Polish humanist scientist Witelo's Latin treatises on the subject. These were the sources, not Aristotle or Thomas Aquinas, that Dante looked to for coherent explanations of the laws of physical light which he assimilated in his *Vita Nova, Convivio,* and the *Commedia*. And these were the laws that gave birth to the science of perspective.

But how was this possible? If perspective grew out of a corpus of physics current throughout thirteenth-century Europe and if the scientific treatises

by Pelacani, Toscanelli, and Alberti two centuries later bear the imprint of the earlier elaborations, where does the significance of Dante's contribution lie? How was the *Commedia* the necessary catalyst in bringing this embryonic science to realization in the explosion of visual arts?

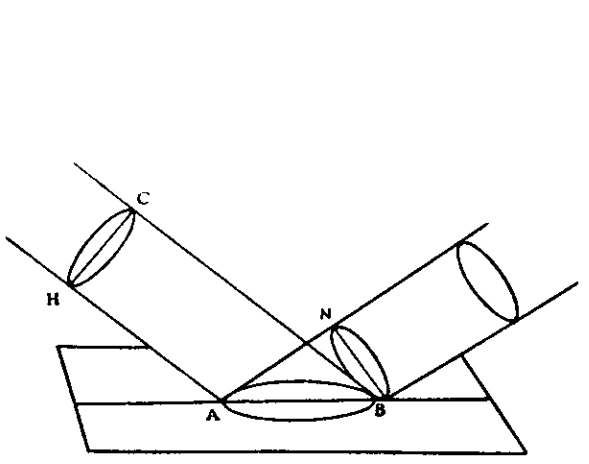
That the founders of the science of perspective knew Dante is beyond doubt. Giotto, Dante's contemporary and colleague, as well as Giotto's long-term student Taddeo Gaddi, were both avid readers of the poet, as were the generations of Florentines through the fifteenth century who were literally brought up on Dante. Dante formed their minds, was the organic impulse of their very identities. Parronchi is definitely right in assuming that the only reason Dante's name does not appear on the list of books in Brunelleschi's personal collection is that the *Commedia* must have been lying on his bedside table, not on the bookshelf, at the time the inventory was taken. Because that is what the *Commedia* was for these Florentines: the fundamental guide to universal knowledge.



Parronchi is also correct in his hypothesis about how Dante was read. To be sure, when men like Brunelleschi and Leonardo reached passages in Paradise describing experiments with mirrors and candles, they most certainly rushed to the cupboard for the mirror to redo the experiment then and there. Indeed, not only Brunelleschi's famous "burla del Grasso" but also his alleged mirror experiment with the drawing of the Florence baptistry has that unmistakeable Dantesque flavor.

They all knew Dante, and through him accessed science. Dante taught these men the art of vision, both literally and metaphorically, both scientifically and morally. He showed in his treatment of the giants mistaken for towers *[Inf. XXI, 10-11, 22-27]* and in other trompe d'oeil experienced in Hell what the nature of defective vision was, and how atmospheric conditions as well as distance created optical illusions. He depicted for them what perspectival painting and sculpture must look like in the wall friezes of Purgatory and the caryatid-like figures of the proud *[Purg. X]*, and transmitted the notion of perspective through light in Paradise *[Par. XXI especially]*.

Furthermore, he articulated the laws of light behavior complete with experimental reference; Dante's vision of Beatrice's eyes focused on the sun *[Par. I]* details the way a light ray reflected perpendicular to a reflecting surface will return to its source, forming 90-degree angles with the reflecting plane; his illustration of the flash of angel light *[Purg. XV]* describes how an oblique reflection will form angles (by the reflecting ray and the reflected ray) that are equal; Beatrice's mirror experiment *[Par. II]* demonstrates the behavior of reflected light at varying distances and the relative intensity.[18]



And the key concept for perspective, that the distance relations between an object and a mirror are reproduced in scale within the mirrored image, is the underlying metaphor throughout Paradise. Not only in his repeated use of the mirror image per se, but in the fundamental notion that the hierarchical process leading to the Empyrean (and the souls manifesting it) is itself a reflection of the Empyrean.

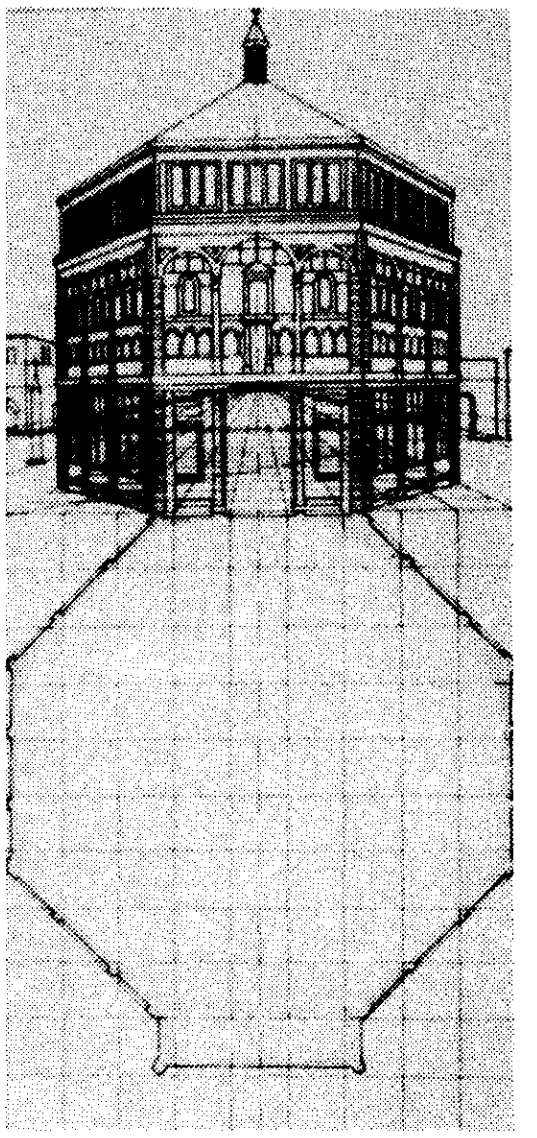
What remained was to translate this concept of different but cohering spaces (itself the organizing principle of the entire *Commedia*) into scientifically measured pictorial space. Which is precisely what Brunelleschi did. Brunelleschi established scale relations (1:3) for a reticular and drew the floor plan of the baptistry on it. He then took a slab and marked off the base-line in equal sections, such that they were proportionate (or equal) to the squares of the reticular. These he called the "braccia picchioline quanto a braccia vere" (small "braccias"—a Florentine unit of measure—proportionate to real braccias). He fixed a vanishing point arbitrarily on the slab and jointed each

of the base-line dots to it in a series of "parallel" lines meeting at that point. Then, probably following the method of the "aid construction" described by Alberti, he extended the base-line out and fixed a second point as high above it as was the first point, but at a distance (determined by a ratio to the distance from which the drawing was to be viewed). To this point, he drew another set of octagonals from the points on the base-line and through the points defined by the intersections of the two sets of lines, defined the horizontal parallels receding into the imagined space. Thus he had created the "maps" of two coherent yet different spaces whose analogous coordinates allowed him to project the floor plan onto the slab in perspectival vertical elevation.

For the first time in modern history, man had evolved the laws of vision in terms permitting the recreation of lawful physical space. This does not mean, as the analogy between mirrored images and the canvas board's created space might suggest, that perspective was simply the "imitation" or "mirror" of empirical reality. Rather, as is clear in Brunelleschi's experiment with his completed picture and the mirror, perspective incorporates the laws governing human perception and cognition, objectifying them by recreating the principles of the visual pyramid within the picture plane. And this is proof in visual terms of the final image of Paradise: that the process characterizing human mental activity are coherent with those of the physical universe.

If this is true, then the effect of developed perspective art must be to reinforce and strengthen those aspects of the human mind, its creative preconscious hypothesis-generating capacity, which are uniquely in agreement with universal law. That, or course, was the declared motivation and the morality of the greatest Renaissance art.

The point to be emphasized here is that none of this could have developed without Dante. The transmission of the laws of optics alone, through the works of Bacon, Alhazen, Witelo, and others, was not enough. The crucial mediation of that knowledge for practice must be poetry.



How Poetry Works

Lyndon LaRouche has reopened the creaking, rusty gates to the understanding of poetry, gates slammed shut in late seventeenth-century England by the likes of loyalist John Dryden and his Royal Society colleagues, and only partially forced ajar by poets leading from Foscolo, Schiller, and Shelley up to Poe. LaRouche has done this by identifying the poetic principle in human creative thinking. For that principle to be grasped, LaRouche has emphasized, one must realize that poetry is essentially music; that poetry must not be read, it must be sung, as indeed it always had been sung until the modern era became deaf to its melodies.

The significance of LaRouche's discovery of the music-poetry principle can perhaps be most efficiently elaborated here with the aid of an apparent digression into the question of translation.

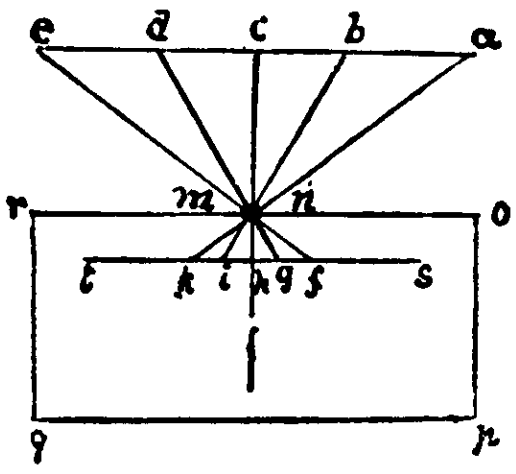
First, I shall discuss some aspects of translation in order to isolate certain general principles of language development (for which poetry is the special case), concentrating on the function of sound (prosody-intonation). Then I shall apply the general principles of language meaningfulness to the case of poetry, focusing on the function of meter. Here I shall discuss the historical roots of modern poetic meter in Dante and illustrate Dante's breakthroughs in music-poetry through comparisons with English translations. Next, I shall examine meter in the wider context of LaRouche's concept of canonical composition and illustrate this with Dante's own theory of poetical compo-

sition. This more detailed analysis of compositional method will then allow us to apply it to the Commedia as a whole and demonstrate "internally" how the poem effected the renaissance of science.

Translation

All great poets begin as translators, not out of respect for tradition, but because the translation process develops a musical sensibility, an "ear," for one's native language that is otherwise unrefined. By translating Greek poetry into Latin as Virgil did, Latin into Italian as Dante did, Italian into English, as Wyatt, the Elizabethans, and Milton did, and by composing poetry in second and third languages, these poets came to grips with the internal workings—syntactical, grammatical, and musical—of both the native tongue and the foreign. Dante is explicit on this when he writes that it was through the vernacular that he was led to Latin and to science, and that Latin then enabled him to "go further" with Italian.[19]

Translation poses useful problems when historically one must transmit relatively more advanced ideas from a culturally superior tongue into a relatively less developed idiom (for example, medieval Latin translation from Arabic, Anglo-Saxon translations from Latin, Tudor English translations from Italian, Greek, and so on). The translator, having grasped the higher concept through reading the original, finds that his higher conceptual level despairs of tools in his native tongue. Yet if he has accessed the second language through the first, he necessarily has the tools to work with, not in the native language as it stands, but in his new awareness of the specific weaknesses of the native language relative to the foreign. He is thus in a position to regenerate his native language, wrenching it out of the old mode and extending its specific potentialities. This does not mean that he changes the language: Milton did not write "Latin in English," he wrote English. But he seizes upon the unique strengths in the language (which have come into focus through comparison with foreign languages) to extend and fortify them, transforming them into relatively predominant features of the global language.



What translation exemplifies (and mediates) is a *general* process of all progressive language development. At times, the introduction of very few new words (concepts) will suffice to initiate an explosive nonlinear expansion within the language, but virtue of extension by analogy to other forms of speech. The Elizabethan introduction of progressive verb forms ending in *-ing,* for example, which was consolidated in complex progressive tenses during Shelley's lifetime, has lent new vigor to English, enabling it to communicate processes of coming into being that are unfathomable in most romance languages.

The same principle is at work in poetry, with a vengeance; for it is poetry, historically, that sows the seeds of new conceptions into the language. Indeed, as we shall prove, this must be the case: only poetry is capable of transmitting the newly acquired, more advanced epistemology into the native culture. This, in fact, is what occurs through poetic translation. Yet, in translating poetry, ironically, it is not only the syntactical and semantic features that are regenerated; it is the *musicality*, and that is the essence of the language.

Language is not a set of grammatical rules or "structures" that police specific words in line, handcuffing them into place. Language is a socially evolved, fundamentally musical system communicating the process of human concept-formation. Since concept-formation occurs as qualitatively new and

higher hypotheses for knowledge, language must needs be self-developing as well. This does not mean that rules are useless or meaningless; it merely means that the culturally shaped rules of a language are no more than the precondition for communication. (One can not compose music without notes, as John Cage has proven. But the notes are not the music; the music is the developing conception that lends meaning to the single notes.)

The musicality of poetic language lies principally in its "intonation." This includes its specific sound quality (determined by consonant clusters modulated by vocalic sounds of varying length and quality) and subsumes its metrical and rhythmical characteristics as well as pitch. Intonation, even in normal spoken prose, is the seat of meaning, is where the truth of the utterance lies. This is most evident in the way a child learns to speak. Through the social process of family life, the child "tunes" his ear to assimilate meaningful sound patterns and phonemes (as opposed to noise) and begins to communicate by reproducing whole utterances *without words*; whether he is understood or not depends solely on the extent to which his unarticulated "singing" approximates the broad intonation pattern of a meaningful phrase. The celebrated "first word" that issues forth from the child's mouth is thus actually the end result of a long assimilation process through which he has learned the principles of temperament in the language.

