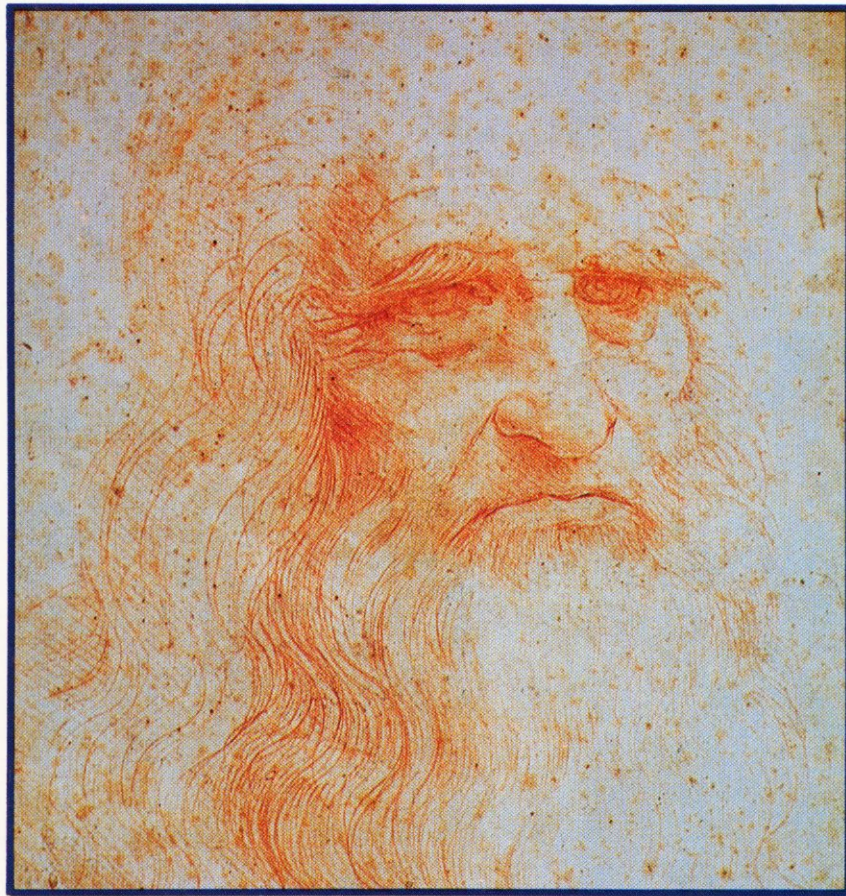


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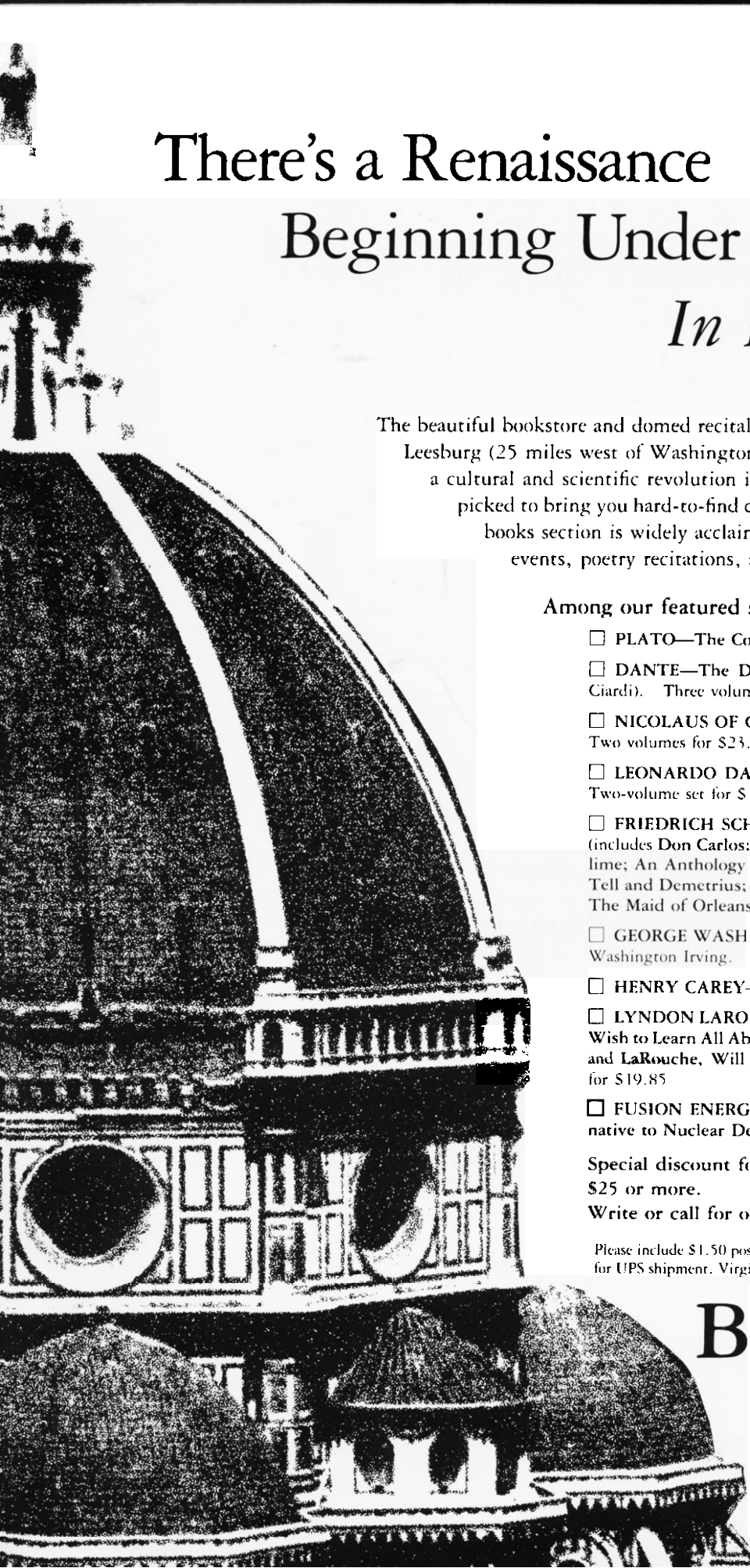
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On the cover
Drawing by Leonardo da Vinci,
believed to be a self-portrait.

Cover design by Virginia Baier

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EDITORIAL

The Age We Live In

This is a time of darkness. Take New York City, with its presumption to being a center of world culture! New York's Mayor Koch has the perfect answer to slowing the epidemic spread of AIDS disease: allow all drug addicts to purchase sterilized needles at medical dispensaries. Take the disease itself! Not only is it symptomatic of severe cultural decline—its major victims presently being homosexuals and drug users—but credibility is given to the demand by sufferers from AIDS to defend their claimed "civil right" to spread the disease without restraint.

What then, in these hard circumstances, is Leonardo da Vinci's message to us? We have hard tasks ahead of us. Africa is starving. Men and women in the United States are out of work. The U.S. itself is threatened with becoming a second-rate power, while the Russians become ever more grandiose in their aggressive imperialist drive.

Too often, culture is viewed as a retreat from bitter present reality. Leonardo's paintings, the music of Bach, Mozart, Beethoven, the plays and poetry of Shakespeare, Milton, and Friedrich Schiller, become an alternative to the ugliness around us. Yet they, of course, lived in equally horrible times, and each of them personally was deeply and actively committed to the republican cause of his day.

Retreat from reality

It is ironical that the escapist trash which is marketed to pervert

the popular fantasy—whether the soft soap dished out by the crooners of the 'forties and 'fifties, or the hard porn version of today's soap operas, aptly symbolized by America's leading AIDS victim Rock Hudson—pretends to be social realism. This fiction is abetted by the news media, which turn reporting into just another version of soap opera. "And how did you feel when your ten children burned up, or when you saw your daughter starve to death, or when the terrorist bomb dropped at your feet?"

Reality, the causality of events, is obliterated—in order to convince the viewer that he or she is necessarily impotent to change events. The media, then, operate to create a culture of Peeping Toms—voyeurs whose relaxation each night is to escape into a fantasy of what they are led to believe other people's lives are like. It is precisely by lulling the population in this way, that the oligarchy intends to destroy this republic once and for all, and extirpate republicanism from the earth.

As our factories close down, and our farmers are driven off their land by bankruptcy, millions die in Africa for lack of food and the industrial infrastructure to transport it. As our productivity falters in comparison with countries such as Japan, our children languish in schools in which they are bored to death, and depressed by the message that there are too many children being born anyway. They are taught that immorality is an ac-

ceptable "life style," and offered drugs on every street corner.

Hard truths

No one tells our children the hard truth, that they must develop their minds, because their work, their discoveries and inventions, will give us the critical margin over the next generations, which will be essential in reversing the present ecological collapse and guarantee a truly human existence for all. No one explains to them that they must study history—not merely the historical sequence of events but the history of our culture, in order to learn how to defend Western civilization and defeat its enemies, the vicious oligarchs who would destroy our republic.

The oligarchs also *treasure* great art and music—but, of course, they can never understand it. They put a monetary value on it, and polish and display it, and offer "learned" treatises about it—in the meantime working to destroy the fountain spring from which great art is renewed. And so far as it is in their power to mold taste, they seek to prevent others from understanding it as well. Thus, Leonardo's hydrodynamic drawings and his sketches of flowers, have been on exhibit worldwide—on loan from the British royal family—but the texts which describe the purpose of each drawing are not made available to the public. The true beauty of these studies lies in the precision of Leonardo's scientific vision—yet only a trained scientist could appreciate

this from the display.

The beauty of great art always lies in its epistemological content. A beautiful work of art must add to our knowledge in some fundamental way. Such knowledge is always an active acquisition. It is knowledge of a method of making the world beautiful. Which is just another way of saying, it is knowledge of the most efficient way to combat evil.

Epistemological warfare

Great art is, above all else, the most effective weapon ever devised of epistemological warfare. Every time we read a play by Schiller or hear a fine piece of music, we should be filled with an unquenchable lust to do battle with the enemy who is destroying human life, and who is turning the potential of our children toward ugliness. Only so will great art once more flourish in our land.

The coincidence of Leonardo da Vinci's role as scientist and painter is not accidental. The qualities necessary to rescue our presently, rapidly decaying planet, the qualities needed for us to reach out and conquer space, are precisely those of the artist. It is not the dismal conditions under which we are living which prevent the birth of new Leonardo da Vinci's; it is, instead, the lack of commitment to the development and encouragement of true art—and therefore artists—which constrains us. Without living artists, a culture quickly dies. This is our challenge.

The American Ideology: The Most Dangerous Threat

by Webster Tarpley

Effective political initiatives to resolve the present world crisis, are ones that have an immediate impact on the mind of the President of the United States. The future of civilization depends right now on the choices that Mr. Reagan may or may not make over the coming weeks and months. To put it in another way, the crux of history in our time comes down to American politics and thus to American subjectivity, especially to U.S. politics as they are expressed in the subjective mental life of Mr. Reagan.

Having established this incontestable fact, there arises the question as to whether U.S. subjectivity, American politics, and the American mind, are equal

Webster Tarpley, International Advisor to the National Democratic Policy Committee, serves as its chief official representative in Europe. This article is taken from a speech presented to the Fourth International Conference of the Schiller Institute, Richmond, Virginia, January 13, 1985.



The aging Now Generation: obsessed with self-pity and nostalgia for by-gone times, they live on a staple of gossip and fantasy states called forth by Dallas, Dynasty, and the rest of the soap operas.

to U.S. National Security

to this immense task, and if they are not, how they can be made so. This measuring of the American mind against reality and against necessity, as science has established these latter, brings me directly to my subject: the American ideology.

It is plain that the American mind is not adequate to reality and to necessity. The political processes of this country are debilitated by an ideology, by an hysterical and systematically false way of looking at the world. The American ideology presently constitutes the gravest vulnerability of the United States as a nation, in the military sense and in every other sense. Indeed, the American ideology is responsible for bringing the nation to the verge of the abyss.

Make no mistake about the fact that an American ideology does exist. To any qualified observer, its existence is one of the grossest of empirical facts. The American mind is emphatically not the standard against which the ideology and folly of other nations can be gauged. We Americans must rather join the other victims of different varieties of collective neurosis—the other nations—in the exertion of curing ourselves, through the Schiller Institute's program of classical education, classical music, and classical literature.

The present form of American ideology is obviously the product of the deliberate intervention of hostile agencies, many of them foreign, in U.S. life. But, although the origin of the ideology may be foreign, the ideology itself has been so thoroughly assimilated, as to become second nature to 230 million victims, many of whom posit their personal identities precisely in the most thoroughly ideologized features of their mental lives.

We welcome the fact that "pragmatism" has recently become a dirty word, an insulting epithet hurled at the White House Palace Guard by the Reagan loyalists. When "pragmatist" becomes a term of insult, like opportunist and traitor, there is hope to defeat the American ideology from the vantage point of the centers of mass psychological warfare and brainwashing—to see the American ideology as it is seen by its handlers and maintenance men at such places as the Stanford Research Institute, Harvard University, and especially in such overseas centers of ideological control and manipulation as Britain's Tavistock Institute, Geneva, and from that ultimate center of the steering of the *Zeitgeist*, the Cini Foundation and the Société Européenne de Culture on St. George's Isle in Venice.

The Lonely Crowd

The starting point for understanding the mechanisms of contemporary American ideology is the noted study, *The Lonely Crowd*, written in the late 1940s by sociologist David Riesman and his co-workers. *The Lonely Crowd* is important not merely as an academic study, but rather as a kind of manual, with whose use vast areas of the post-war American ideology were concocted. Riesman and his cohorts, in other words, were engaged in the business of deliberate menticide against the U.S. population.

At the center of *The Lonely Crowd* are the three character types referred to as Tradition-Directed, Inner-Directed, and Other-Directed. Interestingly enough, each of these character types is linked by the author to the demographic dynamic of a given society; each type of personality is associated with either the growth or the decline of population.

According to *The Lonely Crowd*, the Tradition-Directed type of character is most common in the traditional peasant societies of Asia, such as China, or wherever industrialization and urbanization have not been introduced. Here the individual is governed not so much by his own personal choices, as by an unchanging way of life that is prescribed by traditional norms, as are the peasant villages of the least developed parts of today's world. People are hardly conscious of themselves as individuals, but rather function as parts of a *Gemeinschaft* or traditional community. Ties of kinship and the extended family are of decisive importance, and the rules of society as forms of required conduct are enforced through the fear of losing face, that is, through shame. For Riesman, Tradition-Directed man inhabits a society where population growth is stagnant, but where a very high potential for such population growth exists, by the rapid lowering of the death rate through modern sanitary and medical measures of relatively simple types.

The second type of character is the Inner-Directed, a type the book asserts to be typical of European civilization between 1650 and 1900. The Inner-Directed, says Riesman, is not bound to any fixed traditional mode of life, but is rather obliged to grapple with constantly expanding problems in the course of revolutionizing production and nature.

The Inner-Directed man is said to be guided not by fixed rules but rather by criteria of morality and

duty inculcated in early life by education. These criteria make up character. They in turn nourish enterprise and initiative. Inner-Directed individuals have ideals and values which the book refers to as a sort of internal gyroscope, which will remain on course, irrespective of changing outside conditions. In the name of these ideals, a person will face hardship, sacrifice, even death.

Inner-Directed man inhabits an expanding society, with great mobility to withstand a wide choice of occupations. He inhabits a true civil society, and is guided by the need to maintain his own self-respect through his accomplishments. Failure to accomplish his goals leads to guilt, the main regulating mechanism of this type of character. Inner-Directed man moves in a society of rapid population expansion, caused, on the one hand, by continued high fertility, and, on the other, by a dramatic decline in the death rate.

I interpolate here that what Riesman is attempting to lump under the heading of Inner-Directed, corresponds in history to the cultural and social type emerging from the Italian Renaissance, the French experience under Louis XI, the renaissance in England, and above all to the Leibnizian scientific revolution. What Riesman chooses to flatten with the label of Inner-Directed, is the human potential described by Friedrich Schiller and German classicism. Thus, Riesman sets up Inner-Directed man only to explain that this type is passé, and is rapidly being supplanted by the degenerate Other-Directed variety which, as Riesman is at pains to point out, is the typically American one.

Most important for Other-Directed man, is that the norms of behavior come neither from tradition nor from free choice based on assimilated ideals, but rather from the shifting tastes, caprices, and whims of peer groups and cliques, which are themselves in constant flux. The Other-Directed man is no longer concerned with morality, but rather with popularity and acceptance on the part of his confreres as they constitute themselves in school, on the job and in the neighborhood. The goal of life is not accomplishment, but rather *having fun*, as a well-adjusted, gregarious, extroverted believer in some desirable social ambience. The Other-Directed does not want to be respected, but rather wants to be loved, or at least liked. The worst crime is to be maladjusted.

With the Other-Directed American, society has taken a giant step away from reality and towards paranoia. Society and the individual are no longer concerned with the realities of production or of natural processes. The object of Other-Directed attention is not these, but rather other people. The Other-Directed are shallow and unsure of their values, and lack real loyalty and conviction. They are chameleons who must adopt the coloration of whatever ambience in which they find themselves. The typical Other-Directed person cannot answer a question of fact or belief, without consulting four or five of his friends to find

out what the approved answer is for that week. It is as if the Other-Directed man were equipped with a radar, to sense the expectations of peer groups.

The Other-Directed are kept in line through the fear of rejection by other people, especially their predominant peer group. This excites fear. All of Other-Directed life is nagged by a pervasive sense of anxiety, and this is the control mechanism of Other-Directed life.

Other-Directed man inhabits a world of declining population, as Riesman emphasizes. Fertility has declined dramatically in comparison with the Inner-Directed past. The burgeoning industrialism of the Inner-Directed era has given way to a world based on administration, on services, on the new white collar middle classes.

It is thus the Other-Directed *schlemiehl*, who is to supersede the grandeur of Renaissance man, and of the ideal of freedom of the German classical period. Riesman's description leaves no doubt that the Other-Directed society, marked by declining population and economic stagnation, represents the long-term strategy of manipulating the American population into the supine acceptance of the New Dark Ages through peer group pressures.