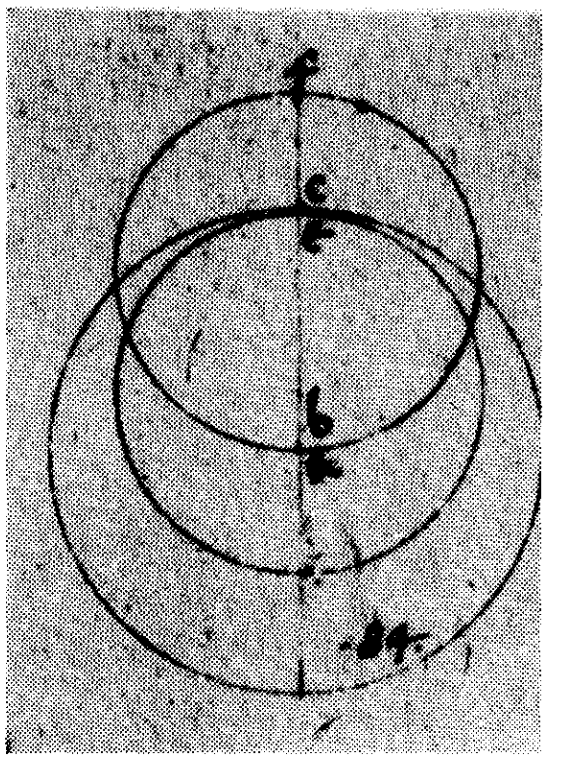
The same principle is at work when one learns a second language. If the characteristic intonation pattern is not grasped, one can articulate perfectly grammatical sentences and be eternally misunderstood.[20]

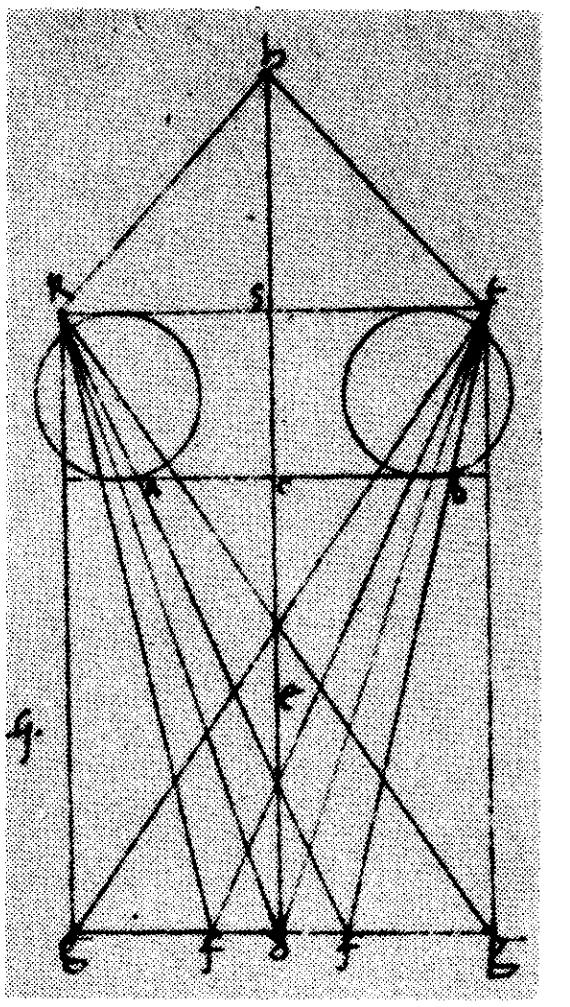
This, then, the connotative quality of prosody, is where language's power for meaning lies. Poetry stylizes the rhythmical regularity of the prosody of spoken language, heightening its pitch, and *thus concentrates the communicative power by intensifying the principle of meaningfulness of speech.* It is not just that the poetic line (or verse strophe) *reflects* the characteristic prosody of the language, but by stylizing it, poetry transforms prosodic meaningfulness from an ostensibly secondary, underlying characteristic of of speech into the predominant and essential feature of the utterance. The musicality of poetry becomes absolutely hegemonic over semantic and syntactical channels of meaning. Since prosody is the very seat of meaning in language, the heightened, quasi-independent quality of poetic prosody charges the utterance with a significance which is not only specific to the line or strophe, but is *universal for the language as a whole*. In this manner, what is contained musically in the single poetic line is not a certain metrical form (although that is also there) but is *the principle which gives the whole language meaning*, packed into a high-powered synthesis. Poetic language is more meaningful because it contains, in a condensed form, *the entirety of the language in which it is uttered*.

This means that to know a second language means to read, write, and sing poetry in that language. To know a language means to have grasped and internalized this intonation principle fully. Translation therefore requires using the knowledge of this principle to recreate the piece according to it.

Meter

It follows that not every poetic form (meter) can be utilized in every language. Meter can not be superimposed on a language any more than foreign grammatical rules can. Meter must be a function of the intonation principle, else all meaning is sacrificed. (This, again, is one of the lessons a poet learns through translation, through experimentation with Latin hexameters, etc.) [21]





Dante hovered over the explicit formulation of this concept in his *De Vulgari Eloquentia*. When determining what syllabic line length is appropriate to Italian vernacular poetry, he writes that

> the eleven-syllable line seems to be the best, both because of the time it takes up, and because of its capacity for maxims, constructions, and number of words.[Bk. II, Ch. V]

The hendecasyllable is in fact the line length proper to Italian, both in Dante's time and at the present. Just why this and no other line is to be preferred (although Dante admits the use of especially the heptasyllable, sometimes the pentasyllable, and, only rarely, the trisyllable) is evident when one reads aloud to hear the nature of rhythmic intonations emerging from Dante's own Italian prose.[22] One will find that, with startling regularity, the smallest meaningful phrasal groups tend to be composed of ten to eleven syllables. Since Italian has virtually no monosyllables (which abound in English) except for particles and articles, most words have at least three syllables, and a short full phrase therefore, about ten. Since almost all Italian words carry a stress on the penultimate syllable, the tenth syllable of a hendacasyllabic line must always be accentuated. This base stress is the mooring on which the line hangs, and produces other stresses on the fourth and/or sixth syllables.

Dante had grasped this truth about Italian not only out of his Latin translation and writing activity, but as a result of his profound immersion in the troubadour poetry from throughout the continent. In fact, Dante's general rules for poetry are adduced for all languages, not just Italian, as his frequent examples from Daniel Arnaut and so on show. That he based his entire poetics on his knowledge of this poetry (rather than on Latin prosody) shows that Dante was attuned to the crucial musical differences underlying all vernacular dialects emerging into literary idioms, as opposed to classical Latin poetry. The difference springs from the fact that rapid language development of the spoken vernaculars involved the swift deterioration and near extinction of grammatical inflectional endings. This process, paralleled in the development of Chaucerian English out of Normanized Anglo-Saxon, necessarily shifted values of vowel sounds. For example, the final *-m* of the dative *muđum* (mouth) in Anglo-Saxon tended toward an *n* sound, after which it, and other inflected consonant endings, fell off entirely, leaving a weakened vowel in *muđu,* which disappeared, leaving *muđ.* Wherever the final *-um* or *-un* or pronounced vowel ending *-a, -u,* etc., was weakened through this overall process of inflectional decay, the final syllable, with its own firmly sounded vowel, was turned into a faintly pronounced, unstressed *-e* (as in present-day pronunciation of the last syllable of "other"[đə]. Consequently the stress pattern, which was formerly nearly regular, with the long vowels pronounced with elongation, shifted from this quantitative accentuation to a qualitative one.

The implications of this European-wide development were dynamic for poetry, the most dramatic documented case being England, where a long tradition of vernacular poetry thrived. It meant that vernacular poetry could not be squeezed into the outgrown garments of Latin prosodic norms, but must establish its own laws in coherence with trends evolving in the spoken language. Poetry did not invent those trends, but it did (in Dante's and Chaucer's case, for example) establish the systematic means whereby such developments could proceed. Poetry introduced the lawfulness and the consciousness of that lawfulness into the developing language.

A good example is in Dante's treatment of vowel endings. Once having established the hendecasyllable as the noblest line, he elaborates on how ten- or twelve-syllable lines can be induced to conform by skillful use of elision. In the opening line,

> Nel mezzo del cammin di nostra vita
> mi ritrovai per una selva oscura,
> chè la diritta via era smarrita.

the first line is a perfect hendecasyllable, whereas the second has twelve syllables, but loses one in the elited "selva oscura." The same application of elision in the third line (between "via" and "era") produces a hendecasyllable, but with a different cadence and resultant tone. What has happened here?

Dante has quite deliberately violated the basic rhythmic movement set up in the first two lines by innovation involving word variation. The line could have read

> perchè la dritta via era smarrita

which would have read rhythmically like the first two. But Dante has cut "perchè" to "chè" and has chosen "diritta" over "dritta" (which he uses, however, a few lines further on), evidently intending to disturb the rhythmic regularity just established. The result of his variations is that, unlike the first lines, the third receives a thundering stress on the first syllable "chè," producing a sense of dramatic shock perfectly tuned to the feeling-state evoked in the opening image.[23]

Dante shows here and indeed throughout the *Commedia* how the rhythmical aspect of the intonation sweep can be ordered to deliberate effect. The example also documents how the sound value of the musical phrase (what Dante calls the "oda") is what determines word selection, and not vice versa. Comparing Dante's brilliant opening with two English translations will immediately bring the musical translation problem into focus. Dorothy Sayers has this:

> Midway this way of life we're bound upon,
> I woke to find myself in a dark wood,
> Where the right road was lost and wholly gone.

Where the translation immediately tells us it is the translator who is lost. John Ciardi has this version:

> Midway in our life's journey, I went astray
> from the straight road and woke to find myself
> alone in a dark wood. How shall I say
> What wood that was . . .

(O wayward waif, why waste thy words? one wonders.)

Why are both translations so unspeakably bad? Both translators have counted their syllables and believed themselves to have shaped perfect decasyllables, jerked into an imitated terza rima. It is precisely the kind of translation solution that an intelligently programmed computer would come up with. But it ain't poetry. At least it certainly ain't English poetry.

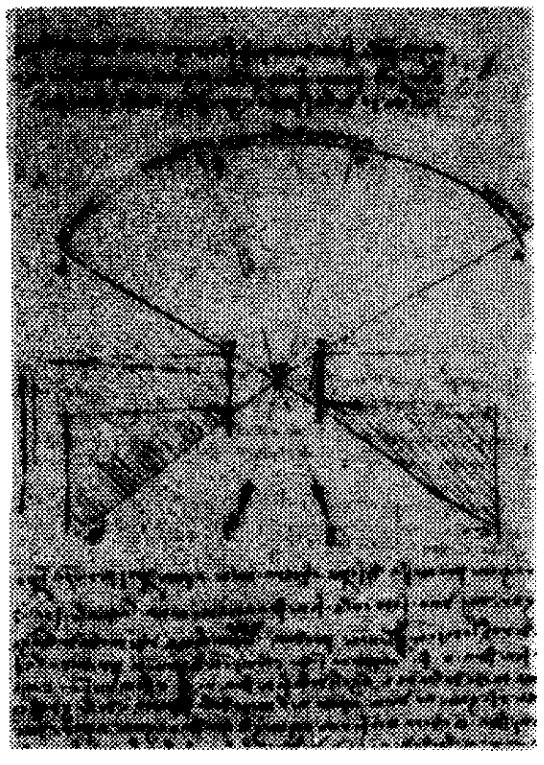
Milton would have known precisely what to do with this tercet. He would have done what he did in the opening invocation to *Paradise Lost*,

leading up to the resounding peal of "Sing Heavenly Muse" in line 6. Milton would have realized first that, although Dante invented the terza rima because the global trinitarian movement of the whole demanded it for its impelling forward movement, this does not mean English must follow suit. Terza rima, of course, can yield English poety, as Wyatt's experiments showed; in fact Shelley's greatest poem, the "Ode to the West Wind," is written in terza rima! But that does not mean that terza rima is appropriate to the English equivalent of the *Commedia.* Just as each language's underlying prosodic laws determine the best line length as the smallest unit of meter, so each language holds preferences for verse forms. The noblest line in English, as Milton knew, is the blank verse decasyllable, historically derived in fact from Dante and Petrarch, by way of Chaucer. In English the line must be in blank verse, Milton knew, to recover the "ancient liberty to Heroic Poem from the troublesome and modern bondage of Riming." English verse, particularly in a long poem, cannot be free if it is rhymed. Italian's strictly limited number of vowel sounds produces an inherent rhyming tendency in the language, but English has nothing of the sort. Because of its unique historical development, the English language abounds in multiple vowel values and is heavily supplied with monosyllables. As a result, rhyming is difficult in English, and therefore the weight of a rhyme-end is felt ten times more than in Italian, where it passes by almost unnoticed. Rhyming Dante in English, and rhyming him in tercets, can only slow down the movement of the musical flow or, in the case of Ciardi's tone-deaf closed tercets, bring it to a grinding halt every three lines. Also, the insistence on rhyme entraps the translator's attention, such that all other considerations, including respect for the poem's meaning, are ignored. Rhyme prevails and the poetry is hopelessly lost.

In fact, both translations are failures. It is impossible to read either one with any rhythmic principle whatsoever. Sayers's rendition stumbles at the end of the second line and never gets back up on its feet. Ciardi's purely visual attempt at enjambment turns out to be more of enjellyment, sliding this way and that off the page until his humorous alliteration (in line 4) attempts to bark out some order.

Milton would have rendered it this way:

In the middle of the pathway of our life
I found myself within a darken'd wood,
Lost from me was the upright path and true.



Or, further stressing the third line's juxtaposition to the first two, he would have shortened its syllabic length:

In the middle of the pathway of our life
I found myself within a darken'd wood,
Lost was the upright path and true.

creating strong stress on "lost" followed by a lengthened caesura.

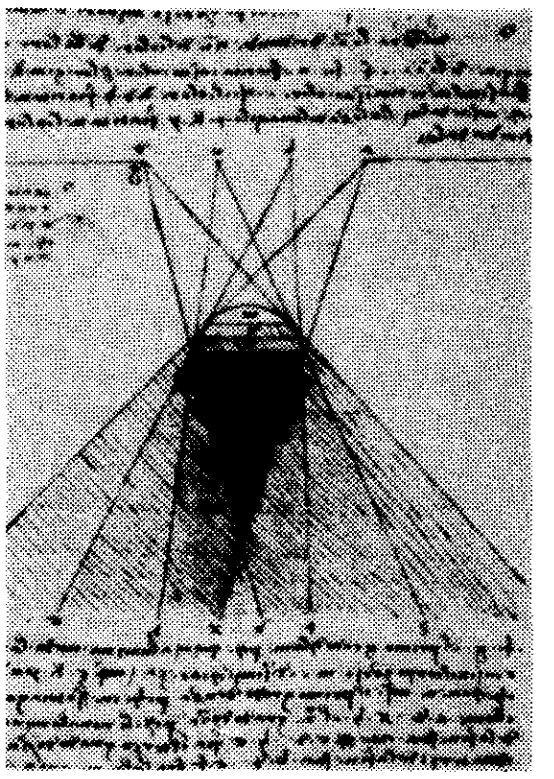
Canonical Composition

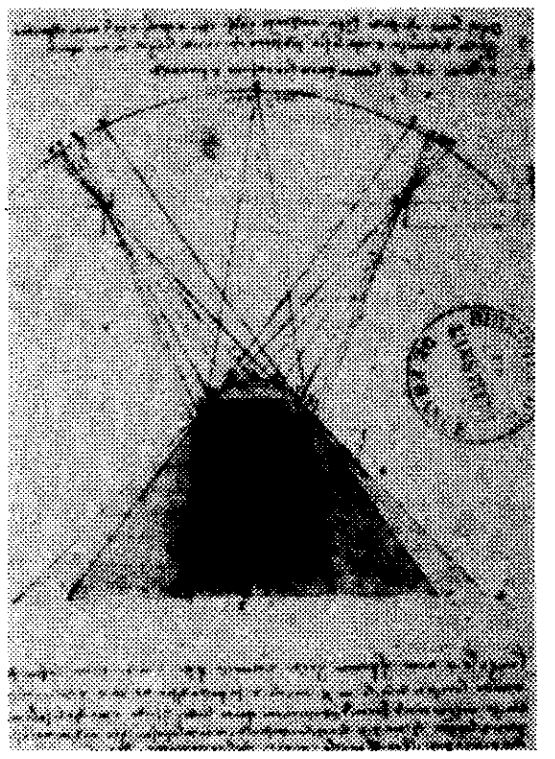
The example discussed serves to show how movement and meaning are derived through a two-fold process in poetic meter. First, the appropriate metrical form is established (significantly, as Dante specifies, through syllabic line length and *not* Latin "feet") in coherence with the language itself; second, the use of elision (in Italian) or word order (in English) varies the

underlying rhythmic regularity, producing a violation of it. The function of lawful rhythmic variation within the poetic line and larger verse strophe is to create a contrapuntal movement.

In other words, the syllabic principal (hendecasyllable in Italian, decasyllable in English, for example) establishes an underlying rhythm or beat, just as 4/4 or 6/8 time is established for music. This beat represents the condensed and therefore heightened stylization of prosody in normal speech. Variation of that rhythm then produces two distinct "voices" *within the single line.* The stress pattern determined by the semantic content of the utterance wars against the established rhythmic pulsation, stretching, as it were, both simultaneously.

Yet these are not the canonical voices of the poem, at least not the only ones. This two-fold quality within the single poetic line is what makes the overall canonical development possible. LaRouche has emphasized that the poet does not begin composition from one line or image (one "voice"). The poet begins with the unarticulated but conceptualized gestalt of a total, multiple-voiced development in mind. (Dante had the entirety of the *Commedia* synthesized before beginning Inferno, just as Milton, Shelley tells us, had fully conceptualized *Paradise Lost* before dictating the first word.) The multiple voices are, historically, destined to be sung by different voices, whether instrumental or human. Thus, although the musical score may not be explicitly stated (and yet it often is), the resultant written poetical lines incorporate (at the least) a two-voiced melodic development. This is what Keats means when he writes "Heard melodies are sweet, but those unheard are sweeter"; that the actual musical power of the poetry in fact lies in its capacity to reverberate the incorporated "unheard melodies."





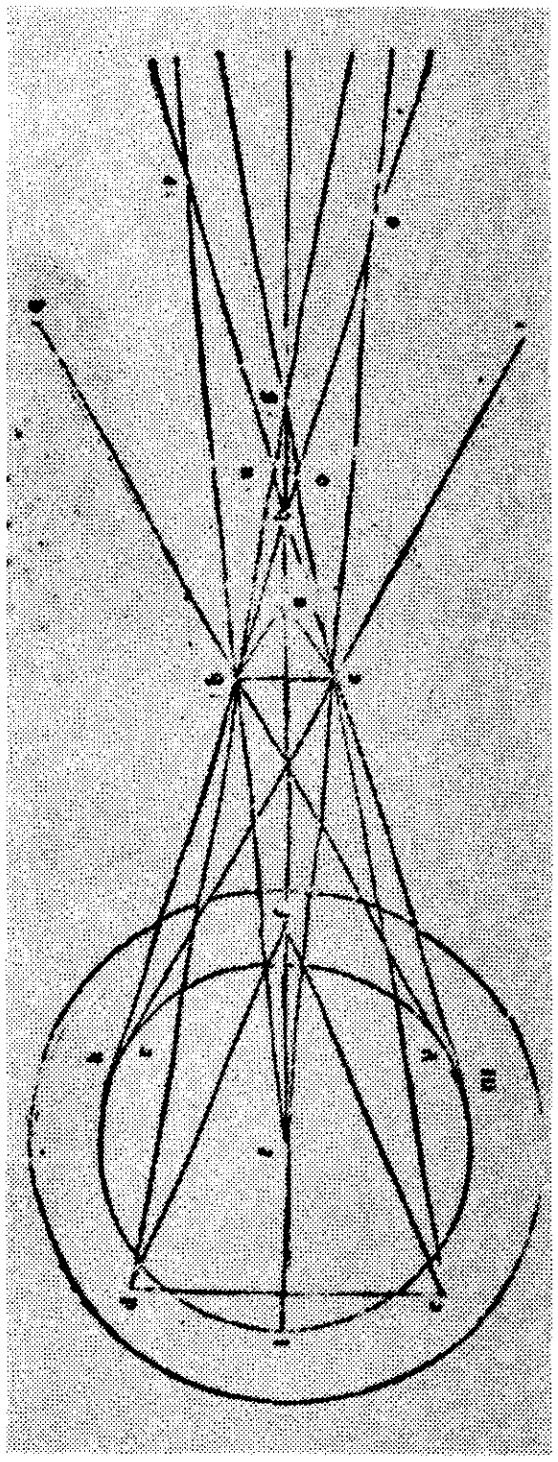
Dante worked according to this principle in his canzoni of the *Vita Nova* and *Convivio,* as well as in the *Commedia,* as his discussion in the *De Vulgari Eloquentia* attests.

The key concept of the development of canonical voices is elaborated in his articulation of the musical laws of the canzone (which means "song"). The canzone is the superior poetic form, just as the hendecasyllable is the superior line, because the canzone embodies music within it:

> And next, that which utilizes all that for which it is made, seems to be nobler than that which needs things outside of itself; but *canzoni* do for themselves all that they need to do; which is not true of ballads, because they require instrumentalists, for which they are fashioned . . . That is noblest, which encompasses the whole of art . . . that the whole of art is contained within the *canzoni,* is demonstrated in this manner, which is to say, that all that which is found of art is in it, but is not converted. [*De Vulgari Eloquentia,* II, iii]

Just how does the canzone accomplish this?

After the total development has been conceptualized, the poet determines (by that concept) an appropriate initial image-idea. This, which Dante calls the "oda, o vero canto" (musical phrase), is the first canonical voice which creates the "stanzia" (stanza or strophe). The stanza "contains" the whole art of the canzone in that it is a canon: "a contexture of lines and of syllables under a certain musical phrase, and under a certain limited usage" [II,ix]. Each stanza "is harmonized to receive a certain *oda.*" The "oda" is set in a group of lines organized according to syllabic length (for example, four lines, of which all are hendecasyllables except the second, which is a heptasyllable). The canzone may proceed to the end respecting this one "oda," or it may



modulate. Modulation means that the stanza is divided, such that the division is "that thing which causes the shift from one *oda* to another" [II,x]. If, before the division, there is just one "oda" without repetition, this is called the "fronte"; if there is repetition of the "oda" before the division, the repeated sections are called "piedi" (feet). If there is no repetition following the division, the last part is called the "sirima" or "coda"; whereas, if there are repetitions of the new "oda" after the divisions, these sections are called "versi."

In other words, the "oda" is the canonical voice. It may be elaborated through repetition of its verse and syllabic structure (lines of 11, 11, 7, 11 syllables repeated) and end-rhyme may as a result reflect the four-line structure (for example: A-B-B-C; A-B-B-C; C-D-D-E) but rhyme is not necessary, as Dante's reference to Daniel Arnaut's blank verse emphasizes. Rhymed couplets are explicitly ruled out. When the "oda" is repeated (as in the "piedi"), this is a repetition of the canon where the words change, evolving and elaborating the image idea contained in the oda's first enunciation. This is known as the doubling ("geminazione") of the song ("canto"). Dante writes that often the passage from the first enunciation to the repetition is marked by end-rhyme (in the example, the passage from the second to the third parts is marked by the repeated end-rhyme C).

When the "oda" modulates, the second canonical voice enters. The crucial connective between the first melodic development (whether repeated or not) and the second new "oda" again is often end-rhyme.[24] This, Dante underlines, is the proper function of rhyme: to structurally link up the last line of the preceding development with the first line of the second development. The fact that this moment of transition, the division of the stanza, is also called the "diesis" (musical sharp) means that the poetic transition being effected is the same as the musical transition from one key to another.

LaRouche has explored the significance of such transitional moments in the transition from the first canonical voice to the second.[25] The penultimate note of the first melodic canon, LaRouche has shown, rings out with maximum ambiguity because it simultaneously "looks backward" to the preceding development and "looks forward" to the new phase initiating after the completed statement of that development. LaRouche emphasizes that this ambiguity in the penultimate canonical note is analogous to the augmented or diminished note in any one key which mediates the transition to another key. By virtue of the properties of the well-tempered system, every note is potentially part of any and every key; thus, when a note in one key is modulated to effect a key transition, its potential ambiguity is charged with explicit, stressed ambiguity, or heightened.

Dante's "diesis" (or, in a slightly different fashion, the connective "key" [II, xiii]) expresses exactly that musical principle. Not only is the principle analogous, it proves La Rouche's point that the poetry being composed is literally music. The canzone, as Dante constructed it, is music even without the accompaniment of a lute or other instrument. It is a canon: in the completed form, the stanza unfolds the first canonical statement ("oda") which, when repeated, echoes itself as the image-idea (word content) proceeds. The highly ambiguous "diesis" marks the entry of the second canonical development which, as it proceeds, *echoes contrapuntally* the preceding "oda" which is distinctly *heard.* It is heard *whether in actual recitation there are two voices singing or not.*

As the entire stanza unfolds (whether as a unified "oda" or divided into "versi"), the fundamental principle of the whole canzone's development is

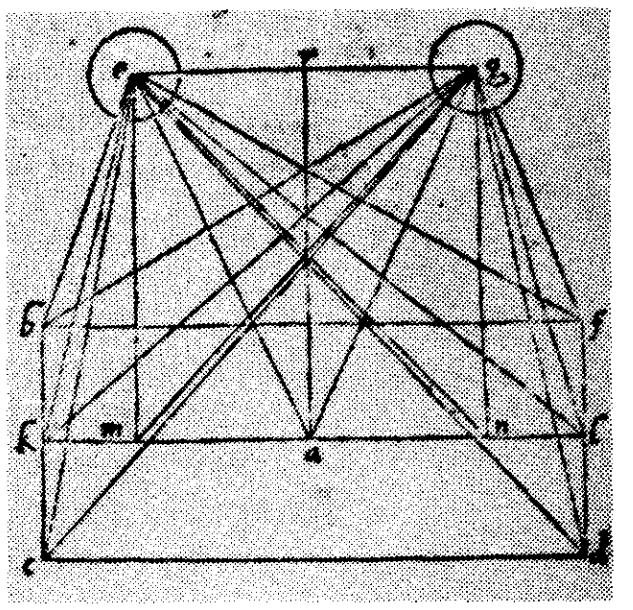
stated. As Dante states, the stanza "contains" the whole art of the canzone, just as the canzone "contains" all art; the method of modulation within the stanza is in fact respected throughout the rest of the canzone, again creating the echo phenomenon already identified within the stanza, but on a qualitatively higher level.

Thus there are actually three levels of contrapuntal relationships imbedded within the stanza of the canzone form. First, the rhythmic movement determined by the interplay of underlying rhythmic regularity (beat) and the metrical organization of the line. Second, the verse movement determined by the echoing of the underlying "oda" through its repetition as the image-idea proceeds. And third, the contrapuntal interplay between the second, new oda introduced through diesis and the preceding "oda" (which actually continues, of course, as the second stanza moves in). This total movement of the stanza, then, contains the principle of development for the entire canzone.

The Commedia as Music

In the foregoing discussion of metrics, one essential aspect of poetic communication was willfully ignored: imagery. This has been ignored up to this point for a specific reason. As should have become clear in the earlier treatment of the progressive development of the *Commedia,* poetic imagery functions to tap the preconscious processes of the reader's mind, awakening them into consciousness. Since the particular aim of the *Commedia* is to order that awakening through a psychological confrontation process, it was deemed appropriate to attempt to bring the reader through a condensed replication of the process itself. This is methodologically preferable to engaging the reader immediately in a discussion *about* that process for obvious reasons: unless the reader goes through Dante's spiritual and psychological itinerary (or in the case of the reader very familiar with Dante, recathexizes the process of the itinerary), he cannot empirically grasp what the discussion is all about. Either he engages in the struggle for self-perfection or he must view the poem externally, from a critical standpoint which at best approximates that of the mind of Purgatory man. Any analysis of the poetic method of the poem is in this instance an academic exercise.

On the other hand, once the reader has undergone an approximation of the internal development mediated through the poem, he is in the appropriate intellectual and emotional framework to *conceptualize* the method and the artistic tools used to forge the process itself. One cannot understand anything of a great piece of music from an exhaustive description of the piece; one must hear it and, reflecting on the *changes the music has provoked in one,* look back on the piece from the standpoint of this self-reflection—because the subject of art lies more in social-psychological processes it unleashes than in its existence as an objective artifact.



Thus the decision to review the poem in its total movement, after which the question of Renaissance perspective was introduced as a way of locating and motivating the inquiry into the means employed by Dante to raise the reader's consciousness to the conceptual heights typified by Paradise. The perspective question raises the question of how you have reached new insight, and poses it in the historically defined context within which Dante's epistemology was in fact assimilated for general practice.

This led to the introduction to the principles of music-poetry as LaRouche has articulated them. The reader was considered ripe for this introduction, through the discussion of translation, by virtue of his having assimilated some degree of sensitivity to Dante's language through the condensed recapitula-

tion. In the case of the non-Italian reader, the recapitulation must have placed the language-translation problem squarely on the table before him. As Dante would say: "Lo! I have set before thee; for thyself feed now" ("Messo t'ho innanzi: omai per te ti ciba").

Now the reader must recall the imagery progression from the standpoint of the intervening discussion, and *conceptualize* it.

Although the *Commedia* embraces a vaster scope than the canzone, the compositional method behind it follows the same basic principles. One must think of the three cantiche essentially as three "ode," modulated into different keys along the lines outlined in the *De Vulgari Eloquentia*. Here, however, the internal contrapuntal movement is not derived solely from what has been identified as line length (syllabic) organization and variation, but rather by differing orders of imagery expressed musically.

On a first, broad level, the successive canonical voices of Hell, Purgatory, and Paradise are characterized by the motifs of descent, ascent (mirror-imaging the descent) and the higher-order ascent (redefining the preceding two as parts of the completed whole). Into this overall ascension movement, the dominant image idea of the Trinity is introduced. It appears in the first "oda," in the very first canto in the nude form of the three beasts surrounding the character Dante. It is restated, as an as-yet unclarified harmonic occurrence, in the second canto in the form of indirect image of the three blessed women reported by Virgil. It resurfaces at regular intervals throughout Hell, in the three-headed Cerberus, the three furies, the tripartite subdivisions within Hell's circles, and so on, down to thrice-monstrous Lucifer.

Yet, although the entire poem is fundamentally trinitarian, the Trinity as such is not the subject of Hell at all. Rather, it appears in Hell as a derived harmonic occurrence determined by some other dominant contrapuntal development. That dominant "oda" development is the succession of images Dante and Virgil meet in their spiraling descent. And the images are bestial at every level of elaboration:

Come le rane innanzi a la nemica
    biscia per l'acqua si dileguan tutte,
    fin ch'a la terra ciascuna s'abbica,
vid'io piu di mille anime distrutte . . .