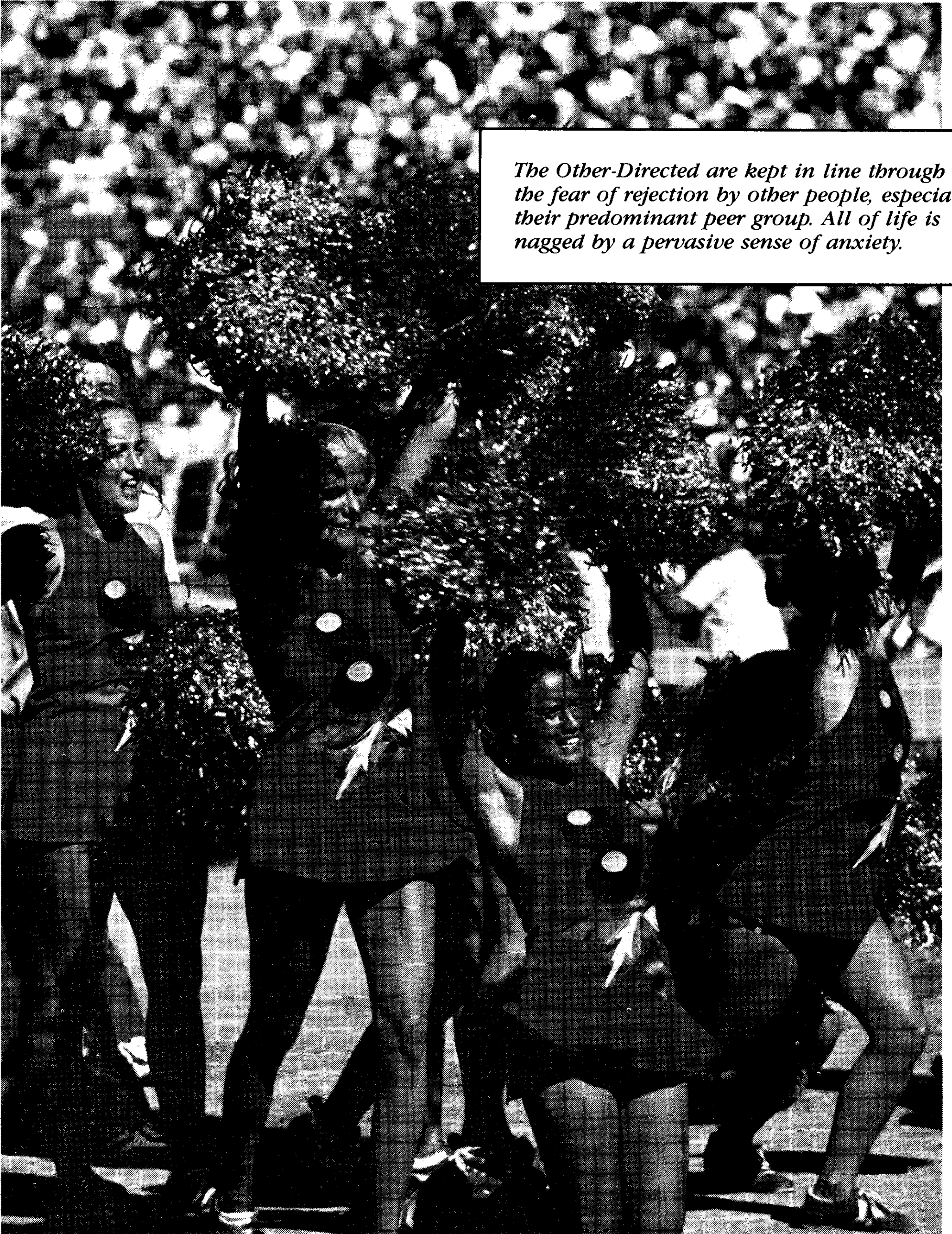
Ostracism

Riesman also implies the techniques by which Other-Directedness is to be enforced. These are drawn from the study of Greco-Roman antiquity. Riesman hints at the outset of his study that he comes to social psychology from an examination of the effects of defamation on politics, including studies of the Jews in Nazi Germany. He later expands on this theme as follows:

For example, the institution of ostracism, introduced as a means of preventing tyranny, became in the fifth century [B.C.] a formidable weapon of public opinion, wielded capriciously as a means of ensuring conformity of taste and of "cutting down to size" those statesmen, playwrights, and orators of markedly superior ability. In addition, the common people produced a numerous brood of informers "who were constantly accusing the better and most influential men in the States, with a view to subjecting them to the envy of the multitude." Studies on the decline of Athens point to a "disinterested tendency to inflict punishment," which, based upon a diffuse characterological anxiety, could perhaps be described as the ascendancy of an omnipotent "peer group."

Riesman sees many symptoms for Other-Direction among the Athenians of the later, decadent, Hellenistic period, and adds:

Similarly, the problems of Rome during the reign of Augustus suggest the emergence and ascendancy of



The Other-Directed are kept in line through the fear of rejection by other people, especially their predominant peer group. All of life is nagged by a pervasive sense of anxiety.

the Other-Directed character type as the population reached the phase of incipient decline. The importation of a new poetic language legitimating the importance of subtle states of personal feeling, in the Alexandrian-influenced work of such poets as Catullus and probably Gallus, may evidence shifts towards Other-Direction in the dominant classes.

In other words, if you want to degrade a population of moral adults to the level of Other-Directed zombies, subject them to a prolonged regime of ostracism: slander, vilification, and punishment in direct proportion to their intelligence, courage, and merit. Riesman is talking about the Athenian court of shards (*Scherbengericht*) in which outstanding statesmen were subjected to a monstrous kangaroo court by idlers and rabble, with the latter writing on a piece of broken pottery their verdict as to whether the accused should go into exile on pain of death. The mob of idlers and rabble were of course controlled by the oligarchical adversaries of the great men being victimized, including Socrates himself. The oligarchy later employed the same methods in Rome, through the institution of the Tribunes of the People, who cut down humanist patricians. The Jesuit-led Inquisition is a more recent example of ostracism.

By now it should be clear that *The Lonely Crowd* is a kind of "how to do it" manual to increase the incidence of Other-Directed types in society, a manual in particular for the pre-McCarthyite and McCarthyite witchhunts of the 1940s and '50s. This was one of the most hideous periods of ostracism in recent memory, and began with the Truman administration loyalty boards long before the scoundrel Senator McCarthy ever came on the scene. Let us remember that the most illustrious public servant purged, was General MacArthur himself. The McCarthyite ostracism produced the Silent Generation of the 1950s, and opened the door to a repeated cycle of ostracism. We would do well to recall that Watergate was not only the ousting of President Nixon, but a capillary process that reached far down into all levels of government and business. The same can be said of the later FBI sting operations, Abscam and Brilab. The Internal Revenue Service is in the perpetual business of ostracism.

Predictably, the television networks, functioning as the single monolithic bloc they are, have taken the lead as the main agency through which the ostracism is carried out, with programs like *20/20*, *Sixty Minutes*, and the late, unlamented *First Camera*, dedicated primarily to Watergating and ostracism. (Those who are familiar with the absurd miscarriage of justice lately presided over by Judge Cacheris in federal court have an idea of how far this ostracism can go. The parallel with the trial of Socrates is unavoidable, although we will never permit a similar conclusion to the case. Otherwise, the numerous brood of informers recalls Melvin Weinberg and the Federal Witness Protection

Program, the DeLorean case, the ostracism of Senator Harrison Williams, and other scandalous abuses of justice. *)

Above and beyond the obvious utility for the oligarchical forces of targeting and destroying individuals who pose a threat to them, we must not lose sight of the disinterested quality of this punishment: it is important also as a means of diffusing terrorism, for degrading the entire society through anxiety. Ostracism, in the post-war period, has become as American as apple pie, as anyone who has recently talked with a denizen of any federal bureaucracy will know. There, the whistle-blowers are on the march.

The Baby Boomers

The social grouping in which the fruits of ostracism is most evident is the 80-million-strong group of baby boomers, those born between 1945 and 1964, the oldest of whom are now approaching forty, and the youngest of whom have just reached their majority. This hapless generation has spent its entire life exposed to the manipulative messages of television, the greatest brainwashing tool of the age. Other-Directed man turns to peer groups for identity and acceptance, and it is in turn television which provides the norms for the peer group thinking. Television thus controls the individual, although indirectly.

The baby boomers, including yuppies or yumpies as they are now called, are deeply scarred by the 1968-72 onset of the post-industrial society, by the Kennedy assassination, by Vietnam. Many grew up in the suburbs, and the yuppies are now active in the new white collar bureaucracies. This aging Now Generation is already obsessed with self-pity and nostalgia for bygone times, although they are not yet middle-aged. For their children, some of them now adolescents, the perspective is even more grim. This generation is now subjected to mind-destroying post-punk rock videos, of the New York Hot Tracks variety.

Having sketched the Other-Directed type in its manipulated genesis, we turn to some salient traits of the American ideology, pausing now and then to note their coherence with the overall Other-Directed model.

*Judge James C. Cacheris, of the Eastern District of Virginia Federal Court, ripped up the United States Constitution on Oct. 22, 1984, when he ruled that the NBC television network was free to use any unnamed "confidential sources" it pleased as evidence supporting a series of libelous statements against independent Democratic Presidential candidate Lyndon H. LaRouche, Jr. LaRouche had sued NBC and the Anti-Defamation League of B'nai B'rith for \$150 million in damages, for scurrilous remarks aired nationally on the Jan. 30 and March 4, 1984 editions of *First Camera*, including allegations that LaRouche was a "small-time Hitler" who had planned to assassinate President Jimmy Carter.

As already mentioned, the pervasive rule of Other-Directed society is television, with an average of seven hours per day per household with the idiot box turned on. Worse even than the situation comedies and game shows, are the soap operas, which reproduce the distilled essence of the Other-Directed world: a paranoid universe of comments, opinions, gossip, and sexually-oriented intrigue, of role-playing. In surveying the so-called "demographics" of the present U.S. population, the sinister Stanford Research Institute Value and Life Style Analysis, which is the basis for designing much television and advertising fare, still posits the existence of large strata of what they choose to call Inner-Directed personalities—up to about twenty percent of the population. But it is clear that Inner-Directed now means something quite different:

Inner-Directeds seem Californian; they backpack, do yoga, are into holistic medicine. The subcategories of these Inner-directeds are the societally conscious—former campus radicals now fighting for causes like ecology—experientials, addicted to adventures in the great outdoors, and the angry, rebellious and maladjusted I-Am-Me's. The experientials are said to be the fastest growing life style type.

It is evident that Inner-Direction here means being more attuned to one's own id than to any demands of a peer group. Autistic would be a more accurate term for these post-war types. Interpersonal relationships, role models, life styles, perceptions—into which objective historical reality and natural processes can never intervene. Vance Packard quotes the case of a European refugee who decided that he would have preferred death in a concentration camp to American soap operas, and that was long before the days of *Dallas* and *Dynasty*.

In politics, the Other-Directed model is generally one of apathy and low levels of participation, since most people feel they cannot change politics. The small minority of those who are politically active, agree that politics cannot be changed in substance or content, but they know that the political process can be manipulated in favor of certain individuals. Whether political life is immoral is of no consequence. The only thing that matters is being on the inside of it. This, the type of the Other-Directed political activist, is the Inside Dopester, who uses his hot gossip to show that he is indeed hooked up to the centers of powers.

The American Bureaucrat

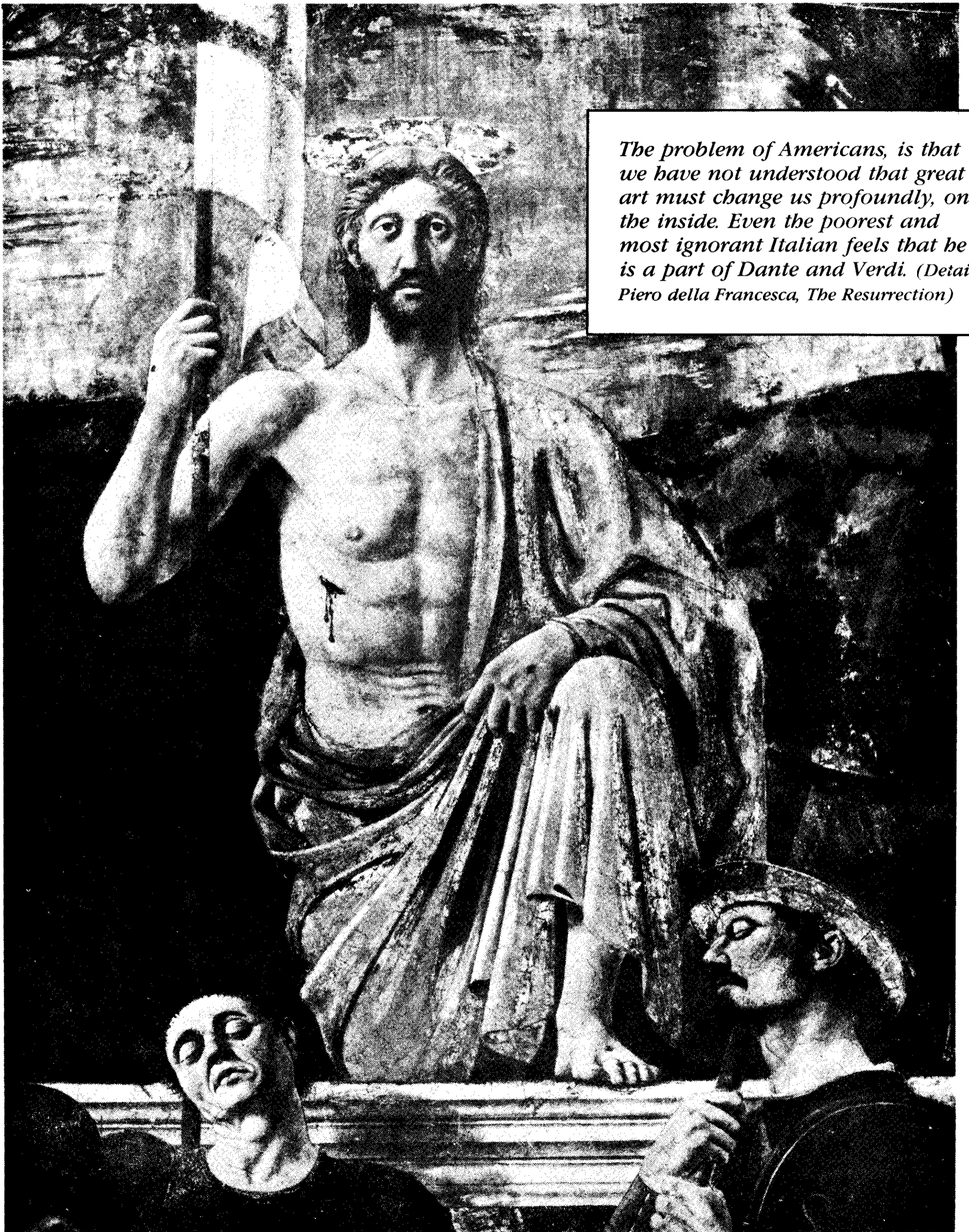
The conformist Other-Directed type, when placed into a bureaucratic context, yields an especially monstrous result. It used to be that the Mandarin Chinese bureaucracy, or Byzantine bureaucracy, or Ottoman Turkish bureaucracy, or Prussian bureaucracy, was held forth as the archetype of formally perfect but totally irrational administration. But all these must

yield to the modern American white collar Organization Man.

The American *apparatchik* is still enough of a Western individual to have the individual's heteronomy and depravity, but when the word comes down, he is subsumed as a cog in the machine, a cringing, propitiating yes-man towards those above, and a bully towards those below. A new policy arrives. "Is this the line?" ask the bureaucrats, wondering, if what they have heard is indeed official, and therefore to be propitiated. Nobody asks if the policy is sane, just, rational, necessary, desirable. Only: "Is that the line?" Romanov and Gorbachov could ask for nothing better from their *apparatchiki*. The Judeo-Christian tradition of the freedom and reason and responsibility of the individual, is out the window, and something very close to the Byzantine statist model obtains—although some of the worst U.S. bureaucracies are in the private sector. Company or agency loyalty is intense, since that is where the perks are coming from. Given a choice between enhancing his own status and solving a problem in reality, an American bureaucrat will choose status over reality every time.

The very mention of status points towards another typical dimension of the American ideology. Many observers have called attention to the fact that in Europe, where class barriers are extremely rigid, even to the point of actual feudal aristocracy and monarchy, there is less attention paid to the status value of items of personal use and consumption—especially such as cars—than in the supposedly egalitarian and democratic U.S.A.

First of all, it should be clear that U.S. society is stratified in the extreme, and that barriers of rank and class are rapidly hardening—especially against the 30 million or so downscale persons who are now on the permanent human junk heap. For those not yet cast into the outer darkness by the magic of the marketplace, there is a kind of fetishism or narcissism of the most minute badges of invidious distinction. The name of the game is the corporate or agency pecking order. Human relations appear inconceivable without first locating the other fellow on the table of invidious ranking, GS1 to GS18, although otherwise very much like the Soviet Russian *nomenklatura*. Books like *The Organization Man* and *The Status Seekers*, catalogue at great length the prescribed forms of behavior and consumption that accompany the executive up the promotion ladder. At each step, a different car, a different suburb, a different snob appeal. Each step upwards requires among other things a skinnier wife, gaunt for the vice-president and skeletal for the chairman of the board. A look at the state of steel, auto, chemical, and other moribund industries shows the quality of performance in the real world that such hierarchies have provided. The bureaucrats have sold their personalities, repressed their anger and aggression, but real processes have not yielded to the spell.



The problem of Americans, is that we have not understood that great art must change us profoundly, on the inside. Even the poorest and most ignorant Italian feels that he is a part of Dante and Verdi. (Detail, Piero della Francesca, The Resurrection)

Sex, Chauvinism, and the End of the World

Since the Other-Directed world devotes such obsessive attention to interpersonal relationships, sex and sexual fantasies naturally occupy a pre-eminent position in the Other-Directed scheme of things. Riesman writes:

Sex . . . provides a kind of defense against the threat of total apathy. This is the reason why so much excitement is channeled into sex by the Other-Directed person. He looks to it for re-assurance that he is alive. The Inner-Directed person . . . driven by his internal gyroscope and oriented towards the production problems of the outer world, did not need this evidence.

Gossip and fantasy states called forth by *Dallas*, *Dynasty*, and the rest of the soap operas, are everyday staples, with an increasing tendency to imitate in private life, the practices seen on the screen. Aging Hollywood sex symbols are now being recycled into both *Dallas* and *Dynasty* to show the aging baby boomers that debauchery need not cease in later middle age, but can blend imperceptibly into senility.

Other-Directed Americans have developed a chauvinism and xenophobia of a new type. Instead of being directly preoccupied with hatred of other nations or the entire outside world, like the Russians or the Swiss, the American xenophobe prefers to treat the outside world as non-existent. Apart from some objects of conspicuous consumption, he knows nothing of other nations, for which he nourishes not so much hatred as indifference. Newspapers and television are primarily responsible for the massive void of international news, which effectively cancels foreign nations out of the universe of discourse of many peer groups. Otherwise, the rumblings of nativist know-nothingism are again to be heard. Finally, a century and a quarter after the most bitter civil war in the history of Western civilization, racism and race hatred continue to deform the people and institutions of this country.

American religion has been exhibiting certain peculiar qualities ever since the Great Awakening of the 1740s in New England, which was a flare-up of the enthusiastic heresy that took place under the direction of the leading Elmer Gantry of that period, the evil Jonathan Edwards. In Northampton and other towns of the Berkshire district of western Massachusetts, the oligarchical agent Edwards produced a pilot project of the revival style, with itinerant preachers on the model of the European mendicant orders, and great stress on the bodily effects of conversion, such as fainting, weeping, shrieking, twitching, and other contortions. Edwards popularized these and other manifestations of the inner *Schweinhund* as the calling cards of the Holy Spirit. For this Edwards was attacked as a "visionary enthusiast" by the more temperate churchmen of the

day. Edwards' New England theology allowed such public writhing to co-exist with absolute predestination, the total depravity of man, and solid fundamentalism on the question of the inerrancy of Biblical prophecy.