Just as the frogs that flee before the snake
    Their enemy, and scramble through the wave
    Until each one is covered up with mud,
So saw I thousandfold of panicked souls . . .
[IX, 76-79]

or:

Come i dalfini, quando fanno segno
    a' marinar con l'arco de la schiena,
    che s'argomentin di campar lor legno,
talor così ad alleggiar la pena
    mostrav'alcun de' peccatori il dosso,
    e nascondea in men che non balena.

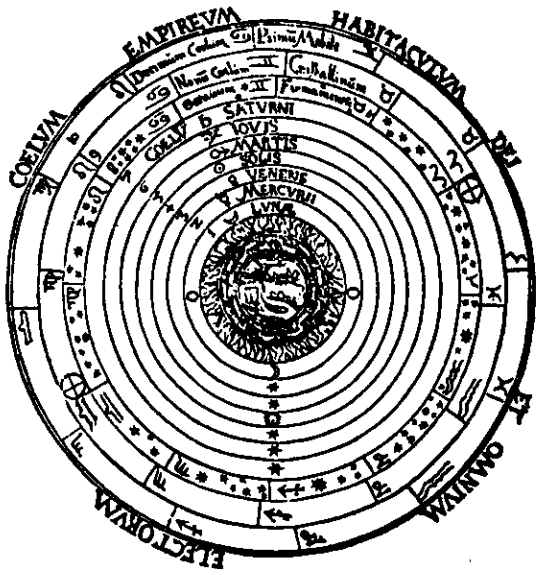
As dolphins that, in sign
    To mariners, heave high their archéd backs,
    That thence forewarned they may advise to save
Their threatened vessel; so, at intervals,
    To ease the pain, his back some sinner showed,
    Then hid more nimbly than the lightning-glance.
[XXII, 19-24]

and so on. The reasons for this are obvious.

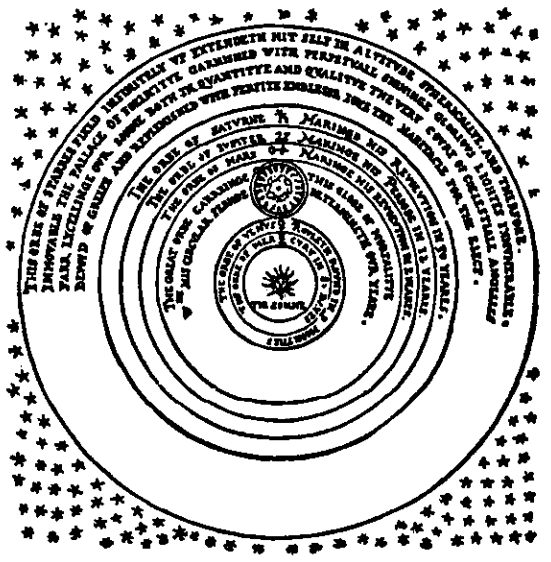
The language used to portray these bestial images is deliberately "aspro e forte" ("hard and strong"). Dante concentrates on emphasizing, at times inventing, line-end words packed with consonant clusters—cinghia, avvinghia, ringhia; selvaggia, caggia; chiocchia, noccia; spiccia, raccapriccia; asseggia, greggia; veggio, deggio, cheggio—which are phonetically as far away as possible from the "cittadineschi pettinati et irsuti" ("urbane, combed") words that he deems the noblest for the illustrious vernacular in

De Vulgari Eloquentia [II, vii]. By the same token, he attentively shapes his syntax so as to maximize the juxtaposition of underlying rhythm and superimposed stress patterns, thus producing explosive rhythmic clashes. This reaches a thunderous pitch in Canto X, where the dramatic interplay among Dante, Farinata, and Cavalcanti reproduces the effect normally obtained by line enjambment, this time at the level of "enjambment of total dramatic action." The dramatic interchange, that is, tends to step out of the confines of the established rhythmic movement of the canto as a whole. The beastliness of irrationality thus erupts beyond the confines of the human form.

Purgatory signals the introduction of a new "oda." The diesis which mediates the modulation appears in the inversion of Lucifer in the last canto of Hell. In Purgatory, the nude, perverted trinitarian motif recedes as a plastic image and becomes an idea. What was an underlying "oda" in Hell, the Dante-Virgil dialogue, becomes dominant in Purgatory, against the backdrop of the ascending succession of images (the souls of the penitent sinners). This predominantly binary arrangement expands to include Statius in Canto XXI, and, on the other side of the wall of fire, a succession of female images approximating the image-gestalt of love leads into and prepares the appearance of Beatrice. Thus the unfolding of Purgatory is symmetrical: the Dante-Virgil dialogue develops into a redefined Platonic dialogue between Dante and Beatrice. The Trinity "oda" thus appears as a category, an abstract idea stretched out in the process joining Virgil, Dante, and Beatrice. (It represents an inversion of the first statement in Canto II of Hell.)



This second phase of canonical development is elaborated through art images. Dante's awakening consciousness of sin and virtue is articulated through pictorial art, architecture, and song; personages from the artistic community predominate (Odirisi, Cavalcanti, and so on). It is a world where human rationality expresses itself through artistic activity. Thus frequently the sinners, as well as the imagined images of virtue, are presented in terms of bas-reliefs, caryatids, and so forth.



The language of Purgatory is more balanced, as bestiality gives way to a world of lawful nature, expressed in symmetrical similes:

Ricorditi, lettor, se mai ne l'alpe
ti colse nebbia per la qual vedessi
non altrimenti che per pelle talpe,
come, quando i vapori umidi e spessi
a diradar cominciansi, la spera
del sol debilmente entra per essi;
e fia la tua imagine leggiera
in giugnere a veder com'io rividi
lo sole in pria, che già nel corcar era.

Call to remembrance, Reader, if a fog
O'ertook thee ever on an Alpine height,
Through which thou saw'st no better than the mole
Sees through his film; then when the vapors dense
And wat'ry start to thin away, how faint
The solar disc seems, wading into them;
So take this airy image as the means
To see how first I rebeheld the sun,
Already on its bedward journey bent.
[XVII, 1-9]

Lawful nature which guides man:

Né 'l dir l'andar, né l'andar lui più lento
facea; ma, ragionando, andavam forte,
si come nave pinta da buon vento.

Our journey was not slackened by our talk,
Nor yet our talk by journeying. Still we spake,
And urged our travel stoutly, like a ship
When the wind sits astern . . .
[XXIV, 1-3]

Nature which reflects man's ordered activity:

Come si volge con le piante strette
a terra ed intra se donna che balli,
e piede innanzi piede a pena mette,
volsesi in su i vermigli ed in su i gialli
fioretti verso me non altrimenti
che vergine che gl i occhi onesti avvalli;

As when a lady, turning in the dance,
Doth foot it strictly, and advances scarce
One step before the other to the ground;
Over the flowers vermilion and of yellow hue,
Thus turned she at my suit, most maidenlike
Sinking her sober eyes to earth.

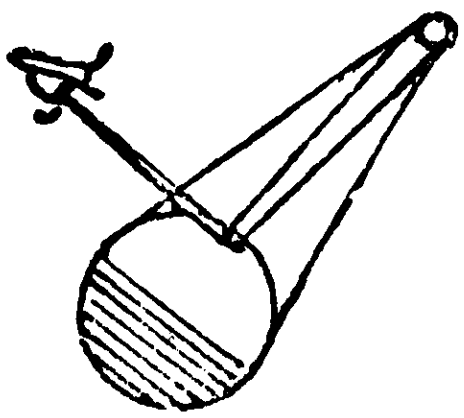
[XXVIII, 52-57]

Beatrice appears through the splendor of a lawful, natural event, the rising of the sun *[XXX, 22-33]*. And Dante's emotions are ordered in coherence with nature's laws:

Sì come neve tra le vive travi
per lo dosso d'Italia si congela,
soffiata e stretta da li venti schiavi,
poi, liquefatta, in sé stessa trapela,
pur che la terra che perde ombra spiri,
si che par foco fonder la candela;
così fui sanza lacrime e sospiri
anzi 'l cantar di quei che notan sempre
dietro a le note de li et terni giri.

As snow among the living rafters piled
Upon the back of Italy, in drifts,
Is frozen hard by rough Slavonian blasts;
Then seeping down dissolves itself away—
Breathe but the land where shadows disappear—
As fire seems to melt the candle; I
Unmoved to tears or sighs remained, until
Those singers sang who always choose their notes
Behind the notes that chime the heavenly spheres.

[XXX, 85-93]



Art and man's mastery of the laws of nature emerge in a world whose vivid color, contrasted to the utter blackness of Hell, denotes the existence of light (Reason). It is refracted light, the rainbow refracting white light into its spectrum of differentiated color *[XV; XXV, 91-93; XXIX, 73-75]*. It is physical light broken by Dante's solid human frame, light defined thus by its negation, shadow *[V, 9; V, 25-27; III, 16-21; III, 90-95]*. Dante in this world of refracted, shadowed light cannot sustain the light of heaven emanating brilliantly from the angelic messengers who purge his soul.

The trinitarian motif reaches full realization in the course of Paradise. This third phase of canonical development subsumes the previous two: the dialogue relationship posed as an empty structure in Hell and fulfilled through Purgatory acquires higher intensity in Paradise as it unfolds between the *mind* of Beatrice and the developing *mind* of Dante. The wall of fire is the diesis effecting the transition. The earlier "odas" are thus modulated into the redefined form of an expanding "I-thou" love relationship that mediates Dante's conceptual ascent to identification with the Trinity. The plastic imagery from Hell as well as the binary symmetries of Purgatory are subsumed by the uniquely "conceptual" imagery of Paradise, in the same way that color and its negation (darkness) are subsumed in pure white light.

The entire movement of Paradise in fact is manifested entirely through the image of light, white light, color in its true essence. Yet it is not static, flat light; its fundamental characteristic (like that of its correlative, love) is that the more it shines giving off of itself, the greater its capacity to illuminate becomes.

Paradise is flooded not only with light, but also with music, and the two are depicted as essentially of the same nature. This in fact is the key to grasping the unsurpassed heights reached in the music of the poetry of Paradise.

The light image increases in intensity as the cantica flows in its self-expanding movement upwards and forwards: from the first glimmerings of blessed souls in Canto III who emerge like reflections, to the golden mirror of

souls moving along the celestial ladder, to the river of light, to the white rose of the Empyrean, and the final image of the trinitarian sphere of light. In all instances the movement of light, whether reflected or perceived directly in its increasing luminosity, appears through music: the two circles of souls including Aquinas move in contrary directions singing separate, contrapuntal melodies, and a third circle emerges as Dante and Beatrice rise to the higher sphere. The heavenly music intensifies from canto to canto, reaching full-throated choral outpouring in the prayers and hymns sung to rejoice in God.

"Al Padre, al Figlio, a lo Spirito Santo"
cominciò "gloria!" tutto il paradiso,
si che m'inebriava il dolce canto.
Ciò ch'io vedeva mi sembiava un riso
de l'universo; per che mia ebbrezza
intrava per l'udire e per lo viso.
Oh gioia! oh ineffabile allegrezza!
oh vita integra d'amore e di pace!
oh sanza brama sicura ricchezza!

Then "Glory to the Father, to the Son,
And to the Holy Spirit," sang aloud
All Paradise; that with so sweet a strain
My spirit reeled. And what I saw, methought,
Seemed like a smile of all the universe;
Thus both my ears and vision opened me
To ecstasy. Oh joy! bliss beyond words!
Imperishable life of love and peace!
Exhaustless riches, from all wanting free!

[XXVII, 1-9]

But even physically, Dante identifies music (sound) with the wave-like behavior of light:

Si tosto come l'ultima parola
la benedetta fiamma per dir tolse,
a rotar cominciò la santa mola;
e nel suo giro tutta non si volse
prima ch'un'altra di cerchio la chiuse,
e moto a moto e canto a canto colse;
canto che tanto vince nostre muse,
nostre serene in quelle dolci tube;
quanto primo splendor quel ch'e' refuse.
Come si volgon per tenera nube
due archi paralleli e concolori,
quando Iunone a sua ancella iube,
nascendo di quel d'entro quel di fori,
a guisa del parlar di quella vaga
ch'amor consunse come sol vapori;
e fanno qui la gente esser presaga,
per lo patto che Dio con Noè pose,
del mondo che già mai più non s'allaga;
così di quelle sempiterne rose
volgiensi circa noi le due ghirlande,
e si l'estrema a l'intima rispuose.

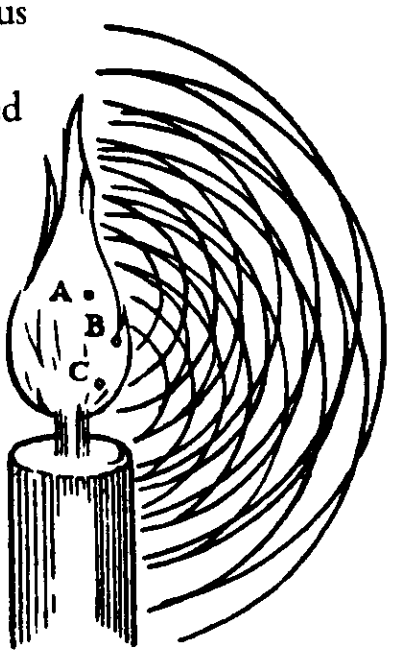
Soon as its final word the blessed flame
Had raise for utterance, straight the holy mill
Began to wheel about itself once more;
Nor had it closed its circle once, before
Another one, revolving, compassed it;
Motion to motion, song to song, conjoining;
Song, that as much our muses doth excel,
Our sirens with those tuneful pipes, as ray
Of primal splendor doth its faint reflex.
As when, if Juno bid her handmaid forth,
Two arches parallel and like in hue
Span the thin cloud, the outer taking birth
From that within (in manner of the voice
Of that meandering nymph whom love did melt
Away, as sun the mist); and they who gaze,
Presageful here on earth call back to mind
The compact made with Noah, of the world
No more by God to be o'erflowed; e'en thus
Of sempiternal roses, bending, wreathed
Those garlands twain around us, and replied
The outermost thus to the inner one.

[XII, 1-21]

Light, like sound, moves in concentric waves, like ripples of water:

Dal centro al cerchio, e sì dal cerchio al centro,
movesi l'acqua in un ritondo vaso,
secondo ch'è percossa fuori o dentro.

From center to the circle, and so back
From circle to the center, water moves
In the round chalice, even as the blow



Ne la mia mente fé subito caso
    questo ch'io dico, si come si tacque
    la gloriosa vita di Tommaso,
per la similitudine che nacque
    del suo parlare e di quel di Beatrice,
    a cui sì cominciar, dopo lui, piacque . . .

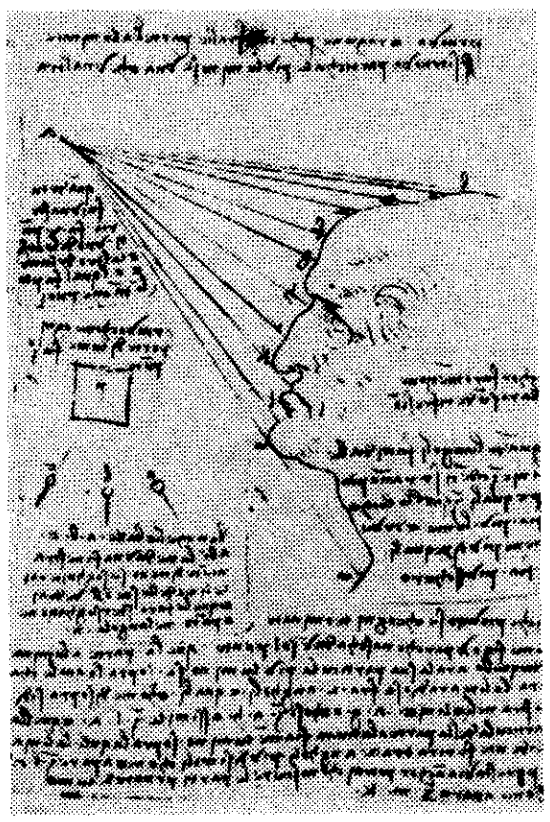
Impels it, inwardly, or from without,
    Such was the image glanced into my mind,
    Like unto that, the moment that there ceased
To speak the glorious spirit of Aquinas,
    And in similitude of sound I heard begin
    The voice of Beatrice, pleasing to speak
In alternate to his.

[XIV, 1-9]

Dante's light-music identification creates an especially powerful poetic image for a specific reason. This is not a "normal" poetic image. It is true, as Dante specifies in the *Convivio*, that all poetic language has at least two levels of meaning, the literal and the allegorical (or figurative). How this functions should be clear from the discussion of the first two cantiche. But in Paradise, this twofoldedness exists on a higher level, by virtue of the nature of the metaphor used.

The characteristic wave-process of physical light is illustrated through Paradise. However, light also uniquely corresponds to the emotional experience of human creative thinking. Thus the image of light calls up its emotional correlative, it "awakens" preconscious creative thinking.

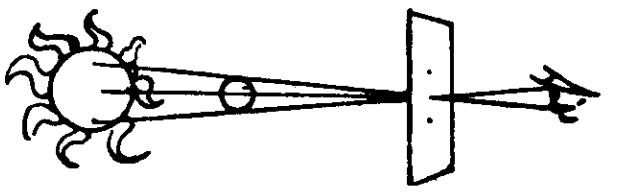
If, as in Paradise, the image of light is not merely used per se, but is the subject of inquiry into light's physical behavior, and if that inquiry itself is used as the metaphorical vehicle to communicate the process of the character Dante's own mental development, then the image evokes "internal illumination" in the mind of the reader; because the image does not merely suggest or reverberate by association, it *reproduces the process of concept-formation*. That process which is itself experienced as "internal illumination." It is through this unique image that Dante succeeds in making the identification of mind and universe empirically real for the reader *[XXXIII]*.



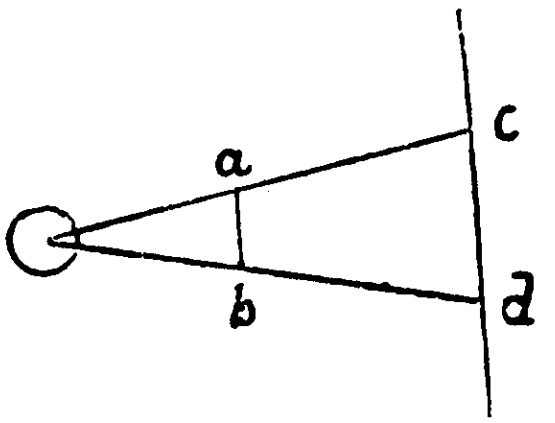
What may seem astounding about the way this occurs is that it does not require the mediation of visual, plastic imagery, in the ordinary sense of the term (as, for example, it occurs deliberately in Hell and Purgatory). On the contrary, the quality of thought depicted and communicated (to be reproduced) in Paradise shuns pictorial imagery, to achieve purely conceptual mental activity. What ensues is that the language, rather than simply using traditional imagery of light, produces, by stimulating concept-formation through light imagery (and theory), the image for itself. (The mind of Dante and the reader *creates* the image of the human face in the last vision). The language, in other words, "creates" the language.[28] This holds not only for the plethora of new formations of words in Paradise—like inleiare, intuare, imparadisare, transumanar, etc.—but for stock vocabulary depicting the experience of light. Thus scintilla, luce and lume (noun and verb both), illuminare, fiamma, infiammare, raggio, raggiare, irradiare, specchio, specchiare, transcend their normal semantic value and are perceived in the process of coming into being meaningful. Because this occurs through the process of concept-formation discussed above, the mind grasps how the image came to acquire its literal and figurative values. Thus Dante is very literally (and figuratively!) creating the language throughout Paradise, because the meaningfulness of the language—indeed of language in general—becomes empirically accessible to the reader.

This implies that there is something "onomatopoeic" in the concept-creating process. That is: the preconscious is stirred to wakefulness by meaningful utterances imaging the waking process. The coherence of certain

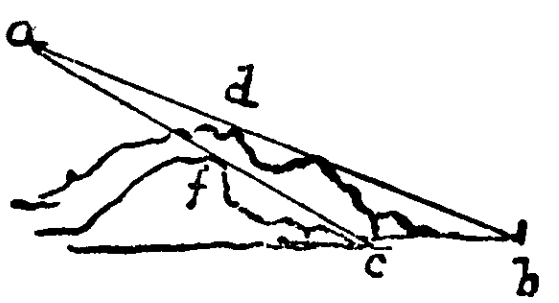
image-ideas (light, music) with this process indicates how certain classes of sound values (expressed in these images) have been determined by the human mind to express the conceptualizing process. Dante classifies such words as the noblest, identifying their nobility by virtue of the purity of their sound values [*De Vulgari Eloquentia,* II, vii].



The phenomenon suggested here is commonly encountered in memory. LaRouche has identified how the mind, groping for a name or idea buried in the recesses of memory, grasps the name at the preconscious level; one knows one has it "on the tip of one's tongue." How does the sought word or name emerge into consciousness? First an array of closely associated *sound* (not visual) images is unloosed until the mind seizes on the desired, complete name. The same process, LaRouche has shown, is at work in original problem-solving conceptualization. Through intensive concentration, the mind calls up approximations of the required hypothesis, approximations which announce their entry into consciousness *through sound.* This does not exclude visual image-formation, but the sound value is predominant and prior, because it is the mediation to the *language* of thought.



This has implications for language development. Since language is invented by man to communicate concepts and the concept-formation process, then phonology and morphology are not separate, arbitrary aspects. There is a coherence between human sound patterns and meaning in all languages, which is emphatic in onomatopoeia. But onomatopoeic words are not the "exception"; they incorporate the fundamental semantic content of all language, just as meter incorporates prosodic regularity. Indeed, were this not the case, poetry would be impossible: the power of poetry's meaning lies neither in the sound (and rhythm, meter) nor in the semantic content (and image) solely, but in the heightened coherence between the two, the coherence most readily experienced in conceptualization.

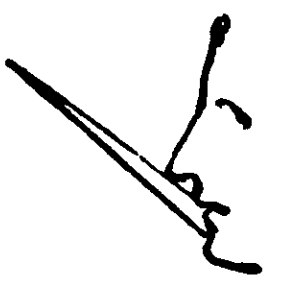


Thus the overwhelming power of Paradise: light and music are the images that most perfectly communicate this process. Dante integrates them in such a way as to make the mind's process of conceptual leaps "onomatopoeic"; the light of the perfecting mind is music. If one were to object that "onomatopoeic" be inappropriate because "light has no sound," one is tone-deaf to Paradise; light does have a sound, it sounds like music *[XVIII, 70–81; XXVII,1–9].* The poetry of intellectual light *is* music:

O luce etterna che sola in te sidi
sola t'intendi, e da te intelletta
e intendente te ami e arridi!

Eternal light! Sole in thyself that dwellst,
And of thyself sole understanding, known
And understood by thee, thou lovest thee
And smilest on thyself!
[XXXIII, 124-126]

It was with these secrets of language that Dante succeeded in enlightening the minds of fourteenth- and fifteenth-century Florentines. The treatises on optics, the Neoplatonic epistemological tracts were not enough to create a Brunelleschi or a Leonardo. Dante's poem was indispensable because it alone could transmit the fundamental concepts in such a way as to engender their visual application. The processes of physical light may have been detailed in the treatises, their laws defined, but the *Commedia* was necessary to provide the crucial experiment (for Brunelleschi et al.) proving the crucial coherence of physical and intellectual illumination, of universe and mind, of God and man. The *Commedia* was the proof that man could forge the musical, poetical, and visual language to transmit that coherence.



NOTES

1. See, for example, Lyndon H. LaRouche, Jr., "Poe's Conception of Poetry," *The Campaigner 11:6 (August 1978),* and "Poetry Must Supersede Mathematics in Physics," *New Solidarity IX:33 (June 23, 1978).*

2. Altissimi Cantus, Apostolic letter for the VII centenary of Dante Alighieri's birth, December 7, 1965. On this occasion Pope Paul VI established the Chair for Dante Studies at the Sacred Heart Catholic University in Milan.

3. In his *Storia della letteratura italiana,* as well as his *Saggi critici,* (Bari, Laterza). Significantly, it was DeSanctis who was responsible for imposing Alessandro Manzoni on Italy as the national poet. Manzoni was a self-declared anti-Dantist who destroyed Dante's poetics and founded literary Italian on a diluted, spoken language characterized by "common sense" proverbial expressions. In his theatrical works, Manzoni tried to create Italian identification with the barbarian Longobards; in his novel *I Promessi Sposi* (which schoolchildren are forced to spend one year reading), he identifies the poor, ignorant common man as the model for Italians.

4. Shelley apparently wanted to write an epic and failed. However, his and Poe's arguments against the epic are not "sour grapes," as is clear in their entire production and activity. The case of John Dryden is very different. Dryden was evidently commissioned by the Royal Society to compose poetry in a pseudo-epic mode so as to destroy the influence of the ailing and defeated Milton. Dryden had the audacity to request Milton's permission to adapt *Paradise Lost* to rhymed couplets. The significance of Dryden's operation, which indeed established the rhymed couplet as the hegemonic verse form for centuries in England, will become clear in the last part of this article dealing with metrics. In a similar though far more insidious manner, T.S. Eliot, who saw Dryden as his mentor, launched an open attack against the Elizabethans and especially Milton and Shelley. Eliot contended that Milton had destroyed the English language, and that Shelley's poetry, though full of scattered, lyrical excellence, contained repulsive ideas. Eliot was recruited by Bertrand Russell and taken from Harvard to England. There he was employed in Lloyds Bank to oversee debt repayments decided by the Treaty of Versailles; thus he was being paid directly by the British financial oligarchy that had made the treaty. His poetry was but one aspect of his anti-American, antihumanist mission. As a literary critic and carefully groomed man of letters, his aim was to repeat the Dryden-Royal Society witchhunt and determine what literature should or should not be studied in American universities. Eliot's acceptance of British citizenship and entry into the Church of England (as well as his earlier, unsuccessful bid to become a secret service intelligence agent during the war) only document his allegiance to Britain.

5. It is significant that the seeds for Cantor's transfinite conception were in Augustine's *City of God* (Book Two). Cantor himself identified the germ concept in Augustine in his correspondence with Pope Leo XIII and other church representatives with whom he worked in collaboration. The point is that the fundamental notion of a self-expanding universal is coherent with a Neoplatonic notion of God.

6. Shelley and Schiller are the most explicit writers on this prior to LaRouche's more advanced coherent theory of the poetic principle.

7. At the beginning of the list of philosophers, Dante speaks of "il maestro di color che sanno" (the master of those who know). Virtually all critical editions of the *Commedia* identify this character with Aristotle, and Dante is traditionally classified as an Aristotelian. Although we have not yet documented where the error ends and fraud begins (or vice versa), it is clear that the "maestro" is not Aristotle and that Dante is not Aristotelian. Two things should be kept in mind: first, that Dante's knowledge of Plato was mediated through Latin translations of Arab scholars' refutations of Aristotle. Ibn Sina's *Poetics,* for example, is written, like many of his works, in the form of a critical commentary of Aristotle. The only original text by Plato current in Dante's Europe was apparently the *Timaeus,* which Beatrice discusses in Paradise *[IV]*; the entire organization of the cantica reflects this text. The other consideration is that Dante was employing irony to a polemical purpose throughout his poem. The great debate in the thirteenth century was the fight between Aristotelian and Platonic epistemology. The reader Dante has internalized therefore knows this and should read references in this light. Thus, the fact that Aquinas is in Paradise does not mean that Dante was a Thomist; only an Aristotelian approach could conclude anything similar. Aquinas is a pedant in Paradise, and he is surrounded by his mortal epistemological enemies, beginning with Sigier of Brabant! Similarly, as Stephen Pepper has rightly pointed out, the vicious St. Bernard of the last cantos proves to be of no help to Dante; Dante reaches God without Bernard. Dante *uses* Aristotle, nothing more. His most explicit opinion of Aristotle is evident by the fact that he equips Virgil with Aristotelian categories in order to "explain" Hell. The polemic in Purgatory is also explicit, and it continues in Beatrice's constant attack on "sense certainty" in Paradise.

The use Dante makes of classification throughout the poem provides decisive refutation of the Aristotelian charge. An Aristotelian would presume that all the characters in Hell are evil, all those in Purgatory less evil, and all those in Paradise, perfect. Yet, this doesn't work. Dante places Frederick Hohenstaufen in Hell, as well as Dante's master Brunetto Latini who was at the court of Alfonso the Wise, for example. Many leading representatives of the Platonic faction of the Arab-Hohenstaufen forces are in Hell. Even Muhammad is in Hell! But Dante was an Arabist! The reasons why he does this seem to be twofold. First, he focuses on sin as historically represented by the best people, the humanist leadership, in order to emphasize (as Shakespeare was to do later) how the tiniest flaw in the world-historical personality leads to society's utter destruction. Second, the poem is a process of continuous re-definition, whereby the criteria of sin, nominally expressed, are subject to change. In this way, Muhammad is in Hell among the sowers of discord only because the mind at that stage, arguing from a nominalist Christian standpoint, would view the Prophet in this *erroneous* fashion. The proof lies in the fact that the ascent to Paradise

through the underworld actually mirrors the Koran, and the Arabic poem *The Book of the Ladder.* Likewise, for Frederick: although he is among the excommunicated in Hell, we find in Paradise that his mother, Costanza, is described as the one who "generò il terzo e l'ultima possanza" (generated the third and last greatest power), the last great emperor, Frederick!