This first Great Awakening set the stage for a second Great Awakening or Great Revival around 1800, the highlight of which was a camp meeting at Cane Ridge, Kentucky, which was hailed at the time as the greatest revival of the Holy Spirit since Pentecost. More sober observers saw a greater prevalence of "fleshly lust" than of spirituality, and one wrote that "more souls were begotten than saved" during the Cane Ridge camp meeting, in which 25,000 people participated for a full week, and which ended only because local food supplies were exhausted. Cane Ridge created the revivalist, camp meeting style that took over broad areas of U.S. Protestantism during the nineteenth century. To this has been added a very strong penchant for millenarianism and adventism—for the idea that we must prepare for the imminence of the end of the world and the last judgment.

It is worth noting that modern forms of this doctrine tend to borrow heavily from the teachings of John Nelson Darby (1800–1882), who is otherwise the house prophet at the André grain trust in Geneva.

Fundamentalism has been a prominent feature of the rapid growth in organized religious activity after the Second World War, which followed a period of stagnant or declining activity in the Great Depression. There is an intense fascination with the apocalyptic books of the Bible and with their symbols. Today's fundamentalists, who enjoy portraying David Rockefeller as the antichrist, may be surprised to learn that the main bastion of fundamentalism in the U.S. has always been the heart of the Eastern Liberal Establishment, specifically Princeton Theological Seminary, which maintained the banner of strict fundamentalism for more than a century, and not only among Presbyterians.

Some overview of what the American ideology looks like when translated into the religious sphere can come from the five religious tendencies that can be called "Made in U.S.A." These are: the Mormons, Christian Science, Seventh Day Adventism, Jehovah's Witnesses, and Pentecostalism as a specific charismatic church. The points of similarity between present U.S. society and pagan imperial Rome are more and more marked. There are the television spectator sports, a mind-destroying version of the *circenses* in the Roman bread-and-circuses. The snuff films, with ritual murders, recall the Roman *spectacula*, theater plays in which real people, generally slaves, died real deaths, when the script and the tastes of the audience so required. In New York City, wretched derelicts and mental patients freeze to death while, high above them, cocaine is snorted in luxury apartments.

'Country & Western' Fascism?

It remains for us now to look ahead to the kinds of ideological characteristics that would tend to come to the fore in the event of an oligarchical victory, in which case Riesman's labors in *The Lonely Crowd* could be crowned by an actual fascist regime in the United States. Victory for the oligarchs and Henry Kissinger means, militarily, Fortress America—an economically autarchical power outclassed by the Soviet Empire and perhaps also by China and Japan, fighting incessant wars against the states of Latin America. The fascism made mandatory by economic austerity and autarchy, as well as by the overwhelming external military threat, would not be of an ideological variety, but rather a simple, blood and soil nativism and know-nothingism, a "country & western" fascism.

On the inside, we would have the inferno of the so-called Conservative Opportunity Society, now being hyped by such demagogues as Newt Gingrich, a new-right congressman who talks with Alvin Toffler and likes to think of himself as the right wing of the post-industrial society. Gingrich and his fellows, who all seem to have spent ten thousand evenings watching *Star Trek*, demand total laissez-faire and free enterprise, with the total abolition and deregulation of the welfare state. The result would be a Hobbesian nightmare of the "war of all against all," accentuating the brutality already endemic to this society. Patients die because doctors demand guarantees of payment before operating. The media debate the pros and cons of the Death Wish Killer, who metes out summary vigilante justice to muggers and hoodlums. The point here is not to take sides, but to change the process that is producing such phenomena. Then, there are capital executions, electrocutions, produced as media events with the family of the murderer expressing righteous approval of his death.

Ralf Dahrendorf, a spokesman for the European feudal oligarchy writing in *Die Zeit*, has offered the thesis that American fascism will be internally generated as a reaction (literally, in the political sense) against the 30 million people, whom the present Volcker-Stockman economic arrangements consign to the human garbage heap, whose numbers are destined to grow, and who are destined to be deprived of all palliative social programs and welfare. According to Dahrendorf, a former head of the London School of Economics and intellectual *éminence grise* of Genscher's Free Democrats, who thus speaks prescriptively, fascism will be instituted gradually, as security measures against the threat of street crime by those otherwise condemned to certain death through poverty. The backdrop for these events can be thought of as the atmosphere of the movies *Blade Runner* or *Escape from New York*.

Another window into Fortress America fascism, is

provided by the racist, xenophobic film *Red Dawn*, a story of American adolescent partisans who fight Soviet and Cuban invaders using the name of their team, the Wolverines.

It is high time this country were freed of this crippling, disfiguring ideology. If it is not freed, the results will prove fatal over the near term ahead. To do this, it will not be enough to tell the members of your peer group to stop being conformist *schlemiehls*, to get up the courage to think and act for themselves as responsible adults—although this will help. What is required is the full program of classical culture the Schiller Institute has outlined—classical music, classical drama, classical painting and architecture, and other classical literature.

I would like to say a final word about how these must be assimilated. In his *Letters on the Aesthetic Education of Man*, Schiller describes how the contemplation of objects of beauty can lift us out of the status of barbarians and savages, by educating the emotions spontaneously to desire what is required by historical necessity, and thus to mobilize sensuous reason to solve the problems that necessity poses.

The problem of Americans, is that we have not understood that great art must change us profoundly, on the inside. A familiar figure of high school life in New York City circa 1960 was the student of the Juilliard School of Music, who was perhaps an accomplished technical virtuoso, but at the same time was consumed by envy, competitiveness, status frenzy, striving, and social climbing. The problem is more general. Even the poorest and most ignorant Italian feels that he is a part of Dante and Verdi, even though his knowledge of their works in detail may be sketchy indeed. The United States has a glorious history, the equal of any in the world, but how many of even the best educated American citizens feel like a part of that history, and are on intimate terms with it?

In the sphere of aesthetics, of objects of beauty, the problem is even more acute, for here we are faced by a void, at least over the last century and more. The American mind has tended to see culture in the best case as a kind of external ornament, and not as the vehicle for profound inner emotional change. The very concept of national poet, national opera, and so forth, are pleasantly novel, because unknown.

The cultural program of the Schiller Institute offers us a way to close this window of cultural vulnerability—I repeat, the greatest vulnerability of the United States as a nation. It was Plato, who established that music and poetry were matters of the most capital importance for national security. It is time we overrode the idiocy of business-as-usual in the cultural sphere, with a mighty national effort, aided by Europeans, our allies, whose contributions in this sphere can be pre-eminent, to re-introduce classical culture into these United States.

LEONARDO: Father of Modern Science



Drawing by Leonardo: A researcher studies cylindrical wave structures in turbulent water.

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Leonardo & The Century of Genius

by Nora Hamerman

Between approximately the middle of the fifteenth century and the end of the first quarter of the sixteenth century, northern Italy was the scene of the greatest creative upsurge of the visual arts that mankind has yet seen. Beginning in the Republic of Florence, and then spreading throughout the cities of the upper half of the peninsula, there flourished schools of artist-engineers each with their own distinctive features, yet unmistakably unified around the concept of rendering a "Platonic dialogue" in the visual domain. Walking through any of hundreds of local galleries in Italy, or the major museums of the United States and Europe today, one can witness this seemingly infinite inventiveness and variation from town to town, workshop to workshop, and decade to decade, yet all conveying the notion of the rational ordering of the universe which can be grasped, and above all conquered, by the human mind.

- Around 1420–25, the architect Filippo Brunelleschi, the painter Masaccio, and several sculptors collaborated to launch a revolution in geometry called "perspective," which was the basis of all Western art until a conspiracy was set off in the 19th century to destroy the scientific, culturally optimistic outlook of that revolution.

- In 1435, a young scholar-artist named Leone Battista Alberti wrote up that revolution in a book, *Della Pittura*, which was the first theoretical book on art ever written since Greco-Roman antiquity.

- At the same time, similar networks working in Germany and the Netherlands were inventing movable type printing, revolutionizing education and book production—an invention unveiled officially in the 1450s with the Gutenberg Bible.

- The advances in art and technology went hand in hand with the evolution of the republican concept upon which, centuries later, the United States was founded. In the 1420s, in Florence itself, a militantly "republican" faction centered around Leonardo Bruni argued for the superiority of a republican constitution against even the most enlightened monarchy, on the basis that only in a republic could the inventive powers of every single citizen be motivated and developed to the highest level, in order to serve the commonwealth.

This is the world into which the greatest artist-scientist of all, Leonardo da Vinci, was born in 1452. The character of Leonardo's drawings and paintings, is that their sole subject, is the motion of the mind which leads from one level of hypothesis, or ordering principle, to the next higher hypothesis, in such a way as to lead the mind of any but the most blocked viewer toward acquaintance with that part of his own mind which is capable of creative, scientific discovery. It is this which moves us in Leonardo's art: Every element of technical breakthrough which Leonardo achieved, in light and shadow, in perspective, in color, in the motions of the body, and so forth, is subordinated to his relentlessly rigorous pursuit and perfection of that principle.

For example: Leaving aside all the standard banalities about the "enigmatic smile" and so forth, what is it about Leonardo da Vinci's portrait of "Mona Lisa," (Figure 1) which so engages and uplifts the mind of the viewer? Ask yourself, in looking at this painting or a reasonably good reproduction of it, whether the woman portrayed is cheerful or melancholy; whether she is placed frontally or turns into the space; whether the contours are defined or not; whether the landscape behind is man-improved, or a wilderness. To each of these questions, one could make an equally categorical argument for two opposite answers.

By such means, Leonardo has made the subject of the painting a process of mental and physical transformations not located in any particular of the picture,

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but above and between all these particulars. Now consider the little-noticed fact: The water-levels in the sea in the background of the Mona Lisa are so distinct that only the imaginary construction of a quite elaborate set of locks could resolve this difference—in short, a great hydraulic works project of the kind Leonardo had been working on throughout his life—and you have a clue, perhaps, to the famous “enigmatic” expression.

What Leonardo was doing was making conscious, by visual (and other) means, the principle of the conspiracy which created the Golden Renaissance—and thus created him. It is important to note that Leonardo was “self-taught”; as the illegitimate son of the distinguished notary of the Florentine Signory, Ser Piero da Vinci, he had all the opportunities of participation in the practical side of Florentine cultural life in the first bloom of the Renaissance, but was not given a formal education. He turned this “handicap” to great advantage in questioning every accepted premise of textbook knowledge, and then making that procedure the basis of his own Socratic approach to teaching.

Science and Platonic Dialogue

From at least the time of Giotto, in the early fourteenth century, the leading painter-architects of the Italian city-republics were also the leading military engineers, called upon to erect the city’s defenses and in wartime (which was most of the time), to also develop offensive weaponry. Therefore, the connection between “fine art” and technology, especially military technology, was an old one.

The leap in the fifteenth century was the connection between the visual arts and *science*, and this occurred together with the evolution of painting as “political cartoon,” which it had not really been before.

As the father of Raphael Sanzio, the last great artist of the Golden Renaissance, proclaimed in a poem in 1482, it was the discovery in his century of perspective—projective geometry—that had transformed painting, sculpture, and architecture into a science, and elevated it above the level of a mechanical skill. The first theoretician of perspective, L. B. Alberti, wrote in one of his original dialogues that the key to “tranquillity of the soul” was for him to devise, in his mind, solutions to weighty problems of engineering. For the Florentine republicans, the primary task of the artist was to use his creative mental powers to lighten the burden of manual labor, so that more and more people could direct their energies to intellectual pursuits, and thus become truly human.

In the paintings that partake of this republican outlook, the power of Reason is conveyed by means of the Platonic dialogue. The artist engages the viewer in an examination of knowledge, not as some discrete collection of “hard” facts, but as the process of discovering *how* one comes to know something.



Figure 1.
Leonardo da Vinci: Mona Lisa.

For instance: It will escape no one that most of the themes of these Italian Renaissance paintings and sculptures are religious themes, especially having to do with the Passion of Christ. Yet, these stories from ancient history were always set in the landscapes and cityscapes of contemporary Italy. The wrinkled features of the local abbot, the city councilman, the wealthy banker, peer out of the picture frame for the first time. Members of the Medici family, who were commoners but a few generations back, appear in the guise of the Oriental Kings who worshipped the Christ Child in Benozzo Gozzoli’s (Figure 2) and Botticelli’s pictures of the Adoration of the Magi (Gozzoli’s Procession of the Magi, in fact, commemorates the arrival from the Eastern Mediterranean of the Byzantine Emperor and his entourage in 1439, for the Council of Florence, financed by Cosimo de’ Medici).

To cite another example, in Ghirlandaio’s mural painting of 1485, the historical scene of the Confirmation of the Franciscan Order (Figure 3), which had occurred in Rome more than 200 years earlier, is plunked down in the midst of the central piazza of Florence of the 1480s, with the city hall rendered in



Figure 2.
Benozzo Gozzoli: Adoration of the Magi.

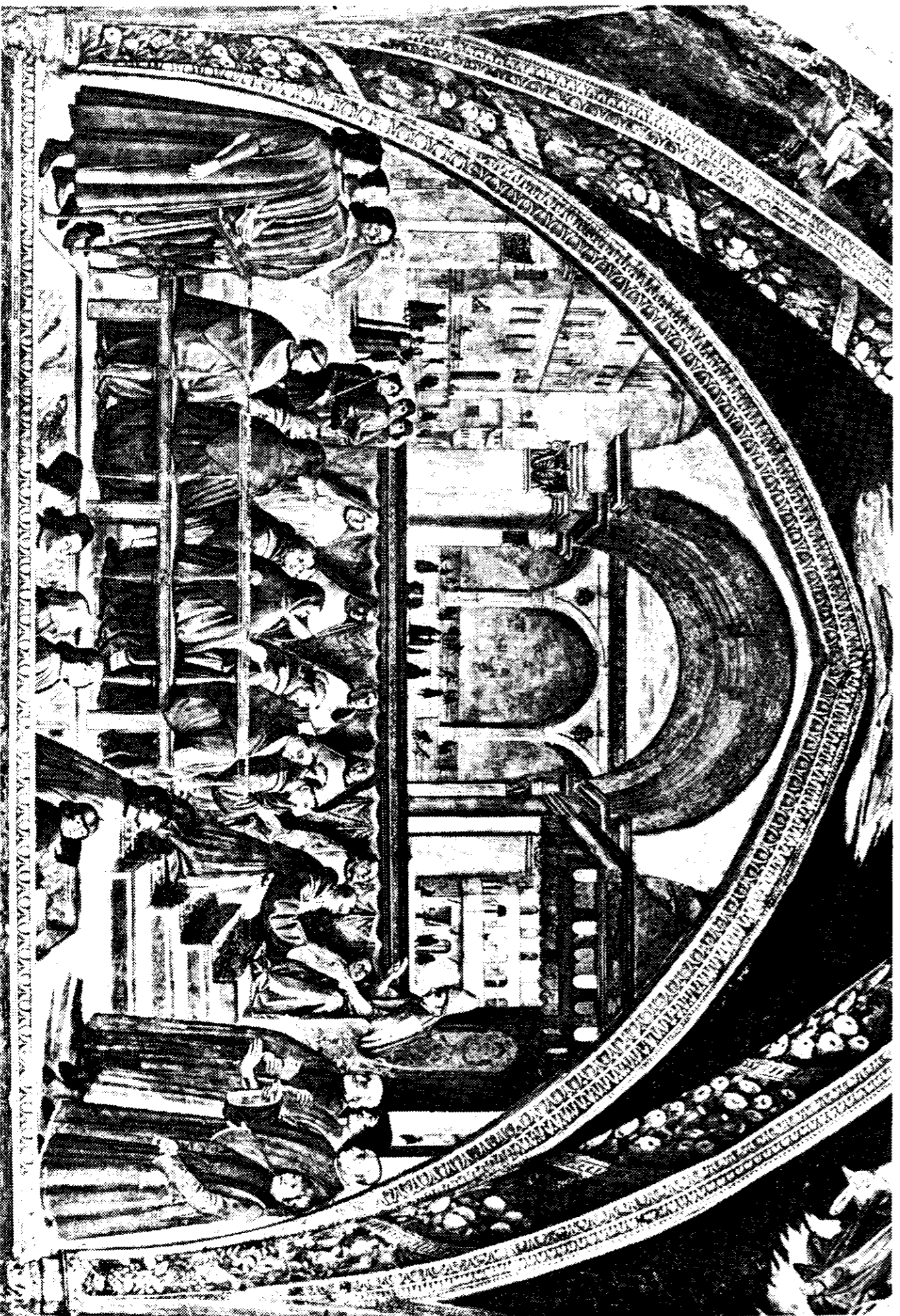


Figure 3.
Domenico Chirlandajo: Confirmation of the Franciscan Order.

Figure 4.
Piero della Francesca:
Flagellation of Christ.



Figure 5.
Lorenzo Ghiberti: "Gates of Paradise," Florence Baptistry.

Figure 6.
Lorenzo Ghiberti: detail, "Gates of Paradise. Ambrogio Traversari
appears left center, full face.



the background in perfectly coherent scale, and the local citizenry bustling about its daily, secular activities in the space in between. Likewise, the Flagellation of Christ (Figure 4) is set by that master of perspective theory, Piero della Francesca, into the “background” of a Renaissance palace, while in the “foreground” three figures converse, whose features and dress identify them as personalities debating the most burning political and philosophical issues of the time.

One of the most striking of these transpositions is in The Meeting of Solomon and Sheba portrayed on Ghiberti’s celebrated “Gates of Paradise” bronze doors of the Florence Baptistery (1435) (Figure 5). Ghiberti designed the Old Testament scene as the prefiguration of unification of the Western and Eastern Churches, which was the subject of an active conspiracy by the leading Platonic scientists and scholars centered in Florence—in fact one of the most important, although least known, positive conspiracies of all of history. In Ghiberti’s bronze panel, the setting is an ideal notion of a Renaissance church of a kind which had not yet ever been built, and the costumes replicate the typical ones of Latin and Greek Christians of the time. Not only that, but in the midst of the crowd of “Westerners” we see the portrait of Ambrogio Traversari (Figure 6), the mastermind of the Council of Florence, which



Figure 7.

Filippo Brunelleschi: ball atop dome, Florence Cathedral, cast in the workshop of Andrea del Verrocchio.

began only in 1439, four years *after* this bronze panel was cast!

Ghiberti’s “Meeting of Solomon and Sheba” is therefore a political cartoon, exactly as Lyndon LaRouche once succinctly characterized the art of the Renaissance. If that characterization offends the reader, it is because today, the notion of both art and policy has become so debased in the common framework of reference, that neither art nor policy is a truly human activity.