8. See LaRouche, "Beyond Psychoanalysis," *The Campaigner 6:3-4 (September/October 1973)* and "The Case of Ludwig Feuerbach," Parts I and II, *The Campaigner 7:2 (December 1973).*

9. The great Renaissance Annunciation scenes should be seen as realizations of this pictorial image of a bas-relief. Simone de Martini's as well as Leonardo's masterpiece come to mind.

10. Dante underlines the character Dante's emulation of the penitents, often in very humorous ways. For example, in the circle of the proud, Dante literally imitates the bent-over sinners. At the beginning of Canto XII, he writes:

> Di pari, come buoi che vanno a giogo,
> m'andava io con quell'anima che carca,
> fin che 'l sofferse il dolce pedagogo . . .
>
> With equal pace, as oxen in the yoke,
> I, with that laden spirit, journey'd on,
> Long as the mild instructor suffer'd me; *[XII, 1-3]*

until Virgil tells him to stand up straight.

11. The Platonic dialogue process that Dante establishes here is the key to the entire "Dolce stil nuovo"-school use of the image, as well as the root of Shakespeare's and other Tudor poets' conception of knowledge through (moral) vision. But Dante's dialogue is more complex than it appears. There is the Dante-Beatrice dialogue, and subsuming it, the Dante (poet)/Dante (character) dialogue (which is the autobiographical framework), in turn subsumed by the Dante-reader dialogue. This, which is replicated to some extent in Shakespeare's sonnets and some plays, is what engenders the still higher dialogue created (reflected) within the reader's mind. This is self-conscious, creative thinking.

12. This sheds light, retrospectively, on the necessity for the virtues to be depicted *pictorially* as we have seen in Purgatory. At the same time, as in Paradise the need for graphic representation of the idea fades, Dante begins to *see* more clearly. More and more frequently, he and Beatrice begin speaking with the phrase "Io veggio ben . . " ("I see clearly that . . .").

13. The scholastic interrogations Dante is subjected to are often used to prove he was an Aristotelian (see note 7). But their importance lies not in the fact that Dante answers correctly. The answers are obvious both to Dante and the reader at this point. The importance lies in Dante's going *beyond them to embrace a vision that eludes the scholastic formulation.*

14. As Dante approaches the Empyrean, another conceptual problem arises for the reader, though it is not identified in the text. This is the relationship between the concentric spherical process identified as the angelic hierarchy (the point of light) and the planetary system, which is its reflection. The earth, from which Dante and Beatrice initiate their journey to the Empyrean, is the farthest star and is presumably the center of the physical universe. Yet the sun, which is the fourth star in the conceptual journey, is *poetically* recalled in the vision of the Empyrean. Is Dante's universe heliocentric?

15. Stephen Pepper and Nora Hamerman, "The Renaissance and the Idea of Progress," *The Campaigner 10:1-2 (January-February 1977).*

16. "The Historical Quest for a Science of Vision," *Fusion, 1:9 (July 1978).*

17. *Studi su la "dolce" prospettiva* (Milan, Martello) 1976.

18. Parronchi's documentation of Dante's sources shows that mirror experimentation was detailed in the earlier Neoplatonic treatises. He also shows that the same texts described the experiment that Brunelleschi carried out with the Baptistry panel.

19. "Moreover, this vernacular of mine introduced me to the way of science, which is ultimate perfection, insofar as with it I entered into Latin and with it [Latin] was demonstrated to me: which Latin was then the way for me to advance further." *Convivio, I, xiii.*

20. Or, any simple utterance, such as "Please leave the room," can mean anything from "I'm glad you understand why I'd like to be alone" to "Get out of here before I kill you."

21. The most exciting and fruitful experimentation in quantitative English poetry took place in Tudor England at the hands of Sidney, Spenser, and their associates. Their interest was not in replicating Latin metrics in English, but in using English's potential for vocalic elongation, which had been lost from Anglo-Saxon, to heighten the musicality. Since Elizabethan English was undergoing profound, explosive development, as a result of the massive influx of foreign idioms (from over fifty different languages), the opportunities for poetic development were further enhanced. See Campion's work on this, especially in connection with musical compositions for poems. Giordano Bruno's role in England is also noteworthy. Bruno's extraordinarily Dantesque poetry must have provided significant input into Sidney's experimentation. The best treatment of the principles underlying quantitative vocalic patterns for poetry is to be found in Poe's "Principles of Versification"; the best modern example is Poe's own poetry.

22. Take, for example, the opening lines of the *Convivio,I*: "As the Philosopher says in the beginning of his First Philosophy, all men naturally desire to know . . ."

23. The fact that Dante takes the freedom to use varied forms of one word (diritta, dritta; lume, lome) shows that the variations either existed in current use or *could exist,* proving the case for qualitative rather than quantitative accent. Most of Dante's innovations in the language derive from such freedoms and applications by analogy (from Latin).

24. Milton used this principle to extraordinary effect in *Samson.* Indeed, Milton's poetics is directly derived from Dante. See Price, *The Italian Element in Milton's Verse.*

25. LaRouche, "A Theory of Development for African Labor," *Fusion 2:8 (June 1979).*

26. The diesis "in the small" is the last line of the last canto of each cantica:

> Inf. XXXIV, 139: e quindi uscimmo a riveder le stelle.
> Purg. XXXIII, 145: puro e disposto a salire a le stelle.
> And restated in Par. XXXIII, 145: l'amor che move il sole e l'altre stelle.

27. This may well be where Schiller conceptualized the "Ode to Joy," which Beethoven used in the Ninth Symphony. The whole Symphony seems to reproduce the method of ascent to Paradise.

28. This is not to imply that words are amorphous, arbitrary, or meaningless. They are meaningful and are determined by the global prosodic system of the language as a whole. When the semantic value of words is overlooked in a stupid attempt at "pure musical poetry," the poetry is meaningless. See D.H. Lawrence's poetry, that of the Italian futurist Marinetti, and later aberrations in the "Beat generation." Compare these to Milton's poetry, especially *Samson Agonistes*; Milton is the last poet in England to have consciously applied an understanding of music to poetry, producing a poetry no longer dependent on visual imagery.

Recreating The Platonic Method in Drama

The Humanist Academy Drama Group in New York City will present a stage production of Christopher Marlowe's *Tragedy of the Rich Jew of Malta* in the middle of April of this year. The New York City production is part of an international effort, coordinated through the Humanist Academies in the United States and Western Europe, to recreate the working principles of the Platonic dialogue method in drama. In Wiesbaden, West Germany, a parallel production is under way of William Shakespeare's *Twelfth Night*.

Both efforts are properly seen as contributing to the development of the new "Schillerzeit" called for by Mrs. Helga Zepp-LaRouche in her presentation to the leadership conference of the International Caucus of Labor Committees held in Detroit, Michigan in the closing days of December 1979. The parallel efforts will demonstrate the necessity for the recreation of the Platonic method.

In this way drama will once more assist in the recreation of what Schiller called "men greater than their destiny."

The New York effort will be the first in this kind of direction, and will demonstrate the qualitative difference between the Platonic apporach and the competing Aristotelean methods which have enjoyed unchallenged hegemony in production methods for stage and screen alike since the attempted Dark Age known as the Enlightenment in the eighteenth century.

The two approaches are characterized by their different choice of subject matter.

In the Platonic dialogue approach to drama, what is primary is the development, in a lawfully ordered way, of the powers of mind which distinguish man from the beasts. Through deployment of provocation, irony, variety, contrast, humor, the Platonic method compels judgment to be passed on what is being seen and heard, to distinguish what is actually happening from what is apparently seen and heard to be happening. Through an ordered progression of such judgments, made necessary by the development of the action, causal connections are established such that the capacity to make judgments in an ordered way becomes known, and conscious knowledge of the potentiality for and existence of reason is awakened.

In this approach, plot, characterization, and staging are merely adjuncts designed to assist in arousing conscious awareness of the actual subject matter to be communicated.

The alternate Aristotelean method can be seen nightly purveyed on the boob-tube through such obscenities as "Mary Hartman," "Charlies' Angels," "The Rockford Files," and so forth. Such schlock productions share a common bestial conception of the human mind with the theater of, for example, Ben Jonson, Dryden and Sheridan, George Bernard Shaw, Henrik Ibsen and August Strindberg. That common conception is best identified by the catchwords that have characterized the Aristotelean approach since the writing of his *De Poetica* over two thousand years ago. It is the effort to "imitate" what are called the real or natural apparent conditions of life.

In this approach situations are cooked up in credible, or incredible, conformity with whatever pornographic rationalizations a targeted population will employ to prop up or massage a sense of identity battered by the prevailing oppressive features of everyday life. In this way what is known to the sheep as recreation or entertainment becomes psychological warfare deployed to maintain the infantile illusions of self-conception that keep sheep acting like sheep. Warner Brothers and CBS are internationally notorious for this criminal activity.

Where the Aristotelean strives for suspension of belief and judgment on behalf of the perpetuation of fantasy, the Platonist strives to awaken the powers of mind to overcome fantasy and thus become conscious of its progress toward mastering these powers.

The *Tragedy of the Rich Jew of Malta* has been chosen as a demonstration of this method. The production in New York will be the first part of a trilogy, to be succeeded by productions of *The Tragical History of the Life and Death of Doctor Faustus*, also by Christopher Marlowe, and William Shakespeare's *Merry, Conceited Comedy of the Merchant of Venice, with the Tales of the Three Caskets, and the Pound of Flesh.* Concomitantly, efforts are being made to

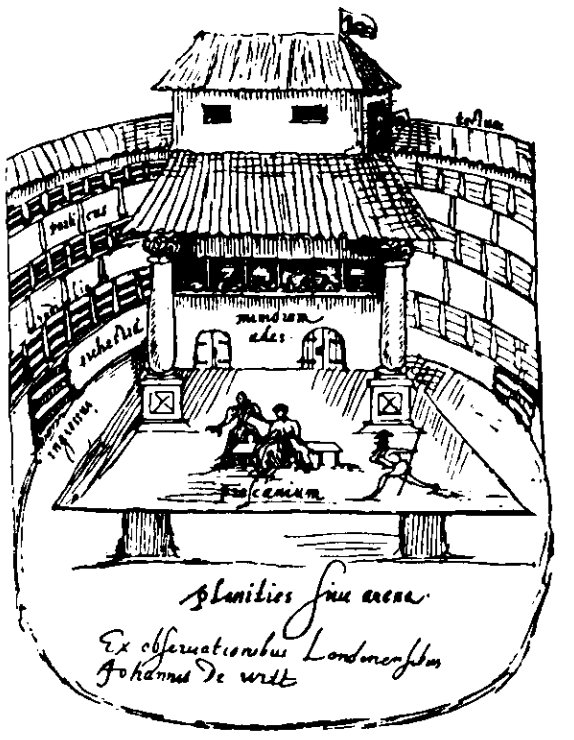
develop adequate English-language translations of Friedrich Schiller's *Cabale und Liebe* and *Don Carlos.*

Because of the influence of the Aristoteleans, of the three plays under study for production, Marlowe's *Tragedy of the Rich Jew* is seldom performed on the grounds that it is an inferior play, and is supposedly violently anti-Semitic; *Dr. Faustus*, though produced, is always presented as ridiculing the man who suffers the delusion of thinking that he is able to conquer the universe through science; and the play that goes under the name of *The Merchant of Venice* has been banned in New York since the mid-1960s by pressure mobilized through the anti-Semitic organization known as the Anti-Defamation League of B'nai B'rith. Irving Suall of that organization's Research Department is the present censor.

While it is of course useful that passions are still aroused and controversy unleashed by these plays nearly four hundred years after they were first produced for the stage, that is not the primary reason why they have been chosen for production in that order. Stirring up the passions in a useful way opens up the possibility for appropriate knowledge of the process by which reason is developed.

To accomplish this, the Platonic method distinguishes three qualitatively distinct levels of knowledge, represented by the three kinds of soul Plato identified in the *Republic*: Bronze, Silver and Gold.

The three plays define a line of progress for the self-development of the soul to higher levels, by provoking self-conscious reflection on the consequences of ordering the soul according to



Shakespeare's Globe Theatre

either mere gratification of the senses or subordination to an inefficient or evil purpose. They therefore force, through development of the audiences' powers of mind and judgment, lawfully arrived at foreknowledge of necessary lawful change in the apparent fixed ordering of the laws which govern the activity of the soul on either of the two lower levels.

For example, the trial scene in the *Merchant of Venice* demonstrates through the anticipated action of Portia in saving Antonio the Merchant from the consequences of his follies, and Shylock, despite himself, from the consequences of his evil, the freedom and efficacy of creative reason in ordering silver and bronze souls according to the lawfulness which characterizes the development of the universe as a whole through lawfully changing what are perceived as fixed laws. Thus knowledge can be developed of the required qualities of mind to further such necessary progress through the development of the qualities of mind which make people "bigger than their destiny."

The internal coherences and development of the three plays makes it unquestionable that Shakespeare drafted the Merchant of Venice so as to provide the standpoint of creative reason as the ordering principle of the dialogue initiated by Marlowe, just as Dante's *Paradiso* creates the lawfulness governing the preceding canticles of the *Commedia*.

In that ordering, *The Tragedy of the Rich Jew of Malta* represents the lowest level, otherwise identified with Dante's *Inferno*. Contrary to the anti-Semites of the ADL and their friends, the subject matter of the play is not defined by Barabas, the character with the most lines. In surprising ways, the action of the play encourages the evolution of a conception of freedom adequate to lifting the enslaved and whorish masses of sheep out of the control of the organized social force which manipulates their slavishness and whorishness. In this way the evil of Barabas the nominal Jew is seen to be a mere instrument in the hands of a greater evil, the nominally Christian feudalist order of the Knights of St. John of Jerusalem, otherwise known as the Knights of Malta, and identified as the adversary force of Christian, Jew, and Muslim alike.

Four hundred years after the play was written to rally forces against the Knights of Malta, that order remains, not only entrenched in the board rooms of CBS and Warner Brothers, but as the principal concentration of Aristotelean evil in the world today. And the task of recreating people big enough for the destiny defined by Marlowe, Shakespeare, and Schiller remains to be accomplished, in surprising but lawful ways.

—*Christopher White*

NOTES

Archaeological Find A Political Hot Potato

In 1976, University of Rome archaeologist Paolo Matthiae and his then-collaborator Giovanni Pettinato announced what promised to be the major Near Eastern archaeological find since the 1930s. The discovery was the ruins of Ebla, a city in central Syria near Aleppo, known previously from isolated Babylonian and Egyptian records, and known to have been deserted by the mid-Second Millennium B.C.

In an area where archaeological scholarship is intimately linked to politics (the Israeli-Arab question) and broader issues of Jewish, Christian and Islamic religions, however, the preliminary reports of the contents of the Ebla tablets have become embroiled in controversy—to the point where some scholars now claim that the entire decipherment of the archaeological remains is in doubt. (This is not surprising, insofar as Near East research, like Classical Studies generally, has almost invariably been run for purposes of ideological manipulation of mass political and religious movements by political-intelligence networks associated with Oxford and Cambridge Universities, the Jesuit order, and the Zionist movement.)