The Council of Florence

Just over a decade before Leonardo was born in Vinci, near Florence, Florence had been the site of the great Council of Ferrara-Florence of 1438–1441. There, the Byzantine Emperor and the Eastern Orthodox Church leadership signed a document of Union accepting the fundamental doctrine of Western Christendom, the notion that society must be organized to realize the creative innovations of individuals as scientific and technological progress.

This idea, expressed in the “Filioque” clause of the Latin Creed, had been violently opposed by the Eastern Roman Empire (Byzantium) for seven centuries before that date. A combination of crushing military necessity—the by-then tiny Byzantine Empire absolutely required the assistance of Western Christendom against the threat of Mehmet the Conqueror and his Ottoman Turkish Empire—and the scholarly efforts of a handful of Florentine and other Platonist scientists committed to the power of reason, brought about the signing of the Union decree on July 7, 1439.

It should be noted that the great European-wide language project initiated nearly a century earlier by the poet Petrarch, which was committed to mastery of classical Greek and making the works of Plato available throughout the West, was the basis on which the Florentines, led by Ambrogio Traversari, convinced key Greek prelates that the Filioque was wholly coherent with their own greatest philosophical traditions.

Nonetheless, the most powerful argument of all for the Filioque was the beauty of the newly constructed dome of Florence Cathedral, under which the Union document was signed. Completed in 1436, the dome by Florentine architect Filippo Brunelleschi had been constructed on principles of projective geometry and defied the previously accepted limits of height and span. Not only had the dome been built at previously incredible savings in labor and materials, but it fulfilled the city fathers’ mandate that it be beautiful. The dome dominating the city and surrounding countryside was the most convincing proof of the Filioque.

Brunelleschi’s dome project was the focus of technological innovation in the city’s artists’ studios, which were also the city’s military engineering studios, as every military engineer in that day was also an artist and vice versa. The young Leonardo da Vinci, working



Figure 8.
Luca Pacioli, collaborator of
Leonardo.

in the workshop of sculptor Andrea del Verrocchio, helped with the great project that completed the dome long after Brunelleschi's death, the casting of the bronze ball at the top of the dome (Figure 7). Four decades later while working on concave and convex mirrors, related to the construction of the telescope, Leonardo was to write about that experience which had always remained vivid to him.

Leonardo's Academy

The legacy of the bold architect, painter, sculptor, and inventor Brunelleschi, who discovered and first applied projective geometry to painting, was one of the most important ingredients that Leonardo maintained in the Academy he established in Milan after moving from Florence to that city in 1482. Brunelleschi was called "the new Daedalus." He held the first monopoly patent known to modern history, taken out on his behalf by Cosimo de' Medici, then Minister of Transportation, in 1421, for his design of a marble-transport barge for commercial traffic on the Arno River. His name was synonymous in Florence with the idea of challenging established knowledge, and using technology to multiply the powers of labor.

Leonardo's Milan Academy, like the Platonic Academy set up in Florence in the aftermath of the Council of Florence, was designed as a new institution, an explicit counter to the universities; most of its members were businessmen, craftsmen, and what we would call "community leaders," who had never had the time to

learn Latin. The central project of the Platonic Academy of Florence had been to fully translate from Greek into Latin, and then teach, in the vernacular language, all the dialogues of Plato; this was the intellectual activity that dominated Florence in the time of Leonardo's boyhood. But Leonardo devoted his Milan Academy also to an element that was increasingly suppressed in Florence after the death of Brunelleschi in 1446, and especially after the death of Cosimo de' Medici in 1464—the realization of technological innovation.

Unfortunately we know very little of what occurred in the Milan Academy, except that Leonardo's closest collaborator in Milan, his instructor in geometry Luca Pacioli, wrote about its existence in the preface to the book called *Divine Proportion*, written in 1498 and published in 1508 (Figure 8). Pacioli paid special tribute in that book to Nicolaus of Cusa, the German Cardinal who had done the initial diplomatic work to bring the Eastern Orthodox Church and the Greek Emperor to the Council of Florence, and who was the greatest scientific mind of the century. The connection to Cusa shows how intimately connected were Leonardo's scientific ideas, theology (Cusa was the great theologian of the Councils of the fifteenth century), and political thought (it was Cusa, in his first great writing, *De Concordantia Catholica*, who shaped the concept of a league of sovereign nation-states as the only basis for lasting peace).

We also know, from transcripts compiled by the students of Leonardo, that the Academy was occupied

with debates on the various art forms, poetry, music, sculpture, and painting, and that Leonardo, a master of all of these media, had delivered a *paragone* or comparison of the arts which is preserved today in the form of these students' notes. Leonardo argued that painting was superior to all other art forms, equalling even music—an assertion which he had made true, for his own day at least, by his own efforts. But in the process, he developed a universal concept about beauty in all forms of art, which totally refutes the “cultural relativist” banalities which dominate so-called high culture today.

For Leonardo, there is no such thing as a color which is beautiful in itself, and he attacked painters who tried to make their paintings “rich” by using the most expensive pigments to create “pretty colors.” Similarly, he wrote that no tone by itself possesses beauty, rather it is the beautiful proportion which is created between that tone and its fifth (which expresses musically the self-similar proportion called the Golden Section, the characteristic of life-processes) which the ear retains in memory, and which the mind perceives as beautiful.

In concluding the *Paragone*, Leonardo argues that music and painting are the highest expression of the principle of beauty because in each of these forms, it is possible to simultaneously perceive the beauty of the whole and the beauty of the individual parts. A great painting is exactly like a polyphonic musical work, in which the lines sung by the soprano, alto, tenor, and bass can be heard in their individual beauty and also in the “divine proportionality” produced between these lines. What Leonardo did not discuss more in this writing, but what is implicit, and certainly visible in his paintings, is the principle Lyndon LaRouche has called the cross-voice: the “fifth” voice emerging from in-between the motion of the other voices, when they are all working together in a well-tempered composition.

The Last Supper

As it happens, not only is the principle discussed by Leonardo as “divine proportionality” uniquely capable of creating beauty, but it is also the key to the question of individual freedom and progress, and hence the realization of the Filioque principle in Western civilization. This can be demonstrated in Leonardo's great composition, *The Last Supper* (Figure 9), which remains beautiful even despite the fact that most of the surface of the mural had already begun peeling off the wall for technical reasons, even during Leonardo da Vinci's lifetime. Today, a team of professional restorers using the most advanced technologies is working to clean off centuries of accumulated overpainting and recover what remains of Leonardo's original painting—

a task for which we shall all be grateful—but only the imagination can bring back, at present, the richness of the original painting. We are left with an imposing shadow. It is enough; after all, Rembrandt only knew the *Last Supper* through a crude engraving, and was able to base a series of drawings and paintings upon his study of it.

When you walk into the long room that was the dining-hall (refectory) of the Dominican monks of *Sta. Maria delle Grazie* in Milan, the painting on the far-end wall presents the same kind of conundrum noted above in the case of the *Mona Lisa*. To the question, “Does the painted perspectival illusion of the space of the ‘upper chamber’ in which the *Last Supper* takes place, continue the ‘real’ space of the refectory?” one can answer both yes and no—and convincing articles have been written arguing both views.

The fact is that it both does and does not. A somewhat complicated analysis can be reduced to the simple, utterly striking fact that only if the viewer imagines himself lifted to a higher position than standing on the floor of the room, and precisely so as to stand on the level of Christ, then the perspective illusion comes into focus, and the room of the *Last Supper* does continue the space of the refectory. And Leonardo has so composed the entire painting, so as to oblige the viewer to identify with Christ, such that the figure of Christ dominates not only the end-wall but the entire room. That is first of all why the picture is literally uplifting.

But the picture is not an icon. It is not intended to merely awe the viewer with a concrete image of God, as in the case of the Byzantine icons, which were worshipped. The very idea that anyone should take the painted image or any concrete image as actually God was philosophically repugnant to Leonardo as it was to his philosophical hero, *Nicolaus of Cusa*.

The Story of the Last Supper

Leonardo's *Last Supper* tells a story, and in the time-honored tradition of the Renaissance political cartoon, he takes care to combine his rendering of the Biblical accounts of Christ's *Last Supper* with his disciples, with details that mirror the daily lives of the monks of *Santa Maria delle Grazie* in 1494–96, including the creases in the tablecloth, the type of plates and cutlery, and even (as the restorers have uncovered recently) slices of oranges on the plates. Hence, the monks eating in that room, listening to their prior drone on and on in Latin, would look up on the wall and see the drama of the *Last Supper* explode across the wall, and would be forced to compare the banality of their lives with that example, vividly presented as a higher-level extension of their own space.

What is the drama? Christ announces his own



Figure 9.
Leonardo da Vinci: The Last Supper.

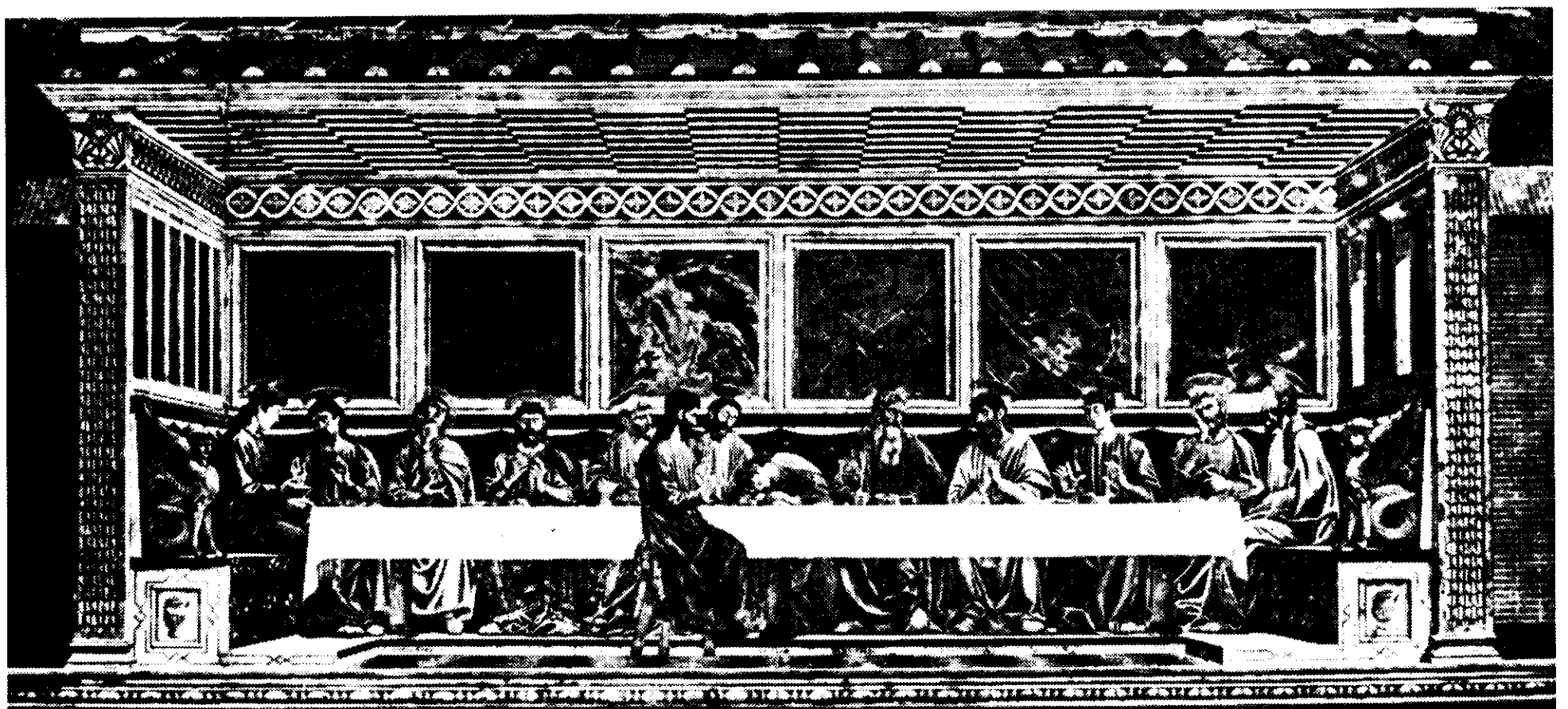


Figure 10.
Andrea del Castagno: The Last Supper.

imminent death, gesturing toward the bread and wine that symbolize the sacrifice of his life. He says, "One of you shall betray me." The storm of reaction across the wall centers on the question as to which one is the traitor, but also on the "succession," as the disciples debate "Which one of us will be the greatest?"

To see how Leonardo treated this, we must enter into some analysis. Some readers may find this amount of detail tedious, but given the extremely thoughtful way in which Leonardo worked on the composition (a contemporary account reports that he would come in on an afternoon, study the painting for some hours, and then add only a few brushstrokes and leave for the day), it is not too much to ask ourselves to spend a few minutes examining whatever details can still be seen. There was a longstanding Florentine tradition to paint this scene on the wall of a monastery dining-hall, and Leonardo's version can be compared to an earlier, famous, Last Supper, that of Andrea del Castagno, painted in the convent of St. Apollonia in Florence around 1450 (Figure 10). The point of this comparison is to bring out Leonardo's conception of the individual, and freedom. Castagno set his disciples and Christ along the table as thirteen very distinct individuals, against the backdrop of colored marble slabs. In Castagno's picture, the central group includes Christ, St. Peter next to him, and Judas, the traitor, on the outside of the table, already set apart from the rest—and this group is dramatized by an external element, the lightning bolt-like pattern in the marble square directly behind it. The theme is therefore the betrayal, and Christ himself becomes secondary to that theme!

We have already seen how Leonardo changed this by making Christ dominant, and thus demanding that the viewer relate to Christ directly. Also, Leonardo does not treat the disciples primarily as individuals, but first as four groups of three, united and contrasted by their actions in response to Christ and to each other's responses. It is truly a challenge to the anarchist's notion of liberty ("doing my own thing") that Leonardo's twelve apostles are far more memorable as individuals in their rigorously ordered interactions, than Castagno's in their strict separation!

The two outer groups of apostles to either side of the Last Supper by Leonardo are affected by a relatively mild turbulence, and we can still count them, first, second, third, from each direction. But as we come nearer to Christ, the inner two groups of three twist around each other so violently, that ordinal counting breaks down, because the heads and bodies "cross." To the right of Christ (Figure 11), three kinds of personalities are shown being drawn up into the question of the succession of leadership, and Leonardo particularly underlines the contrast between the "crossed" figures of St. James, who shrinks back in a totally emotional expression of horror, and St. Thomas, the doubter, who immediately engages in a scholastic debate, pushing around behind the back of James.



Figure 11.
Leonardo da Vinci: detail, The Last Supper.

This crossing of distinct "voices" is replayed on the left of Christ (Figure 12), but here the thematic treatment deepens, from a contrast in personality to a fundamental question of character: For it is the traitor Judas, his darkened profile drawn back and one hand grasping his bag of silver, "crossed" against St. Peter. Peter who was, by the Biblical accounts, to deny Christ thrice on the night before the Passion, but was also to overcome that deep flaw and rise to become the leader of the church after the death of Christ.

Leonardo has shown the Last Supper as the moment of launching of a great historical movement, the movement which was to save humanity from the horror of the Roman Empire. The twelve apostles, including the traitor, are shown in their response to that challenge.

You might have reason to suspect that Leonardo da Vinci's Last Supper was not painted in a period of peace. Indeed, while he was working on this project (and several other great projects) over the years 1494–97, Italy was being threatened with invasion from France and Spain. In Florence itself, the Medici rule had been overturned in favor of something much worse—a "Khomeiniac"-like mob rule under the theocratic monk Savonarola, who unleashed the spirit of a fundamentalist revival against the allegedly "pagan" products of the Florentine Renaissance. The longstanding project to bring into being an Italian nation-state was on the verge of being crushed, for lack of leadership, and lack of the development of the kind of republican citizenry Leonardo Bruni had talked about three-quarters of a century earlier.

Leonardo and Machiavelli

What was Leonardo's relationship to this republican movement? The few explicitly political comments he



Figure 12.
Leonardo da Vinci: detail, The Last Supper.

made in his surviving notebooks, which are only a fraction of those he left behind at his death in 1519, are very terse. But from them, we know that he linked statecraft and city-building together as the only way in which stable government could be guaranteed. This attitude is the secret of his collaboration, after 1500, with the statesman Niccolò Machiavelli, first in their joint service to Cesare Borgia, the prince who attempted to unify Italy under a single military rule and thus finally break the power of the Roman oligarchical families, and later in service to the revived Florentine Republic in the years 1503–1506. It is documented that this collaboration centered on “great projects” for redirecting rivers, building fortifications on the most advanced principles, mapping out cities, and channeling water to tame it for man’s use—endeavors in which there is no simple dividing line between military necessity and the prerequisites of winning the peace.

The most far-reaching of these plans was the Arno River System Plan, a vast proposal which would make the Arno River running through Florence to the Mediterranean navigable year-round for cargo transport, keeping it from flooding, and powering a series of industries, at least sixteen of which Leonardo had expressly enumerated, along its shores. In his surviving notes for the project, which began as a military project proposed in collaboration with Machiavelli to the Florentine city rulers, Leonardo actually posited the necessary manpower and costs, and proposed a system of taxation of the cities through which the Arno Canal would now pass, based on the expected revenues from commerce and industry which would result from its construction. This canal could not have been built except by pulling together the financial and political resources, if not of an Italian nation, at least of a far larger section thereof than was politically unified at the time; and by developing new sources of energy, a

project on which Leonardo was assiduously working.

One can compare the final chapter of Machiavelli’s essay, *The Prince*, written many years later, where he uses the metaphor of states which fail to build banks and dikes for flood control to states which fail to build the necessary institutions to safeguard stable government, and Leonardo da Vinci’s writings, also of the second decade of the sixteenth century, on the Deluge. In both cases it is possible to see that the relationship between the waterworks and the state is far more than a metaphor, but embodies a specific programmatic approach, which was never to be realized in Italy.

Some people, some very old, very powerful families, considered such ideas to be very dangerous—as dangerous as Leonardo’s research into human anatomy, which provoked some of his most passionate remarks on the identity of love and knowledge, and was probably the cause of the showdown with the oligarchical Roman Curia, which led to his flight from Rome to France in 1516. There, at the age of 67, he died in 1519, leaving to his adopted heir Francesco Melzi a large number of notebooks on topics he had intended to make into books. These manuscripts, and very likely, others that left his hands before 1519, have been the subject of a concerted effort of suppression ever since.

It seems appropriate to close this brief survey of Leonardo’s biography by returning to the Last Supper. We have noted three levels of consciousness in the picture: that of Judas, the arch-traitor, who has subverted his mental powers to the cause of bestiality; that of Christ, representing creative reason, whose sacrifice for humanity sets off a shock-wave that will generate a higher order of organization among his disciples and thus in society in general; and between these two levels, the eleven faithful disciples, shown in the process of overcoming their lower nature and rising to the demands of historical necessity. But it is critical to realize that the painting contains a fourth level.

The perspective construction maps out a very deep rectangular room extending back from the table with the apostles by a distance comparable to the length of the actual refectory. At its far end, three windows open onto a luminous landscape. None of its details are visible any more, but it is certain that, as in Leonardo’s better-preserved paintings, this landscape showed a wilderness in the process of being tamed by man’s intervention. To identify with Christ, as Leonardo demanded in this painting, meant to organize society for the sake of subduing nature. Without this scientific purpose of changing the world, the self-ordering turbulence of the scene in the front plane would be meaningless. Likewise, without unleashing that kind of social process, there would be no hope of focusing the necessary energy to change the physical world. This is why for Leonardo, not only was there no difference between art and science, but no difference between science and politics.

Leonardo: Father of Modern Science

by Dino de Paoli

There is nothing more exciting and stimulating, for anyone who has studied the works of Leibniz and of the masterminds of the French Ecole Polytechnique, than to look directly into the works of Leonardo da Vinci on scientific matters. Here we find the same method, the same problematic, the same universal solutions to the task of economic progress. Every single problem found in the works of Leibniz, Monge, and Carnot concerning the "thermodynamic" relations of work, power, energy, and productive activity with their correlative, the principle of least action, is also present, and in most instances solved, in Leonardo da Vinci's writings.

Before going to the heart of Leonardo's scientific work, we must clarify one point. Leonardo belonged to the current of city-builders, humanist republicans. This is the key to all of the efforts on the part of the oligarchs to paint a deliberately false picture of Leonardo as a mystic. There was, and still is, a common line which shapes and unifies the feudal policies of these oligarchs and their mercenaries: their hatred of cities. This is because urban civilization, the idea of city-building, is the very essence of republican humanism. The city is the natural sociocultural center for human beings. It is the place where they socialize the highest form of thinking and action.

The construction of a city, its architecture, is the realization of man's comprehension of the harmonic laws which govern natural evolution. Cities are there to be looked at centuries later, as visual representations of the progress of the human species. Look at Florence or Paris: what makes them beautiful? It is not the trees, but the harmony of their architecture. Beauty is not located in "natural nature" but in the harmonic way man has transformed nature. Today, the ideology of

zero growth has tended to shift away from this positive valuation of man's capacity to transform nature for the improvement of the potentialities of his fellow man, and to locate it instead in so-called "natural" beauty. The more a city looks like a virgin forest, these environmentalists claim, the better it is; the more a man looks like an ape, the better!

It is obvious, then, that a zero-growth ideology does not fit with the concept of city-building, and therefore does not fit with the true idea of the Italian Renaissance. A city is the result of thinking about social life in a different way than as a collection of apes; it can live only if it becomes the center of economic activity which it fosters through its cultural functions. It is around this notion of city-building that the real science of economics was built more or less explicitly in the past. It is within this current of city-builders that we must locate the work of the great Leonardo da Vinci at the end of the fifteenth century.

The effort to ensure Italian national unity through economic development is the unifying principle which puts into perspective all of Leonardo's diverse activities. There is not one Leonardo the painter, another the architect, another the scientist, and another the geologist. There is only one man, who, along with Dante before him, and with Machiavelli and others, was involved in trying to organize the different activities necessary to build a national Italian state, as their collaborators had already done in the France of Louis XI. The necessity for this, the aim of such an idea, had already been perfectly described by Dante over a century before, and was reiterated by Machiavelli. The urgency of success in such an endeavor, is proven negatively by the disaster which befell Italy when it failed to bring it about.

Great Projects

It was around "great enterprises," great economic projects, which Leonardo and Machiavelli believed

Dino de Paoli lectures frequently on the history of science, both in Europe and the United States. He is currently preparing a full treatment of Leonardo's hydrodynamics.

they could bring Italians out of their local feudalistic quarrels and into a modern, strong state. Their failure was due to the incredible power held by the Venetian oligarchy, even in the Italy of that period. But their method had been successfully applied in France, and later on in Tudor England. It became the model for every notion of state-building and real political economy.

Leonardo elaborated plans to develop different parts of Italy and France, based essentially on irrigation, fertilization of areas to improve agriculture, port building to allow an increase in the trading of goods, and the building of entire new cities. One of his greatest ideas was the construction of an irrigation system along the Arno River from Arezzo to Pisa, which would have protected Florence from floods, and would have launched a tremendous economic boom in the region. This is the way he described it:

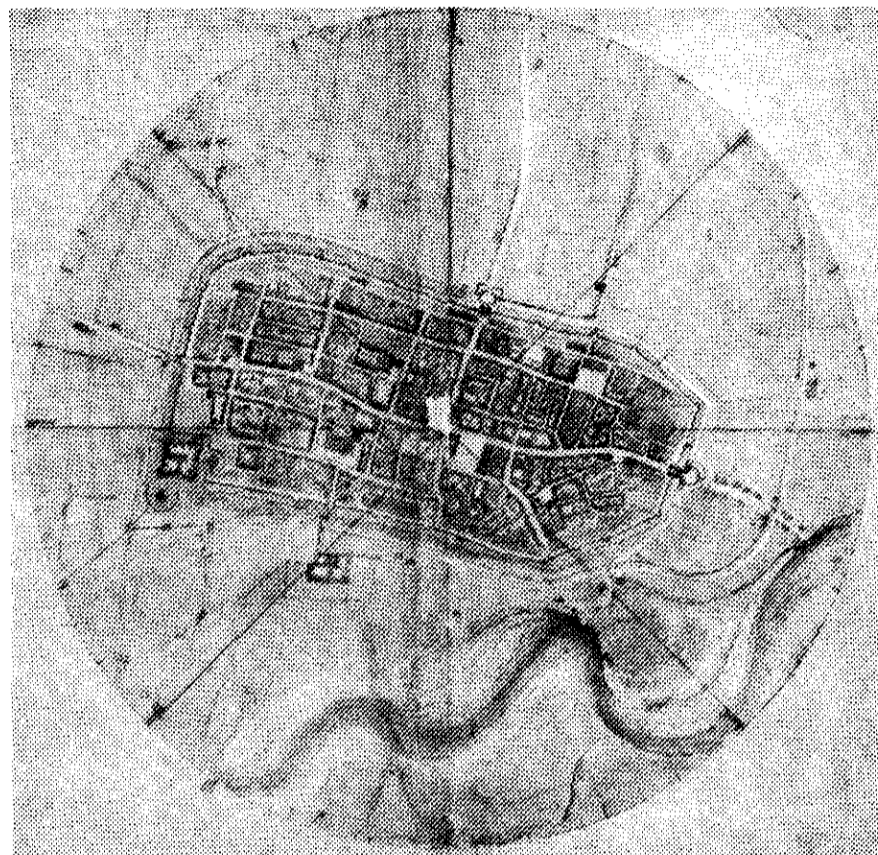
This will fertilize the country, and Prato, Pistoia, and Pisa together with Florence will have an annual revenue of more than two hundred thousand ducats, and they will supply labor and money for this useful work, and the Lucchesi likewise [Codex Atlanticus, fol. 46r-b*].

He also drew up a list of the industries which were to accompany such projects. His geographical and physical studies, especially for the tunnel in Serravalle, which lay along the canal's projected route, were perfect, as is proven by the fact that the modern motorway there had to follow precisely the same path projected by Leonardo.

He had fully grasped the political and economic importance of such projects, and realized that this was the crucial element for effecting the necessary growth in population. This accent on productive activities, on the fostering of industrial agriculture and manufacturing, is the germ of the notion of the economy which determines whether or not a nation is going to survive.

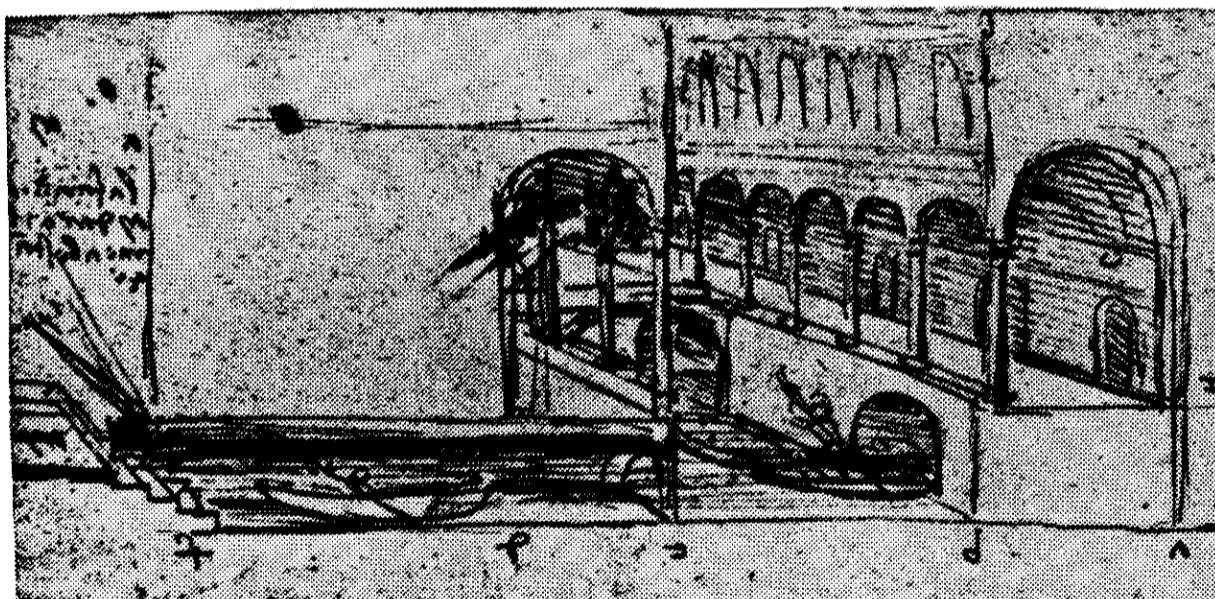
But Leonardo was also aware that it was the kind of life to be led in the cities, which would determine whether the city would indeed foster progress or would instead lead to a cultural decline. This is why

LEONARDO, CITY-BUILDER. A city lives only if it becomes the center of economic activity which it fosters through its cultural functions. Leonardo's city planning sought the economic development required for Italian national unity, and the architectural harmonies derive from this purpose. (All drawings in this article are by Leonardo.)

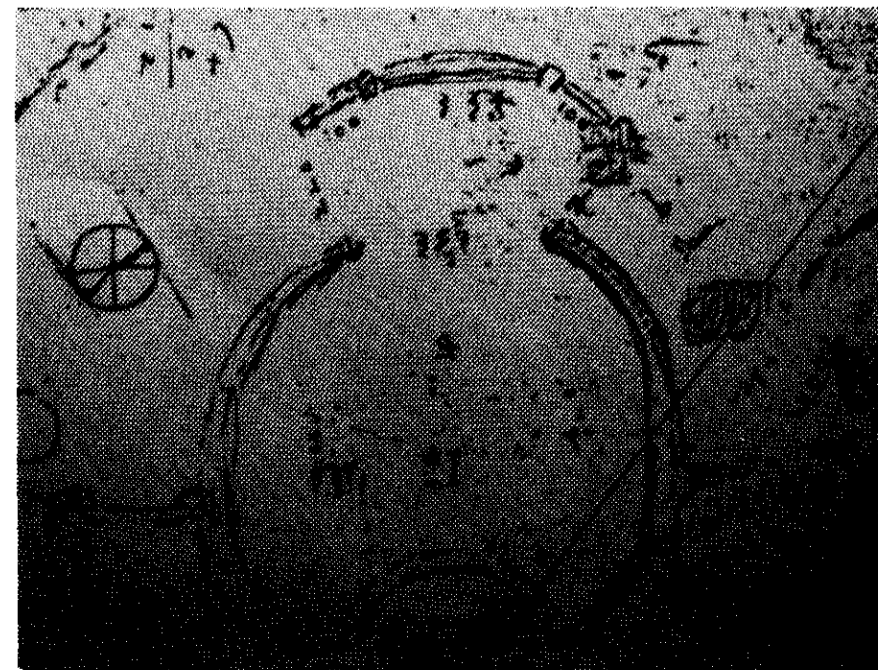


▲ Aerial view, city of Imola

▼ Canals below street level provide transport and services, while freeing the city of commercial traffic



▼ Proposal to develop the port of Rome at Ostia



*All of Leonardo's extant manuscripts have been given standard abbreviations, according to their locations. After the name of the collection or codes, comes a number indicating the folio or sheet, then the letter "r" or "v" indicating "recto" (front) or "verso" (back), followed in some cases by "a" (above) or "b" (below). The locations of the manuscripts used in this discussion are:

Manuscripts A-K: Institut de France, Paris.

Codex Atlanticus: Ambrosiana Library, Milan.

Codex Madrid: National Library, Madrid.

Windsor: Collection of Her Majesty the Queen, Windsor Castle, England.

Codex Hammer: Armand Hammer Collection, United States (formerly called Codex Leicester).

he elaborated new approaches to city planning, such as having transportation, water systems, and sewer systems operate underground. The city was to be a beautiful place, whose architecture would be based upon harmonic proportions—a place in which cultural activities would thrive in a relaxed and healthful environment. Now it happens, that the great projects of Leonardo could not have been realized in his time, without a jump in the technological level of that period. So this was precisely the angle upon which he concentrated his efforts. He conceived of new and more efficient technology as a means of improving the productivity of society and thereby ensuring its continued existence. This was the plan of Leonardo and his followers.

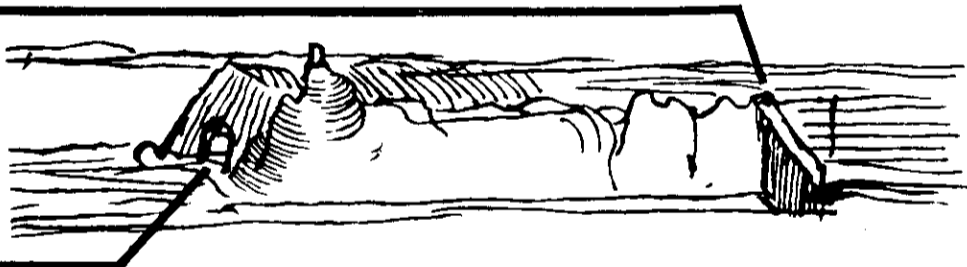
It is quite rare, incidentally, to find any widely circulating book in which the scientific works of Leonardo are seriously studied and presented. He is customarily presented as a sexually repressed artist whose scientific discoveries are the imaginative play of a child. This disgusting, quasi-criminal slander, which was already being retailed by the sixteenth-century biographer Vasari, was lent great weight by Sigmund

Freud's perverse book on Leonardo, and is still circulating today.

If today we are confronted with a general decline in the field of science, especially concerning the power to create new hypotheses to solve existing paradoxes, it is because we are confronted with a generalized destruction of purpose and aim in society as a whole. Malthusian ideology has taken hold—from zero growth in economics, to the anti-nuclear campaigns, to super-formalism in mathematical physics. There is no more search for causality, no more conclusiveness in the human thinking process; there is no more understanding of the usefulness of the formation of new creative discoveries. With the loss of moral purpose, the real soul of physical science is lost.

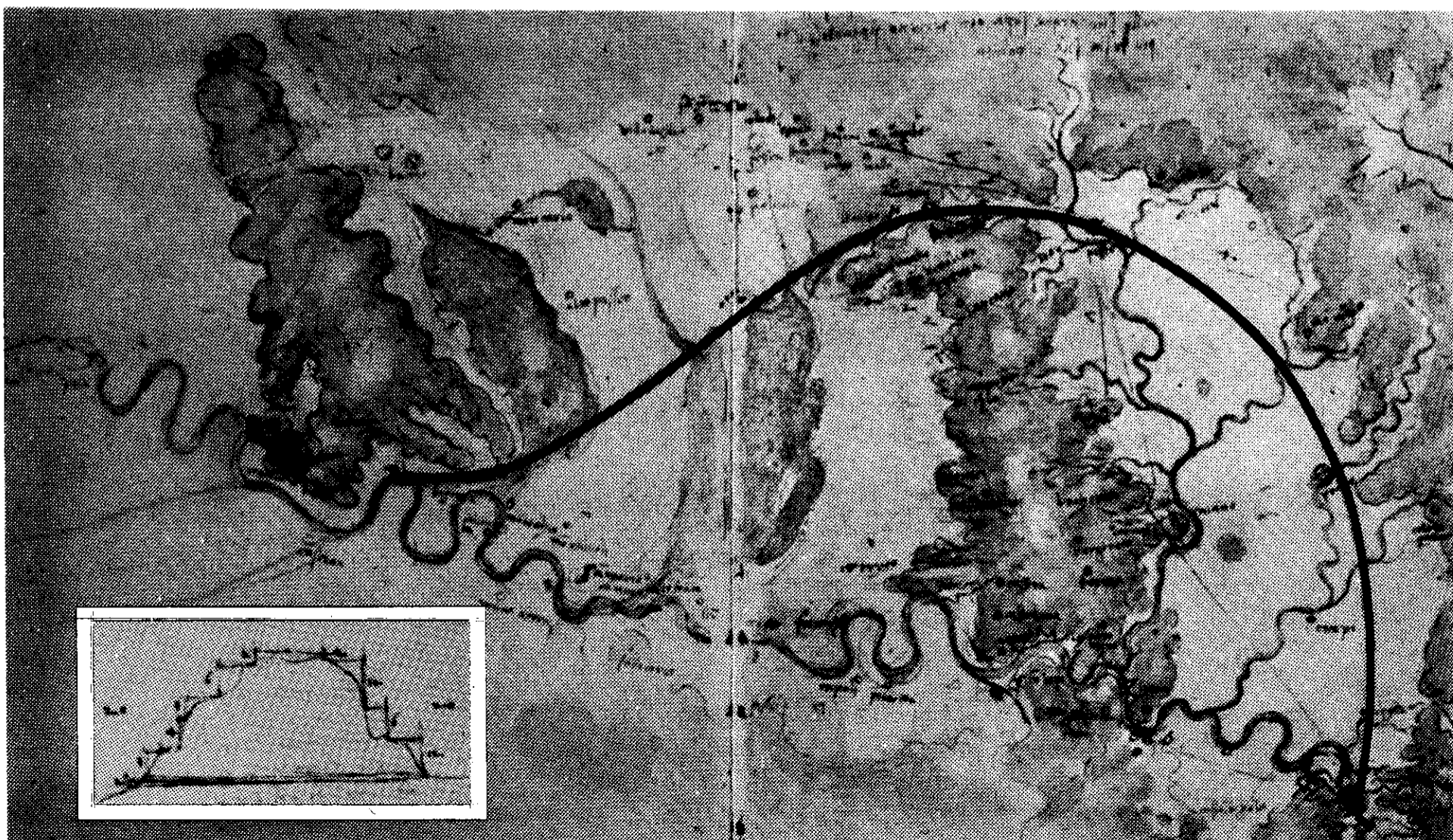
There are no more economic grand designs which make scientific progress a necessity! Scientific innovations in the Renaissance were possible only because of the general drive launched by the humanist republican faction around Cosimo de' Medici, Nicholas of Cusa, and Plethon Gemistos, which saw the creation of the first modern nation-state in France under Louis XI. This was the faction of Leonardo.