What made the discovery of Ebla groundbreaking—like that of the Ugarit on the Mediterranean coast of Syria in the 1930s—was that the excavations uncovered a large store of administrative records, literature and scientific material written on clay tablets. The tablets found at Ebla included a small find dating from the mid-Second Millennium, and, by far the most significant, some 16,000 tablets dating from the late Third Millennium (initially dated around 2400 B.C.).

These latter tablets confirmed that urban civilization at that early period was not, as many believe, restricted to isolated clusters grouped in the Tigris-Euphrates valley, the Nile valley, and the Mediterranean coast of Syria and Palestine. The discovery of Ebla, a major city of population estimated around 20,000 (the order of magnitude of Periclean Athens) in an area of Syria where urban civilization had been thought not to exist at so early a period instantly proved that the city-centered civilization of the Third Millennium had stretched continuously from the Indus Valley through Mesopotamia to Asia Minor, the Aegean, the Levantine coast and Egypt.

The existence of Ebla, therefore, discredits the hegemonic thesis fashionable since World War I among Warburg Institute and Jesuit circles that ancient Near Eastern civilization developed through labor-intensive agricultural adaptation to the natural cycles of seasons, floods, etc. in the Mesopotamian alluvial plain, rather than through the urban commercial-scientific outlook characterized by intensive concentration on city-building.

The Ebla Findings

The first reports of the decipherment of the tablets by Pettinato stated that:

(1) Ebla was a nexus of trade in manufactures which included the Sumerian cities, Asia Minor, Akkad, Lebanon and Cilicia, and Cyprus. Ebla was apparently a manufacturing center which produced furniture out of Levantine and Cilician lumber for export to treeless Mesopotamia, and wove raw cloth obtained from the Sumerians for re-export to Sumer. Ebla also had commercial relations with Byblos, then under Egyptian control.

(2) Ebla may have been involved with the Assyrians in the foundation of the commercial colony of Kanish in Asia Minor (Kültepe), which earlier in this century yielded an important stash of commercial records, and which apparently played an important role in the spread of urban civilization in Asia Minor.

(3) Strong cultural ties between the Eblaites and Sumerians are indicated in the discovery of Eblaite-Sumerian "dictionaries," as well as of a mathematical work written by an inhabitant of the Sumerian city Kish.

(4) The language used at Ebla was not of the East Semitic group ("Akkadian") used by the Sargonids, Babylonians and Assyrians, a form of which became the accepted diplomatic language of the entire Near East in the Second Millennium. Rather, it belonged to the West Semitic group which included the later dialects of Ugarit, Phoenicia, and Israel and Judea.

Details of the texts on which Pettinato bases these reports will no doubt undergo refinement. Other reports by Pettinato, however, struck a sour note. Particularly puzzling was his suggestion that the Eblaite language was more closely related to ancient Hebrew than to Phoenician and Ugaritic. Whether or not Pettin-

ato had appreciable "structural linguistic" considerations to present in favor of this conclusion—he did not present any—in any event the time spans involved (1,000 to 1,500 years) and intervening historical upheavals rule out any possibility of obtaining valid "structural" comparisons in matters of detail concerning the Eblaite, Ugaritic, Phoenician, etc. dialects.

Equally suspect, if not downright silly, was Pettinato's attempt to use the Ebla tablets in an effort to shed light on the history behind some of the more obscure episodes in the Old Testament. For instance, Pettinato adduced evidence that an Eblaite King Ebrum had introduced religious reforms which were manifested in the replacement of the form "Il" by "Ya" in theophoric names ("Yahweh"). This was to serve as an historical underpinning for the Abraham legends in Genesis.

Political Controversy

Pettinato's conclusions smack of the methods of the post-World War I archaeological school whose principal figure until his death several years ago was Johns Hopkins scholar William Foxwell Albright. Among Albright's pupils and protégés, active in the field of Near Eastern and biblical studies today are Israel's Yigael Yadin, Father Mitchell Dahood, a Jesuit and dean of the Oriental Faculty of the Pontifical Biblical Institute in Rome, Harvard's Frank Moore Cross, and David Noel Freedman of the University of Michigan who is editor of the popular publication, the *Biblical Archaeologist*. Pettinato is, in fact, a protégé of Dahood, and Pettinato's first major English-language report on the Eblaite discoveries appeared in Freedman's publication.

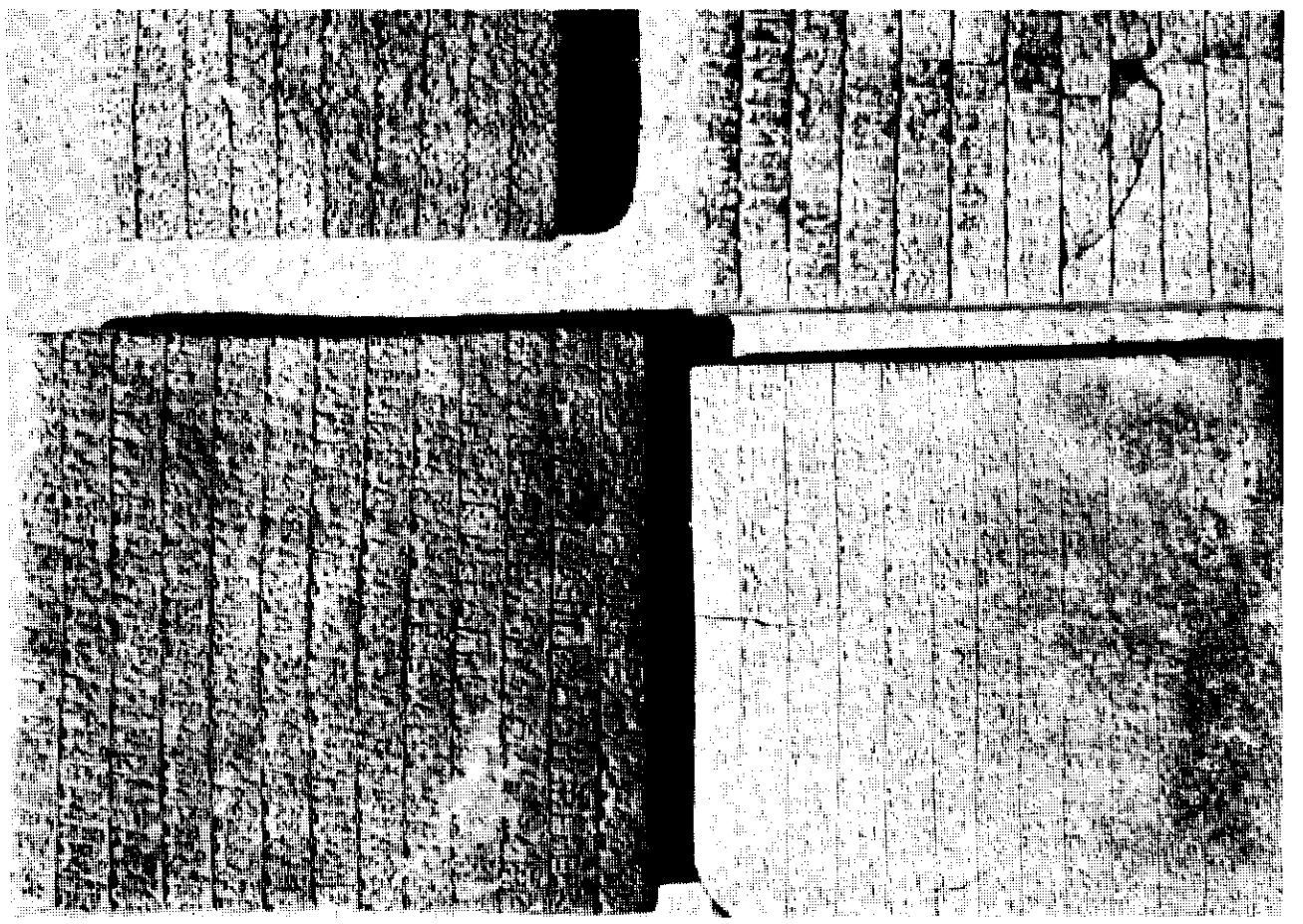
The members of this school—Freedman publicly, at considerable expense to his professional reputation, and Pettinato more discreetly—have recently thrown a swirl of bogus controversy around the Ebla findings by suggesting that what the Ebla tablets really prove is that Hebrew civilization extended well into ancient Syria. This is precisely the foreign policy position of the present Begin government of Israel, which is committed as a matter of policy to restoring Israel's ancient borders.

The result has been to throw a taint of doubt on all results emerging from the Ebla finds, while blaming the Syrian government—which is supposed to be distraught at the discovery that Syria is the seat of Israeli civilization—for "tampering with scholarship" in an incident involving Pettinato's ouster from the Italian-led team working on the Ebla tablets. (It is publicly agreed that this move was in fact initiated by Pettinato's collaborator Matthiae.)

It remains to be seen whether Matthiae and his co-workers will successfully preserve the Ebla tablets from the treatment that Albright and his colleagues dished out to the 1930s Ugarit finds—that "Israeli peasant civilization is superior to the city-centered Levant"—and whether the full ramifications of the Ebla discovery for understanding the history of civilization's development will be explored.

One result is clear, however: The Syrians, for fear of involving "politics" with "scholarship," have missed an important political opportunity. For if Pettinato's reports that the Judean god Yahweh was a member of various polytheistic pantheons extending some 1,500 years before the time of David are true, and other evidence indicates that this is indeed the case, then all Israeli claims to cultural and historical "uniqueness" as "God's chosen people" are destroyed. What Pettinato has in fact shown from Ebla, the Syrians might politely point out, is not that Syria is part of "Eretz Israel," but that Israel may well be part of Syria.

–Paul Arnest



Tablets found at Elba reveal early trade and commercial activity.

Nazi Race Science Revived

William Shockley, a physicist who won the Nobel prize in 1956 for his work on transistors, made national press and television news headlines the first week in March when he admitted contributing his sperm to a sperm bank dedicated to "increasing the people at the top of the population." The actual sperm bank is being kept by Robert Graham, a California businessman who was the associate of the late Nobel prize-wining geneticist Hermann J. Muller.

Shockley became very well known during the late 1960s and early 1970s for his work in tandem with the University of California's Arthur Jensen and Harvard University's Richard Herrnstein. It was during that time that the major educational and scientific journals of the country began to publicize their fraudulent theories that 80 percent of intelligence is determined by genetic factors.

Shockley still holds fast to this view, standing out as one of the most crude of the new breed of race scientists. He is well known for his public statements on the genetic inferiority of blacks and the need to reduce their "breeding." Shockley calls his genocidal theory "antidysgenics"—"my past and present emphasis on reducing the tragedy of the generically disadvantaged at the bottom." He defines "dysgenics" as excessive reproduction of the disadvantaged, and has advocated throwing "losers" like welfare recipients off the rolls to rid the world of "useless eaters."

"We are being threatened with a dysgenic trend in our society," Shockley said in a recent interview. "Twenty years ago, only five percent of Aid for Dependent Children recipients were trans-generational, that is, grew up in families who were welfare recipients. Ten years ago it was 10 percent. Now it's 20 percent. . . Meanwhile, the burden of over-reproduction of babies with a badly loaded parental genetic dice-cup is worsening, and we must act to change this. These people are *genetically enslaved*, they will be miserable all their lives, paranoid, frustrated, with no inherited ability to get along in our industrial society. . ."

Shockley currently claims that his donation of sperm is to be differentiated from his continuing endorsement of antidysgenics. He is among three to five other Nobel prize winners who have given their sperm to be frozen, and later inseminated into highly intelligent women whose marriages are childless. By advertizing in the magazine of Mensa, an international organization open to men and women with intelligence scores in the top 2 percent, Shockley and Graham have gotten three female guinea pigs who are now pregnant by Nobel sperm.

Shockley and Graham's theories are immediately traceable to eugenicists Alexander Graham Bell and Hermann J. Muller. Today it is a little known fact that the founder of Bell Labs, where Shockley got his start, was a raving racist. In 1914, Bell wrote a thesis titled, "How to Improve the Race" by increasing the number of marriages and offspring from couples composed of two people with "desirable" characteristics. Shockley, who is London-born, was also "educated" by the Massachusetts and California Institutes of Technology.

The Muller case is also forthrightly in the spirit of Nazi race science. A product of the Rockefeller Institute, Muller believed that "deleterious genes" were becoming preponderant within the "gene pool" (population) due to the elimination of "natural selection" by scientific and technological advance. If this continued, Muller predicted, the human race would be left with two kinds of persons: one so crippled that it can hardly move; the other able to move but totally tied down to having to take care of the rest. It was Muller's dream, according to Graham, that the sperm of gifted men could be used to remove "genetic defects" from the human evolutionary cycle.

The concept of human intelligence and capabilities being determined by the statistical interaction of the "gene pool" and the purity of the blood is easily recognized as the Nazi concept developed by British aristocratic circles and conduited into Germany by the British-controlled Thule Society and "Clivedon set" ideologue Houston Stewart Chamberlain. It was their commitment to Aryan supremacy that justified the purification of the race through the murder of millions of Jews, Poles, Russians, and others by the Hitler regime.

Unfortunately, the parallel

between Shockley's circle and the Nazis does not end with race science *theory*. Shockley's vocal insistence that "useless eaters" and "socially marginal" people can be "prevented" is the *content* of the genocidal austerity policies now being foisted upon the U.S. population by the Carter administration.

The coming to the fore of "fiscal conservative" economist Milton Friedman, a self-avowed admirer of Nazi Finance Minister Hjalmar Schacht, is one case in point. As Shockley colleague Richard Herrnstein said in a recent interview: "A valid connection can be drawn between Shockley's ideas and Friedman's. Shockley has on occasion suggested a more efficient use of fiscal means as incentives and disincentives to alter reproduction rates of various groups, to change the current trend of welfare, which favors the perpetuation of those with lower inherited intelligence. This matches Friedman's idea on changing the welfare system through fiscal incentives."

It is to be remembered that the left-environmentalist movement in the United States, supposedly the opposite end of the political "spectrum," is mobilized around exactly the same genocidal policies as Shockley and Friedman. This includes the leadership of Zero Population Growth, the U.S. arm of the cannibalism-promoting Club of Rome, and the gaggle of antinuclear environmentalist groups across the country who have been long committed to genocide in the Third World countries. Their united perspective is, in the words of a ZPG spokesman recently, to seek "a limitation or reduction of the world's population, especially the over-consuming population of the United States."