◀ Leonardo planned a waterway to connect Milan with Lake Como and the Alpine passes of the north. The route along the Adda river (left) required both a 90-foot-long stone dike to dam the river, and diversion into a navigable tunnel with a sluice gate. Below, Leonardo's drawing of these hydraulic projects is keyed to his map of the river.



GREAT RIVER PROJECTS. Leonardo elaborated plans to develop different parts of Italy and France, based on irrigation, fertilization of areas to improve agriculture, flood control, expanded water transport, and water-driven mills to drive new manufacturing industries.

▼ In consultation with Machiavelli, Leonardo planned to open Florence (bottom right) to the sea, by building a canal that would bypass the unnavigable portion of the Arno river. The canal would irrigate the entire region. Inset: Leonardo planned a tunnel for the canal through *Serravalle*—precisely as 20th century engineers did in building a superhighway along his proposed canal route.



It is a fact that by reading Leonardo's scientific works, one can say: "My God, science, after all, is beautiful, too! I too can become a scientist." It is this state of mind, this excitement, that the oligarchs want to prevent. Therefore they demand that science be presented as incomprehensible sets of formalisms, while art is supposed to be a realm of anarchistic freedom. That is why they have to lie about who Leonardo really was, what his real accomplishments were, and the quality of thinking which led him to be both a great artist and a great scientist.

Leonardo the Scientist

Let us read some passages in Leonardo's own words:

I am fully conscious that . . . certain presumptuous persons will blame me that I am not a man of letters. Foolish folks . . . they who deck themselves out in the labors of others and will not allow my own. . . . Though I may not, like them, be able to quote other authors, I shall rely on that which is much greater and more worthy: on experience, the mistress of their masters [Codex Atlanticus, fol. 115v-a].

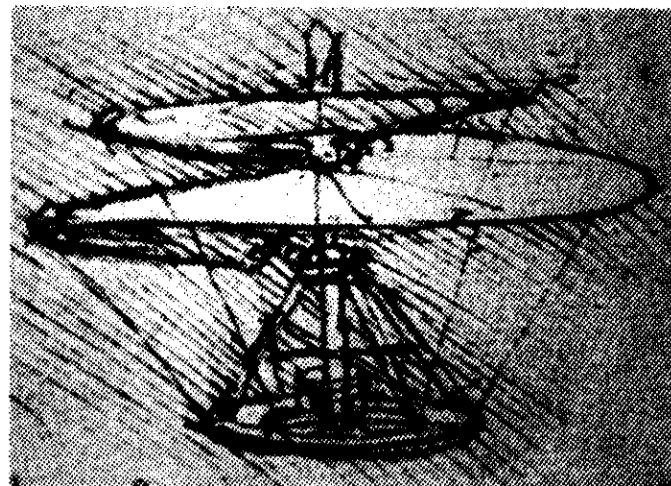
Those who are in love with practice without knowledge are like sailors who board a ship without a rudder or compass and who never can be certain where they are going. Practice must always be founded on sound theory, and in this, perspective is our guide [Manuscript G, fol. 8v-a].

Now let us see how Leonardo is presented in a widely publicized book in France by the "expert" Bernard Gille: "There is nothing scientific about the essence of Leonardo's work; it is completely pragmatic, real, *quasi terra a terra* [at the lowest level]." To substantiate this, he quotes from Leonardo who says in Manuscript F: "When you formulate the science of the motion of water, remember to include under each proposition its application and use, in order that this science may not be useless."

To this Gille comments: "Is there any text more anti-scientific, or better yet, more a-scientific than the above?" I want to answer Gille with a quotation from Leonardo:

I know that many will call this useless work; and there will be those . . . who took no more account of the wind that came out of their mouth in words, than of that they expelled from their lower parts. . . .

LEONARDO'S INVENTIONS. The tremendously broad range of Leonardo's inventions impresses us with his incredible imagination. But most of his designs for "mechanisms" are machines for production (see following pages), and his drawings combine studies of these machines with studies on energy sources and energy-work transformations.

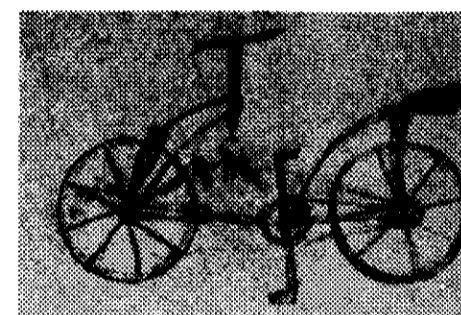


◀ "Air screw" (helicopter)

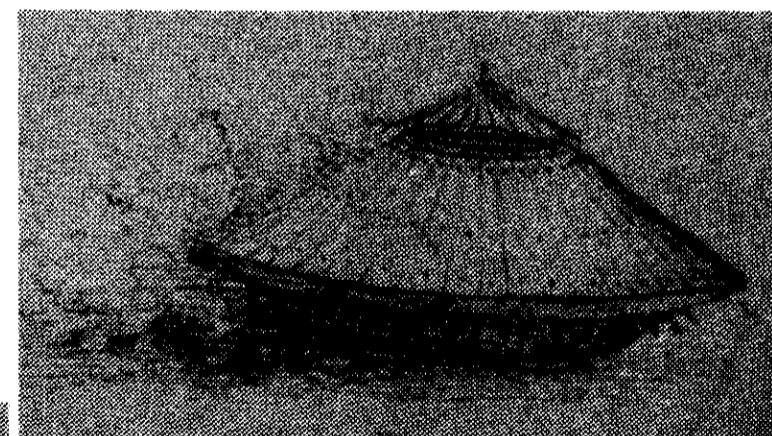
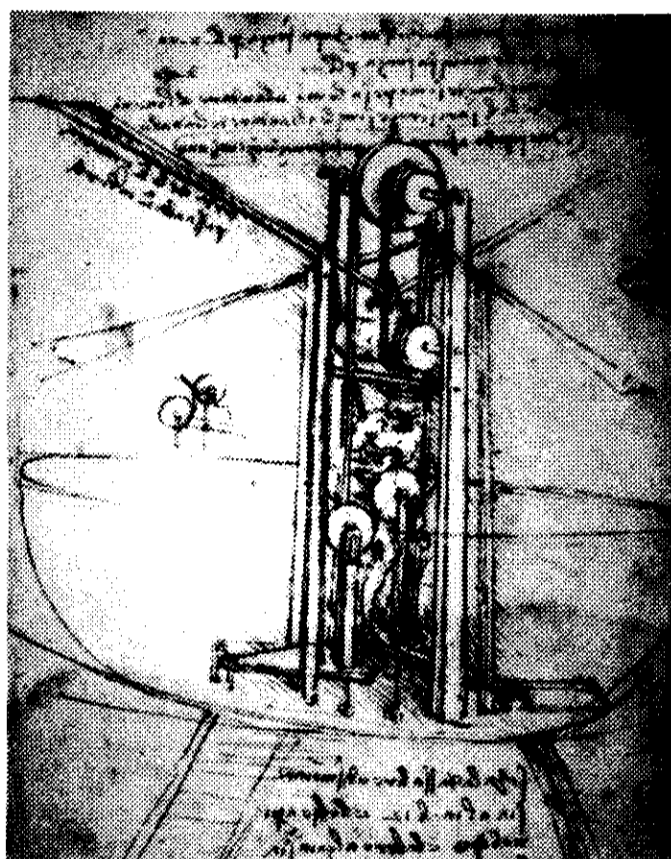
▼ Parachute



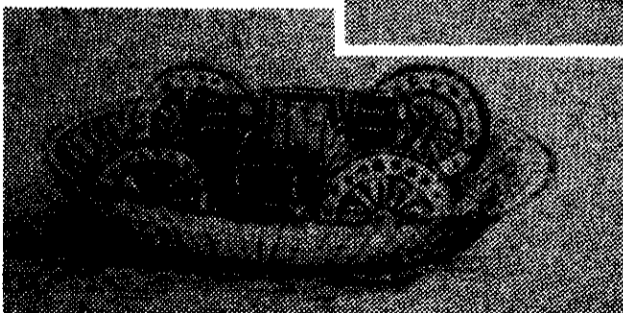
◀ Flying machine ("ornitottero")



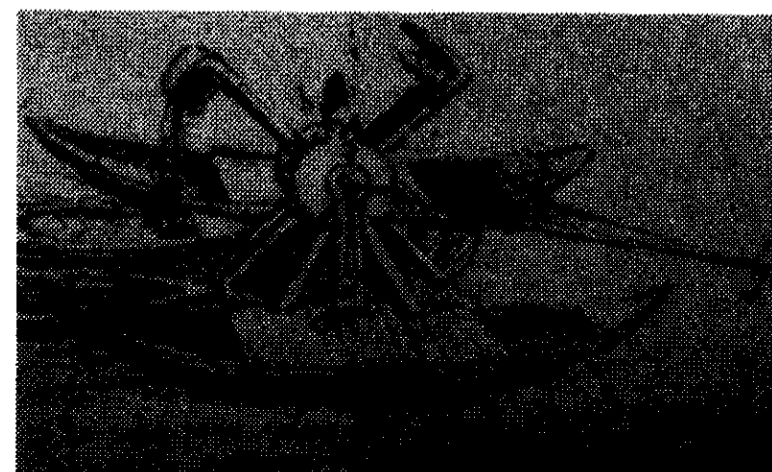
▲ Bicycle (drawing by one of Leonardo's students)



▲ Metal-plated wagon (tank), both top and bottom ▼



▼ Canal dredge



For, so much more worthy is the soul than the body. And often, when I see one of these men take this work in his hand, I wonder that he does not put it in his nose, like a monkey, or ask me if it is something good to eat! [Codex Atlanticus, fol. 117v-b].

Science can be understood only if the mind's enjoyment in solving real problems in the advancement of the human species is naturally allied with beauty. Any other way to look at Leonardo the "artist" or the "technician" is disastrously foolish. Human progress can only be joyful and beautiful. Let us now try to define more precisely what we mean in the case of Leonardo.

The Science of Technology

Leibniz is recognized as the first person to explicitly state the foundations of political economy, which he called *polytechnique*, or in English, "technology." It was he who precisely formulated the notions of energy and work. This was also precisely the standpoint of the Italian Renaissance, not merely implicitly, but in explicit and active formulation.

There are many available catalogs of Leonardo's inventions. The net impression which they convey is that Leonardo had an incredible imagination. His machines are presented as cartoons from science fiction. He is dismissed as a serious scientist, or even a legitimate inventor. So you, the reader, can imagine how frustrated this writer was in his attempt to understand how Leonardo had arrived at such a perfect

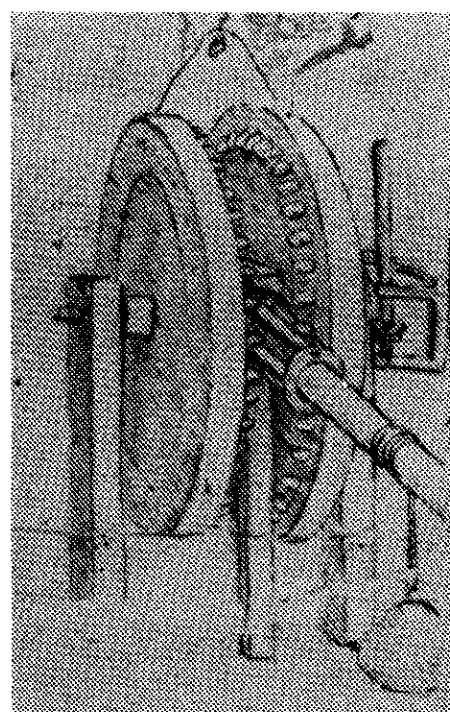
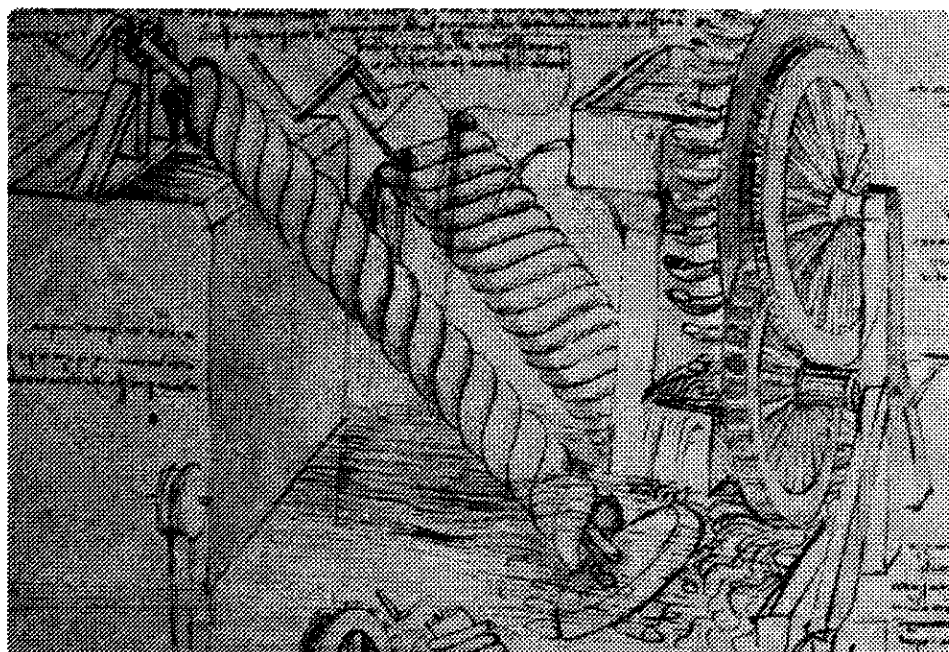
drawing of stabilizers in ballistic missiles. No answers were to be found from such books. Only by looking at a broader range of his drawings, was I suddenly struck by one very simple fact: Most of Leonardo's "mechanisms" are machines for production. His drawings combine studies of these machines with studies on energy sources and energy-work transformations.

There are thousands of such drawings, some incomprehensible, while some are simply notes; but they have one invariant feature: Leonardo was trying to increase the efficiency of existing technologies by better transmission systems, and to automate productive activities as much as possible in order to avoid simple manual labor. In this regard, look at the studies which he made of the mechanical movements of human bodies performing work, so that these motions could be replaced by machines.

He conceived of an automatic excavator whose purpose was to dig out large-scale irrigation canals. We can easily see that such a machine could not be driven by human energy, nor by so-called "natural" energy (water, wind, sun, rain, etc.). For this reason, our Leonardo experts would tell us, "Here you see another of Leonardo's fantasies. In order to function, such a machine would need to operate on a new principle: that of an energy of greater density, and above all, mobility—not constrained by the physical conditions of a given location. It would have to be a mechanical motor."

The same problem confronted Leonardo in the realization of his project concerning mechanical flight. It is probably in this context that Leonardo began his

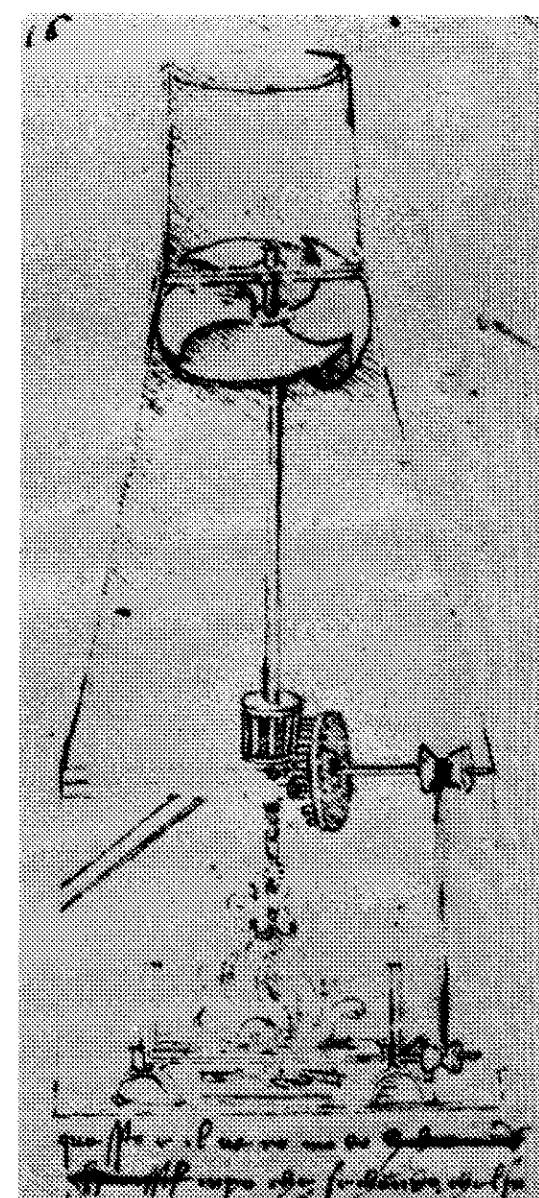
MACHINES AND ENERGY SOURCES. Leonardo tried to increase the efficiency of existing technologies and energy sources by better transmission systems, and to experiment with new energy sources, such as steam. Only the economic collapse following the defeat of the Medicis by Venice transformed such otherwise realizable works into apparent fantasy.



▲ Windlass transforms reciprocating motion into rotary motion to lift weight.

◀ Water screws and water wheels

Rotisserie driven by heated air ▶



research and experiments on the use of steam to power an engine, over 100 years before Leibniz' collaborator Denis Papin.

Only a degenerate mind can dismiss Leonardo's technological studies as futuristic fantasy. All that Leonardo studied could have been realized during his own lifetime or shortly thereafter, had the economic and political conditions which he expected and fought for, been realized. It is only the relative economic collapse of the period following the defeat of the Medicis by Venice, which transformed such works into apparent futurology.

This is precisely what we mean by the science of technology. It is the drive to improve the human condition by freeing man from slave labor, by the creation of technologies derived from man's mastery of natural laws. As Leibniz put it later: the steam engine would allow one man to do the work of hundreds. And it is precisely Leonardo's work on watermills, steam engines, and so forth, which defines him as an economist. The wealth of a nation does not come from the raw materials at its disposal, but from its development of the productive powers of the population as a whole through the development of machines. This is the invariant of human development, and this is precisely what the Renaissance was all about.

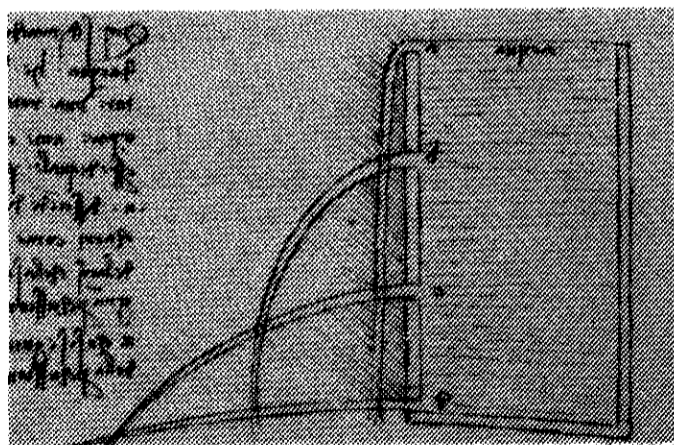
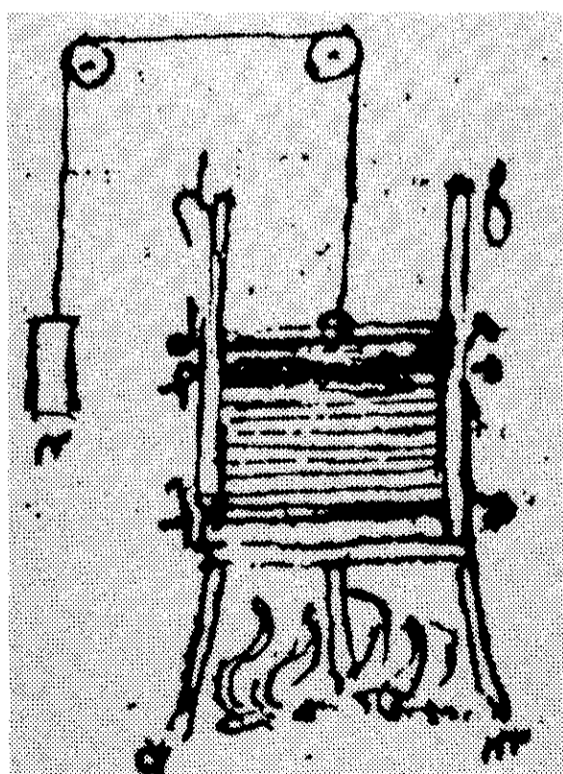
It is true that before Leonardo, Renaissance engineers had worked on the construction of machines, but only with Leonardo can we speak of science, that is, of attempting to derive the solutions to mechanical problems from general and universalizing principles.

This is a constant in all of the machines which Leonardo designed, and in all of the new "mysterious" mechanisms which he introduced. Leonardo tried to increase efficiency and productivity in the transformation of energy into work.

Every society needs technology to live; but a fixed technology tends toward limits imposed by the inefficiency of the transformation, and by the raw materials on which the technology is based. It is at this point that the Malthusians intervene to insist that society must run up against an absolute limit on the population which it can support. As a first approximation, these apparent limits can be overcome by increasing the efficiency of existing technologies. But fundamentally what is needed is the discovery of new scientific principles, which introduces a new range of possible technologically valid solutions.

Leonardo demonstrated a profound understanding of this through a series of studies on automation. First, he polemicized against the absurdity of simple manual labor; second, he began to study the mechanical aspects of human movement during labor; third, he conceived of machines which would be capable of performing such movements. This is the invariant of human development.

This is precisely what the Renaissance was about. However, Italy was lacking one critical ingredient, one that Leonardo and Machiavelli were trying to introduce in the face of fierce opposition from Venice: the unity of Italy under a republican government. They understood that the key to an economy is not its current stage of technological development per se, but

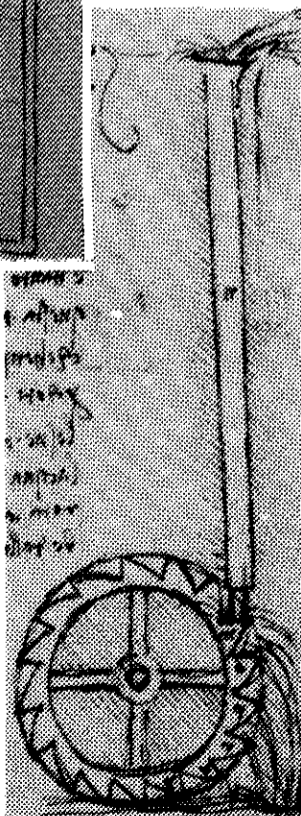


◀ Measuring the force of water at different heights

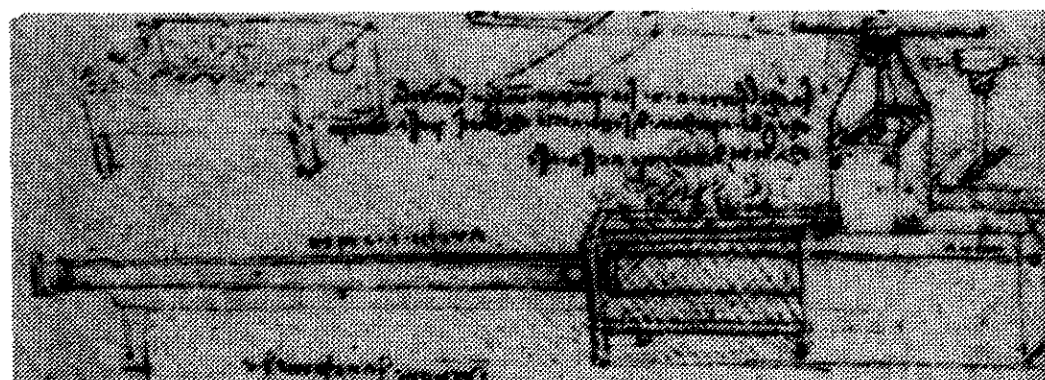
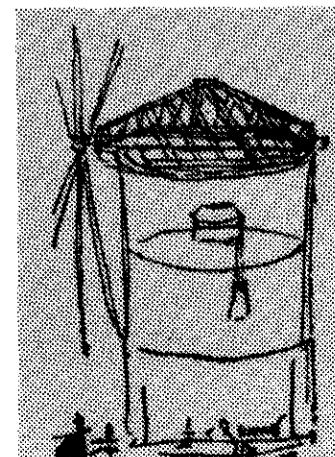
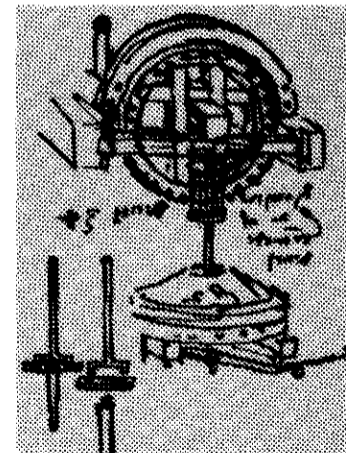
▼ Maximizing water wheel efficiency

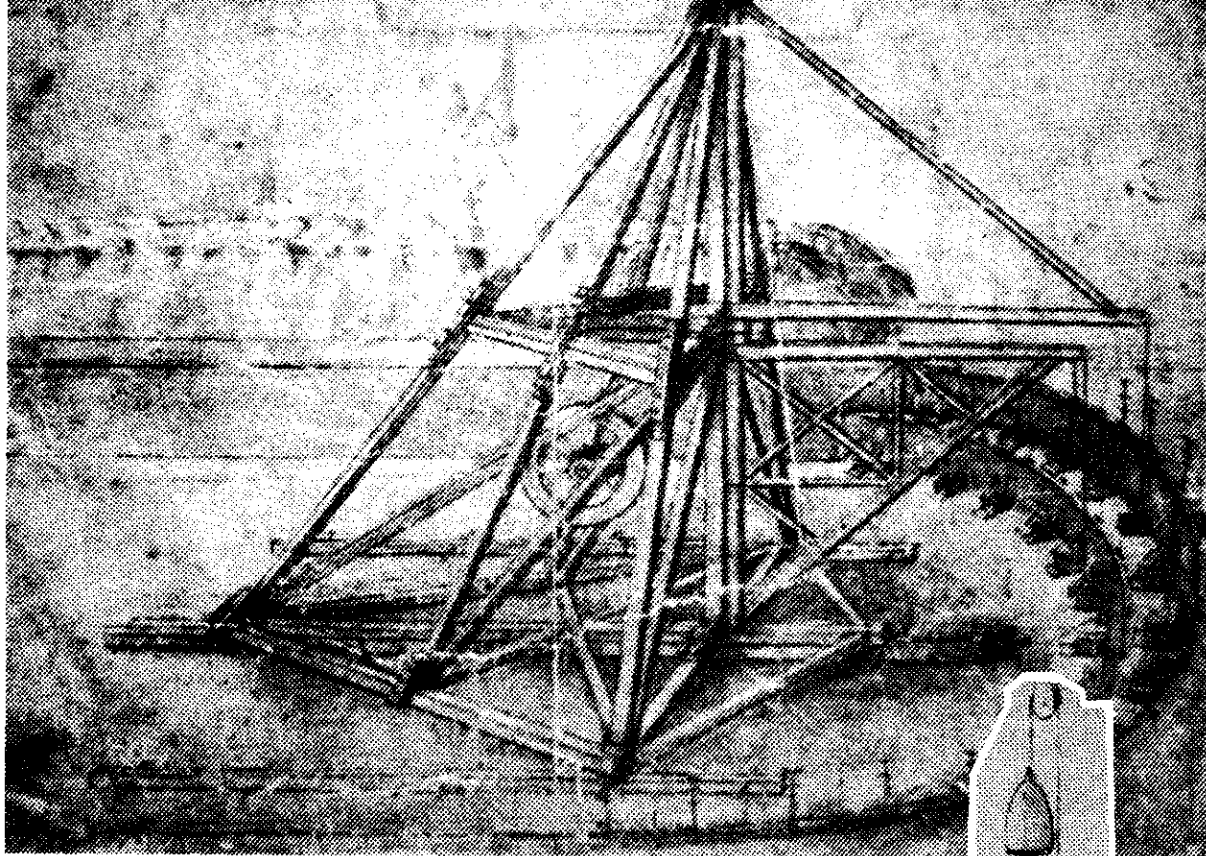
◀ Steam piston experiment, for lifting weights

▼ Steam-driven cannon, presaged a 19th century device



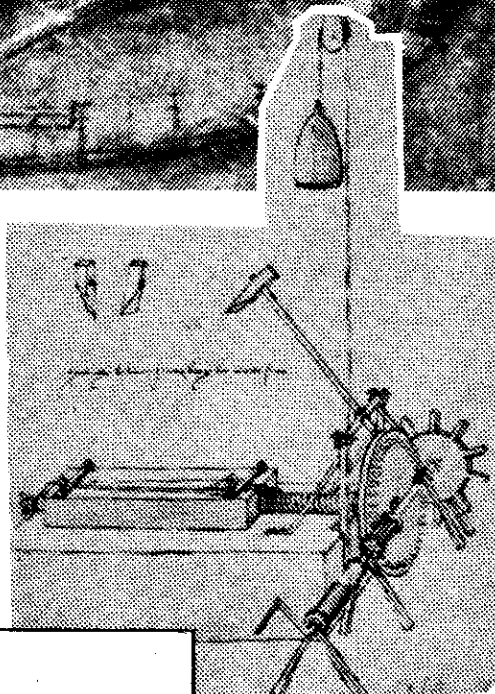
Windmill mechanisms ▶



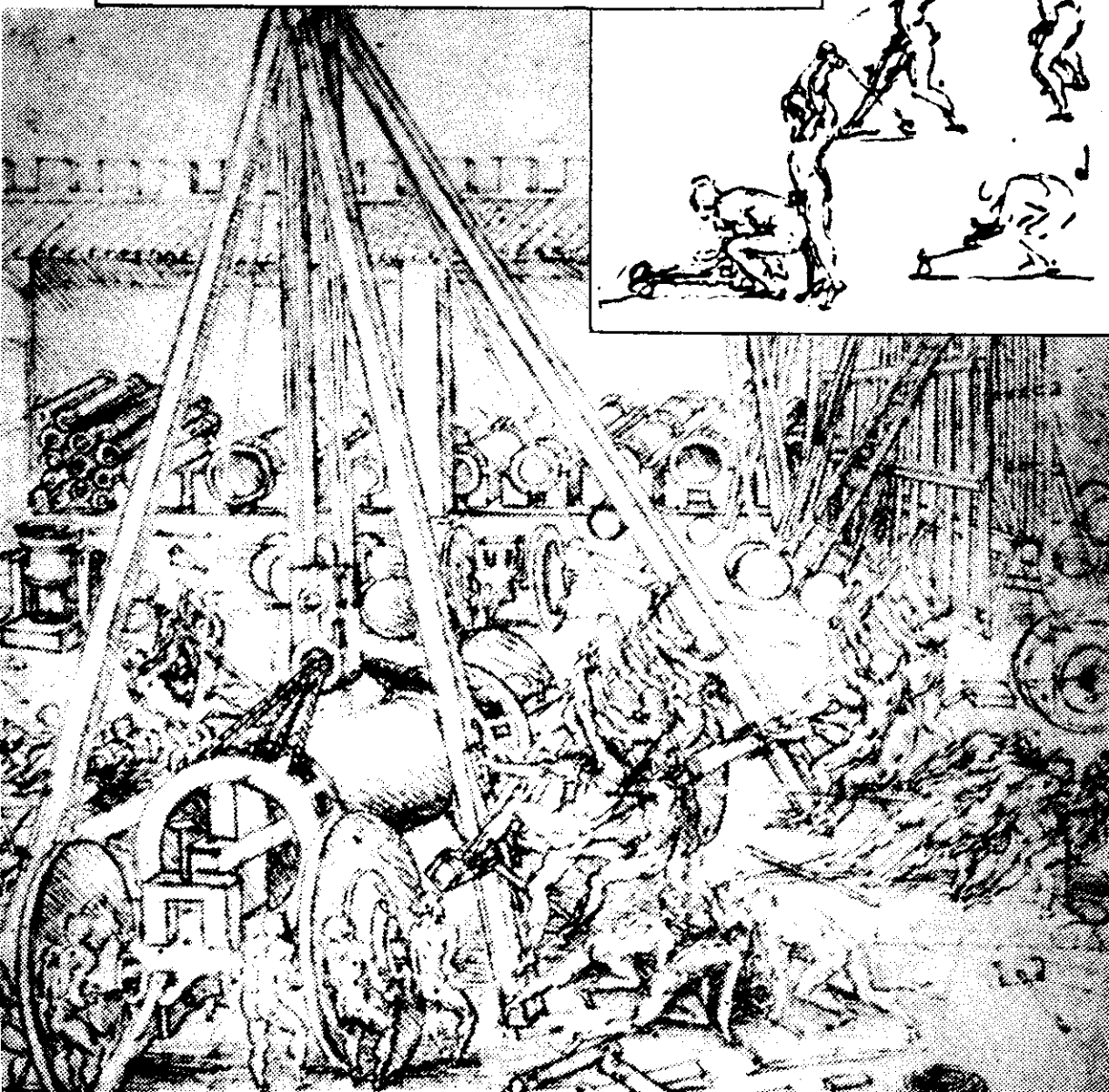
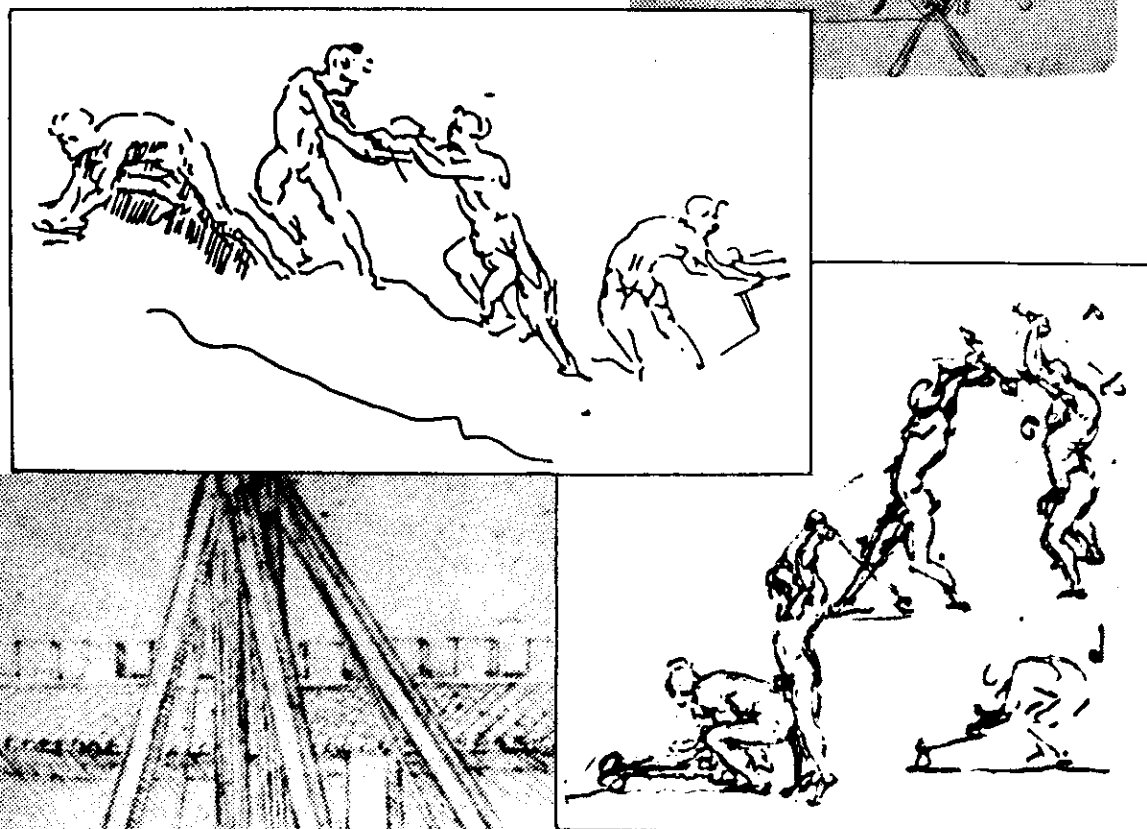


▲ Giant automatic excavator

Automated file-making machine ►



▼ Studies of bodies in motion



◀ Giant hoist

the potential of that society for technological development, its potential to create and master new technology. Such potentialities can be fully realized only in a humanist republic.

Leonardo studied and wrote his notes on technology during his stay in Milan, in 1482, when he was in the employ of the Duke Ludovico Sforza. At the time, Milan was already a key industrial center, placing it in opposition to the oligarchical center Venice, which sought to destroy Milan by financing a series of foreign invasions of Italy. Milan, along with the Medici family of Florence and France's King Louis XI, constituted the axis for republican policy in Europe.

Leonardo did not simply draw what he saw around him in Milan, but actually wrote notes, theses, and books, accompanied by drawings. There are thousands of scattered notes which prove the consistently high theoretical level at which he pursued his mechanical studies. These alone are sufficient to dismiss the stupid idea that he was merely a simple "practical observer."

According to Ladislao Reti,¹ the only decent commentator on Leonardo this writer has found, Leonardo actually wrote a book called *Elementi macchinali*. Unfortunately, this book has been lost, along with seventy-five percent of the rest of his writings. Nevertheless, when we reconstruct the probable content of the book from the notes which still exist, we see a striking similarity with Lazare Carnot's "Essay on Machines" written three hundred years later, in 1783. Both Leonardo and Carnot start from the specific technological problems of their own period, and from these they derive the basic laws which define natural physical processes and machines in general. Both go beyond empirical techniques, to a conscious study of the general laws of technological evolution and applications.