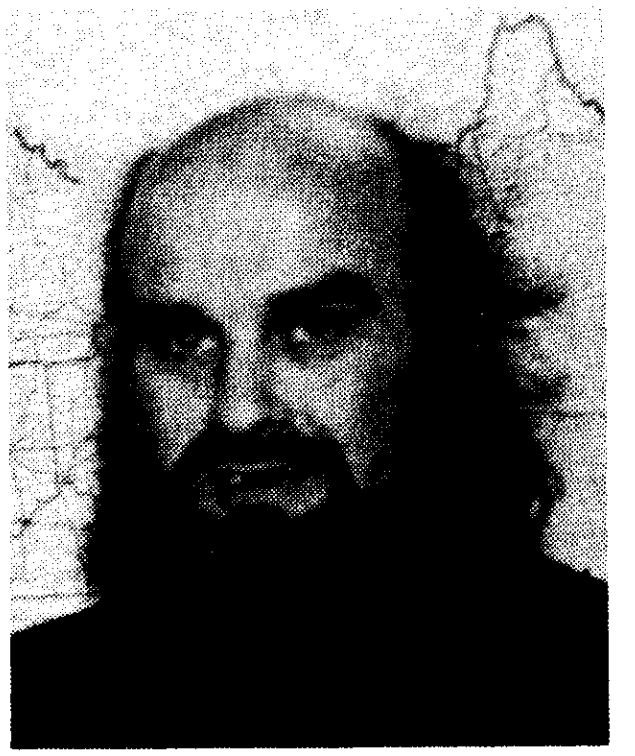
Pope to Launch War on Drugs

Pope John Paul II is expected to soon launch an international war on drugs, with particular focus on New York City. According to early March press reports in the United States, the Pontiff recently met with U.S. Congressman Lester Wolff (D-N.Y.), head of the House Committee on Narcotics Abuse, the president of the International Association of Chiefs of Police Joseph Dominelli, and veteran antidrug fighter Peter Bensiger, the head of the federal Drug Enforcement Administration.

The Pope is now expected to issue a written appeal aimed particularly at parish priests in New York and elsewhere to take an active and highly visible role in the antidrug fight. A spokesman for Rep. Wolff said the congressman hopes the priests "will go out into the streets and talk to the kids about drugs. . .Priests can give sermons, they can talk to community groups and church leaders. They can accelerate the antidrug programs in Catholic schools."

"A priest on the street can sometimes accomplish as much as the cop on the beat," Wolff's representative added. "We're hoping the Pope will ask priests in New York to wage an all-out battle against the drug scourge that is menacing the youth in our area."

A tradition of church activism in the fight against drugs has already taken hold in Europe, as witnessed by a recent visitor to the United States, Father Redento Tignonzini. Father Redento, who is responsible for the drug rehabilitation program of the Diocese of Brescia in northern Italy, was in the United States at the invitation of the LaRouche for President campaign and the National Anti-Drug Coalition.



Father Redento Tignonzini, leader of international anti-drug fight, on tour in U.S.

In an interview released shortly after his return to Italy, Father Redento expressed his concern that "during the three years of the Carter administration there has been an increase in drug consumption worldwide and in the country of 300 percent! What does this mean if not the fact that the U.S. government is somehow complicit in the drug networks?"

Another of Father Redento's comments indicated that action by the Vatican may in fact be the ingredient necessary to establish a positive role for the U.S. Catholic clergy in the war against the drug epidemic. The veteran drug fighter reported that he had unfortunately "found that the U.S. Catholic population lacks 'shepherds'. . . rather I found pastors in the Catholic Church who, because they are subject to certain political factions, are neglecting their duties. . .I met colleagues who showed me the door telling me very clearly that to discuss these [drug] problems was forbidden to priests, because priests are not supposed to be political."

BOOKS

FREE COMPOSITION
by Heinrich Schenker
translated and edited
by Ernst Oster
published by Longman, Inc.,
1979
2 vol.; 166 pages
with musical examples
$29.95

Heinrich Schenker

Wilhelm Furtwängler

The Battle for Counterpoint

Forty-five years after its first publication in German, but only one year after this magazine's first exposure of the political issues surrounding Heinrich Schenker's writings, this English edition of Schenker's last work, *Die Freie Satz*, finally makes available to serious students of classical music in America the central corpus of the great musicologist's theory.

For over twenty-five years, Ernst Oster, the translator of this work, battled with the opponents of Schenker's musicology over the book's publication. Early on, Oster—like Schenker himself and like the great conductor Wilhelm Furtwängler, a collaborator of Schenker's—was subjected to brutal public and behind-the-scenes vituperation as a "Nazi sympathizer," because of his attempts to publish Schenker's book in English. This reviewer, an acquaintance of Oster for much of the period in question, had occasion to discuss with him the suppression of Schenker's work in this country only months before his untimely death in June 1977.

At that time Oster seemed battle-weary, and affected by the psychological capitulations to his tormenters over the years, as was indicated by a rather hysterical denial of the political nature of the issues in which he himself had been embroiled for so long. He was nonetheless quite clear on the identity of several individuals who had acted to block *Free Composition*'s publication.

The circles who worked against Oster were in fact the same circles who sponsored the counterculture in Weimar Germany out of which the Nazi movement was built. These people had created the Nazi movement as well as the parallel cult of Zionism on behalf of British geopolitics after World War I, and had later run the "collective guilt" operation against post-World War II Germany out of the Wilton Park center of British intelligence. The London Tavistock Institute, the Frankfurt School in Germany under Theodor Adorno, and the Vienna School of linguistics were the main European-centered institutions behind this cultural design. These institutions' American sister-organizations, the Aspen Institute and the University of Chicago under Robert Hutchins, ran the same operation in the U.S., creating the rock and drug counterculture and undermining Americans' identification with the music of Bach, Mozart, and Beethoven through promoting such frauds as Schoenberg student John Cage as a "distinguished American composer."

Oster acknowledged that several previously Vienna-based individuals who were responsible for erroneously presenting a musical analysis based explicitly on structural linguistics as "Schenkerian theory" in America were involved in obstructing early release of *Free Composition* in English. Ironically enough, the fraud-

ulent notion of Schenker as an exponent of structural linguistics, and also a proto-Nazi, is carried forward into the present edition of *Free Composition* in the "Introduction to the English Edition" by Yale University's Allen Forte. Yet Schenker explicitly attacked this approach in several as-yet untranslated writings.

The Platonic Method

Unlike the writings of Schenker that were (as Schenker's student Dr. Felix-Eberhard von Cübe has pointed out), banned by both the Nazis *and* the Occupation forces in postwar Germany, *Free Composition* includes no direct attacks on British geopolitical designs in the post-Versailles Treaty period. The sole issue in this work is the application of the method of the Platonic dialogue to music.

The book is an exhaustive and painstaking exposition of the application of the principles of strict counterpoint to the higher-order domain of actual composition and performance of music. Schenker's exposition is purposely constructed in such a way as to demand that even a thoroughly trained musician must spend several months of intensive effort to work through it. To the limits of his capacity, Schenker demonstrates an approach to great music in which the significance of any particular moment in a musical work is defined by its simultaneous existence in three domains of development, which Schenker calls "foreground, middle ground, and background," drawing from principles of Gestalt psychology developed by Wolfgang Koehler and others.

In Schenker's system, "foreground" means the myriad detail of notes, phrasing, dynamic shading, etc. in the composition. The "middle ground" corresponds to successive abstraction of the broader features of voice-leading; for example, recognizing that a particular note may be related melodically not only to the notes immediately surrounding it, but also to musical phrases many pages distant. Schenker's "background," also called the *Ursatz,* uses this principle to reduce the voice-leading scheme of the entire composition to its most elemental form.This does not imply any simple structural categorization of the predicates of a musical work, nor is there any simple mechanical way of applying Schenker's method. The power and rigor of Schenker's essential approach lies in its coherence with the classical principle of domains of consciousness, traceable to the dialogues of Plato.

The secret of great music, in Schenker's view, lies in the countrapuntal *transformation* of such levels or domains of consciousness as that process is brought to bear upon the predicates of a single moment. To grasp music in this fashion requires, at least germinally, insight into the composer's own compositional method. Writes Schenker, "This continual present in the vision of the composer is certainly not a greater wonder than that which issues from the true experiencing of a moment of time: in this most brief space we feel something very like the composer's perception, that is, the meeting of past, present and future."

For Schenker, this was not merely an abstract or hypothetical approach but directly determined practice, including the approach to performance of great music: "A performance, in serving background, middle ground and foreground, can employ the greatest variety of color. Even the richest and most varied resources of performance *can be taught—and learned—with great exactness.* On the other hand, commitment to background, middle ground, and foreground excludes all arbitrary personal interpretation [emphasis added]."

This assertion was embodied in Schenker's longstanding association with Furtwängler and his role in shaping the latter's performance of the major works of Beethoven. But even more light could be shed on the matter with the translation and publication of Schenker's *Treatise on Performance,* which to this date remains sealed off from public inspection in the Oster archives at the New York Public Library.

A Systematic Flaw

Notwithstanding the essential soundness of Schenker's endeavor, his approach to making the principle of multiple domains fully practical in musical terms was inadequate. As a result, the nature of a great composer's perception of his own compositional method remained ultimately mysterious to Schenker, and his work, including *Free Composition*, is systematically flawed by a Kantian alienation from the active causal principle of self-conscious musical creativity. For Schenker, creative mental activity is ultimately unknowable: "A wonder remains a wonder and can be experienced only by those blessed with special perception. Its secrets are inaccessible to every sort of metaphysics, they are neither teachable nor learnable."

Schenker's notions of a "fundamental diatonic line" (Urlinie) and "fundamental form" (Ursatz) are an inadequate attempt to concretize a "phase space characteristic" determining the predicates of the musical composition as a whole. On the other hand, the "transformed stretto" defined by Beethoven's late works and first

recognized by Lyndon LaRouche in early 1977 represents the appropriate form of the principle Schenker was struggling to concretize. The canonical approach to composition and contrapuntal study identified by LaRouche more recently in these pages ("How to Teach Beethoven to the Layman," Vol. 12, No. 1) renders practically accessible what remained mysterious to Schenker.

Notwithstanding its limitations, the full translation and release of Schenker's *Free Composition* is a blow against the American musical ignorance that has allowed the proliferation of jazz and rock in our society. The work embodies elements of a Platonic-Neoplatonic approach to practical music sufficiently to have elicited the wrath for the last fifty years of the enemies of Beethoven, and remains a crucial prerequisite to the advent of an international musical renaissance, beginning in America.

—Dr. Peter Wyer

Dr. Wyer is a director of the Humanist Academy and is the author of a "Draft Proposal For a Heinrich Schenker Foundation For Musical Science" published in The Campaigner, *August 1978.*

Copies of Schenker's *Free Composition* are available through The Campaigner at 304 West 58th Street, New York, N.Y. 10019. Make check or money order for $29.95 payable to Campaigner Publications, Inc. New York residents, please add 8% sales tax.

EDITORIAL

Making Music

Continued from page 3

themselves. Furtwängler's collaborator Heinrich Schenker, also championed investigation into the method of Beethoven's composition.

One of the short-term objectives of the American Music System project will be to produce a definitive performance of an appropriate Beethoven work—a performance which will adequately represent the multidomained richness of a Beethovenian composition. Beethoven was the culmination of the tradition of contrapuntal polyphony in music commonly identified as the Well-Tempered System of polyphony. This tradition can be traced backwards from Beethoven through Mozart and Bach, the German School of Buxtehude, Tudor England's John Bull, Zarlino, the Arab musical theory articulated by Al-Farabi, to at least the kind of musical-poetical polyphony described by Plato in his dialogues. The multivoiced "dialogue" richness and development of contrapuntal music ought to be accessible to listeners when Beethoven, Mozart and Bach are performed.

In addition to the question of interpretation, the accessibility of Beethoven's musical ideas is directly shaped by the very nature of the musical program itself. The pervasive smorgasbord character of concert programs today—in which a Beethoven work is sandwiched between atonal noise on the one hand and post-classical music on the other—is inadequate. The sort of concert program which can excite the human mind's development in grasping the ideas of a Beethoven was illustrated by the extraordinary Musical Festival held by the Humanist Academy in Detroit, Michigan this past New Year's Eve as an alternative to the traditional bacchanalia celebrations. Performed mostly by amateur musicians aided by a few gifted professional soloists, the program, which has excited even those who were not there by its boldness and vitality, included: Mozart's Coronation Mass (K. 317); Beethoven's Archduke Piano Trio (Op. 97); J.S. Bach's Double Concerto in C Minor (BWV 1060); Handel's Messiah (excerpts); Haydn's Creation (excerpts); Beethoven's Septet (Op. 20); and as the final piece bringing in the New Year, Beethoven's Choral Fantasy (Op. 80).

The Precedent

In the eighteenth century Johann Sebastian Bach, Joseph Haydn, Leopold Mozart and their collaborators built a Musical System in Germany whose twin objectives were to wonderously advance the musical art and poetry of counterpoint at the same time that professional and amateur musical activities were organized in towns and villages, in some cases from scratch. The Musical System they developed made possible the emergence of Wolfgang Mozart and Beethoven in the next generation.

The success of a Music System flourishing in America in the 1980s will ensure that during the twenty-first century a musician on the level of Mozart and Beethoven will develop. Even more! The as-yet-unborn great who will surpass even Beethoven's magnificent achievements will emerge, just as surely as J.S. Bach composed for the future Beethoven, and Dante Alighieri knew, isolated in political exile, that his *Commedia* would guide and make possible all human achievements which could be called "great" after his death.

—Warren Hamerman

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In a groundbreaking study of the *Commedia (Divine Comedy)* of Dante Alighieri, Dr. Muriel Mirak shows how this famous epic poem provided the rigorous basis for the advances in natural science, art and political science associated with the "Golden Renaissance" of Europe's fifteenth and sixteenth centuries. Leading the reader through each of the three canticas of the *Commedia*—Inferno, Purgatory, Paradise—she shows how poetry is used to convey the developing process of the human individual from a bestial state to that of a "golden soul" guided by creative reason, the same self-developing principle which governs the physical universe. Mirak uses Dante's own theoretical writings on poetry to prove that the poet's musical enrichment of the vernacular language was indispensable for making this principle accessible to the population led by the great inventors, artists and political thinkers of later generations.

GENIUS CAN BE TAUGHT!

Using examples drawn from a project to teach geometry to grade school children, mathematician Uwe Parpart demonstrates how history's most complex mathematical ideas are easily comprehended—even by adults!—once the physical processes they describe are made clear. These principles have guided scientific and political development from the time of Plato's *Timaeus,* to Wilhelm Gottfried Leibniz and the founding of the American Republic, to the geniuses of the French Revolution's Ecole Polytechnique.

MAKING GREAT MUSIC AND POETRY AMERICA'S NATIONAL PASTIME

Impossible? Efforts are now underway to group professional musicians and amateurs into a NASA-style program of orchestras and choruses committed to recreating the level of polyphonic richness practiced in the American Musical System of the 19th century.

ARCHAEOLOGICAL FIND A POLITICAL HOT POTATO

The 2400 B.C. city of Ebla in central Syria promises to overturn the well-known theory that civilization originated in the labor-intensive agricultural cycles of Mesopotamia. However, the results of this find may be buried by a dispute whose origins lie in the politics of Biblical scholarship: the conflicting claims of Zionists and Arabs.