From others of Leonardo's notes, one can reconstruct his main theoretical contributions. We find studies on Archimedes, stimulated no doubt by the work of Nicholaus of Cusa, who had reintroduced Archimedes to Europe. Indeed, most of what now falls under the heading of mechanics—both statics and dynamics—as well as areas of hydrostatics later rediscovered by Pascal and the Bernoullis, are to be found in these studies by Leonardo. Here, too, we see studies of falling bodies and Galileo's experiments with inclined planes.

We find him stating the fundamental relationship of the energy-work transformation, later developed by Leibniz and typically ascribed to Isaac Newton as

AUTOMATING TO REPLACE MANUAL LABOR.

Leonardo made studies of the mechanical movements of human bodies performing work, so that these motions could be replaced by machines. He conceived of an automatic excavator capable of digging the large-scale canals he proposed—projects too large to be completed by unaided manual labor.

the latter's discovery. Leonardo writes in his manuscripts the relationship: Energy equals mass times acceleration times height. This, of course, was the basis for Leibniz' critique of the Cartesian notion that momentum, rather than energy, was conserved in mechanical processes. (Leibniz emphasized Galileo's discovery that the height of a falling object is correlated to the square of its velocity.)

The issue is, whether or not an economy can exist in a fixed equilibrium, without technological progress. For Leonardo, the answer was clearly negative. This is not a simple technicality, but rather brings to the fore the key Malthusian error: for any given, fixed energy-work transformation, there is an intrinsic entropic process, such that any evolution necessarily implies technological progress of a specific kind.

The projection of such notions into the lower domain of machines led Leonardo to criticize the

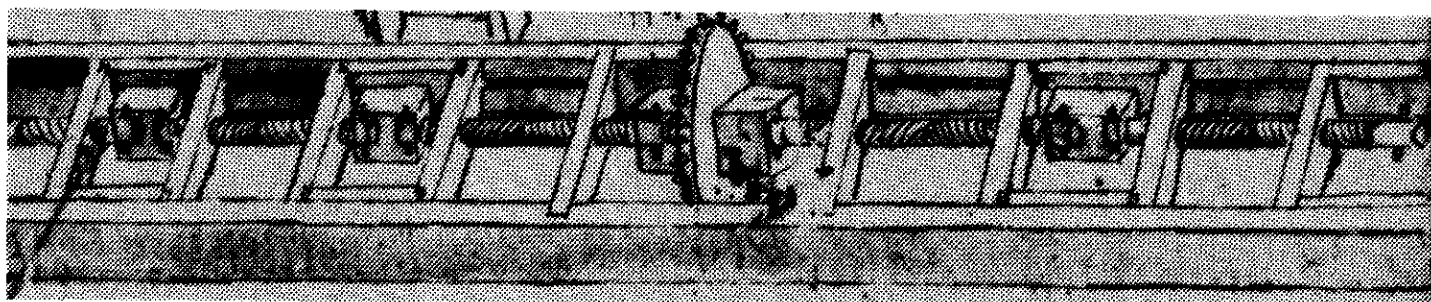
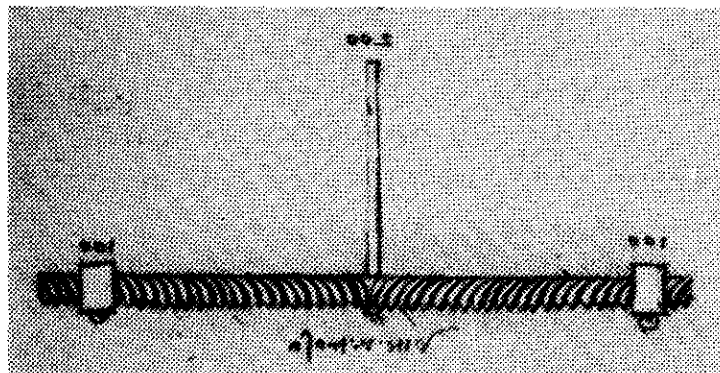
mistaken notion that more work could be accomplished by the addition of more wheels in the transmission of the motion, an impression derived from the apparent possibility of lifting heavy weights by multiplying mediating wheels, as in a pulley. In fact, this will introduce more thermodynamic "loss." Let me quote Leonardo:

The more wheels you will have in your instrument, the greater will be the friction, the more power will be lost by the motor, and consequently, force will be lacking for the orderly motion of the entire system [Codex Atlanticus, fol. 207v-b].

It is impossible to increase the power of one instrument used for lifting weight with a given quantity of force and motion, if the motion of the rope and the counterweight, as well as the heights and weights at the opposite end, are equal, whatever kind of motion and instrument are used [Codex Madrid I, fol. 175v].

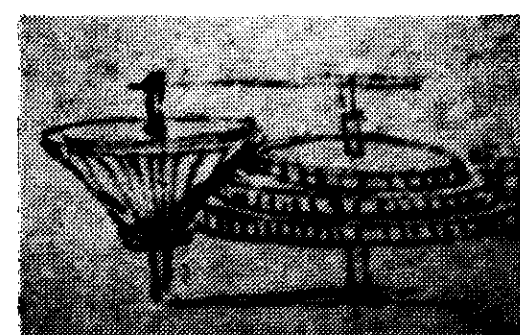
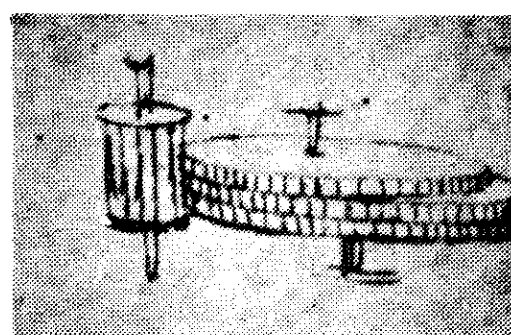
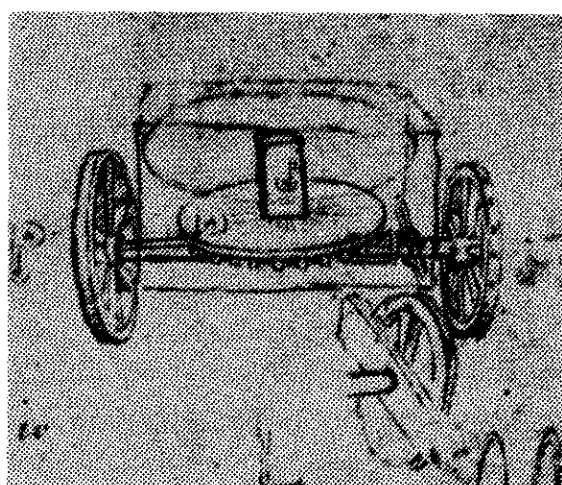
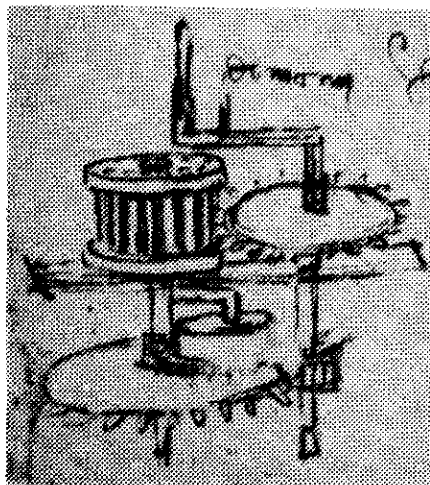
A larger or smaller number of threads on the nut surrounding the threads of the screw will not augment or diminish the burden of its mover . . . the shorter the motion of the moved thing in relation to the motion of the mover, the less force is required of the motor [Codex Madrid I, fol. 175v].

LEONARDO'S MACHINES. Leonardo wrote a long-lost book called *Elementi macchinali*. Beginning with the fundamental relationship of the energy-work transformation, he criticized the mistaken notion that more work could be accomplished by the addition of more wheels in the transmission of motion. In fact, this will introduce thermodynamic "loss."

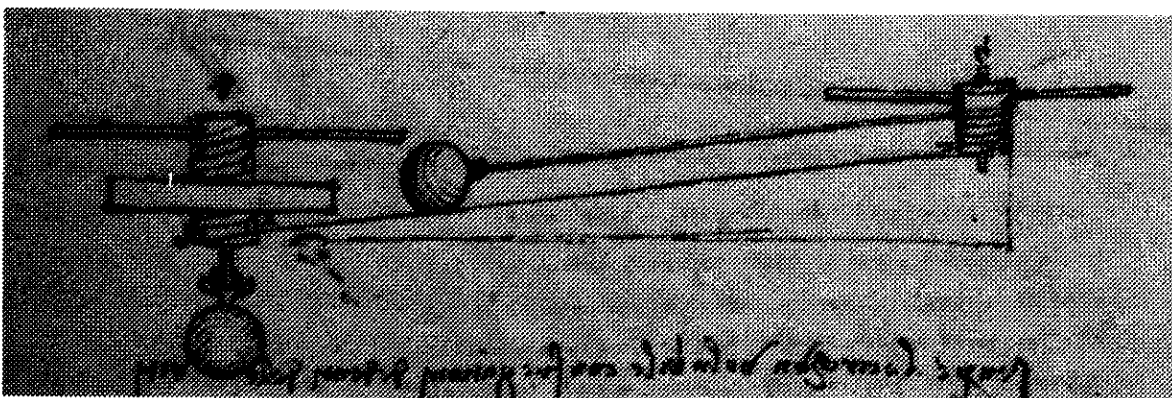


◀ Combined right- and left-hand screw

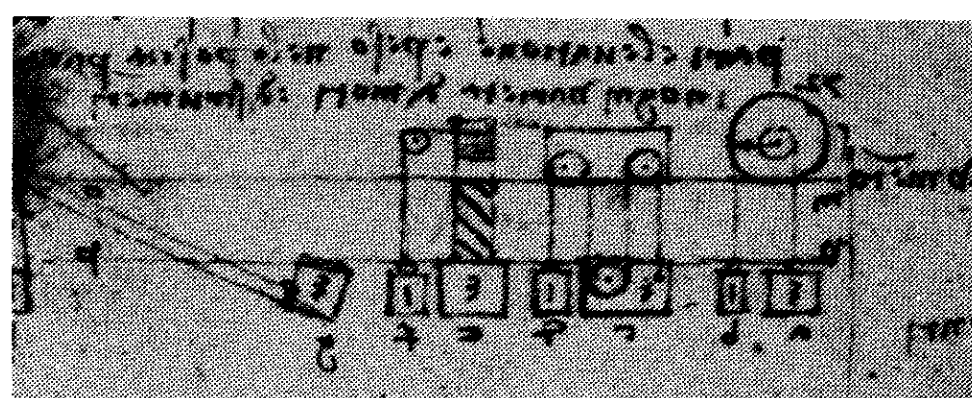
▲ Machine based on combined right-left screws



◀ Transmission system (left) and wagon axle system (right), which functions like a modern differential



▲ Comparing work of inclined plane and screw



▲ Demonstrating mechanical equivalence of screw, pulley, inclined plane, and differential hoist

Leonardo's Scientific Method

We should reflect on the crucial significance of the Renaissance approach to science, which allowed for so many breakthroughs, as the backdrop for Leonardo's essential theoretical contributions to the science of fluid mechanics. His standpoint, as reflected in his paintings, geometry, physics, as well as directly stated in his notebooks, can be synthesized as follows.

There is an underlying harmony in the universe, which we perceive as visual geometry and understand as physical law, when this appearance is comprehended by the human mind. Man does not automatically grasp the laws governing his own and nature's evolution. It is only when he knows himself to be the reflection of the divinity of God the Creator, when he is in the *Paradiso* of Dante, that he can express the qualities and motivation to define the laws of the universe harmoniously, as flowing from the one process of creation represented by God. Only in the common understanding of self-perfection, can we love both God and other human beings.

This implies going beyond the simple, aesthetic observation of nature, to transforming nature according to a knowledge of the laws of evolution it shares with man. Leonardo expressed it thus:

Abbreviations do harm to knowledge and love, given that the love of anything is the offspring of knowledge, the love being the more fervent in proportion as the knowledge is more certain. Certainty is born of complete knowledge . . . not as they who want to comprehend the mind of God in which the universe is included, weighing it minutely and mincing it into infinite parts, as if they had to dissect it! O human stupidity, do you not perceive that, though you have been with yourself all your life, you are not yet aware of the thing you possess most of, namely, your folly? and then, with the crowd of sophists, you deceive yourself and others despising the mathematical sciences in which truth dwells, and the knowledge of things included in them [Windsor Anatomy III, 141].

And:

. . . this is the way to understand the Creator of so many admirable things, and this is the way to love such a great Inventor. In truth great love is born of knowledge of the thing that is loved [Treatise on Painting, 80].

FLUID MECHANICS. Leonardo realized that the laws governing physical action in all types of fluids—water, air, and so forth—are characterized by common properties. His studies and experiments, not equalled until the 19th century, included analyses of storms, wind turbulence, rain, condensation and evaporation, water currents, shapes of fish, and bird and human flight. He was particularly fascinated by the vortical structures he found in nature.

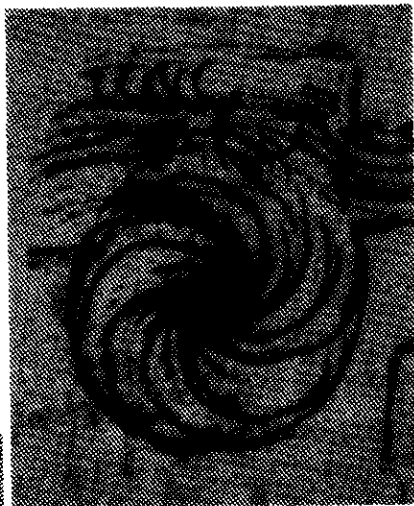
▲ Water poured from a square hole into a pool forms a whirlpool-like turbulence

Star of Bethlehem plant cluster; spiral structure ▶



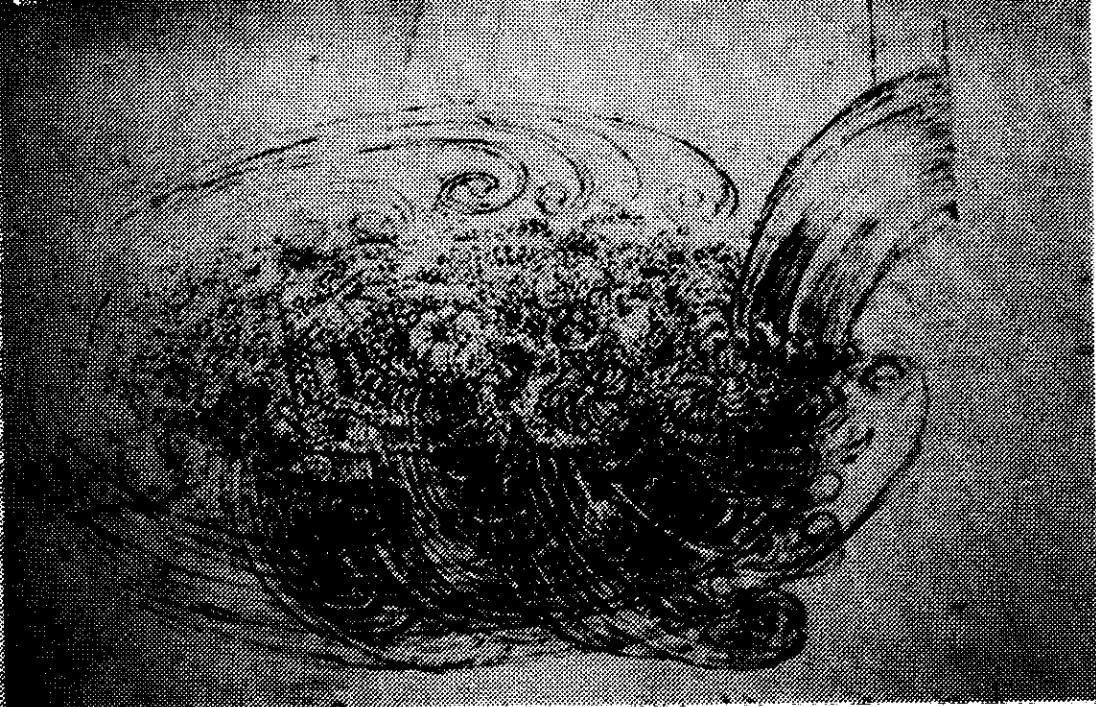
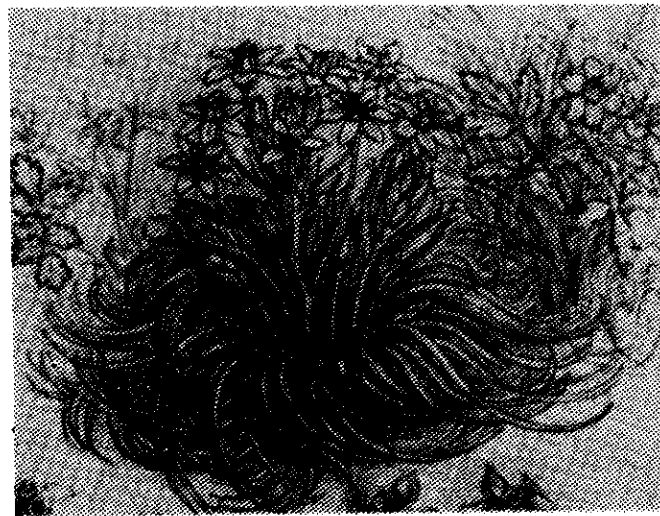
▲ Shape of fish: investigating motion through water, to aid in ship design

Flight of birds: wing shape and thrust ▶ through air



◀ Vortex current in a channel

▼ Construction of a river breaker creates a vortex current



Compare this to Leibniz, who in the *Theodicy* writes: "There is no possibility to love God without knowledge of our and His perfection."

But knowledge of the universe is possible, only if the question of necessity is brought in. For no mind which has lost its own grasp of necessity, of directed finality, can grasp science. This is the key to Dante, and this is the reason why Leonardo, and subsequently Leibniz and Carnot, declared so forcefully that there are laws which are necessary in nature, laws which define from a higher standpoint why a particular evolution is correct, while others are not. Here is a passage from Leonardo:

Here forms, here color, here the character of every part of the universe, are concentrated to a point [in the eye], and that point is so marvellous a thing. O! marvellous, O stupendous Necessity, by thy laws thou dost compel every effect to be the direct result of its cause, by the shortest path [Codex Atlanticus, 337v-b]

Again, compare with Leibniz' least action principle!

This is no vague metaphysics. It is instead, a reflection of the understanding that above specific mechanical laws, there are higher determinations, connecting them to universal laws, and to the mental processes which generated them. It is this deep understanding of the relationship between Freedom and Necessity that defines Leonardo's paintings, and it is why modern half-drugged artists can never understand them. All those types can do, is to repeat, monkey-like, "I am free, I am free." Leonardo was free only to use his mental power to define the laws of composition, just as, for Leibniz, God is free only to do good.

The same principle, expressed during the Renaissance by Nicholas of Cusa as the "Unity of the All," was crucial to Leonardo's insight into the laws of hydro-aerodynamics.

Leonardo and the Development of Fluid Mechanics

Leonardo was the creator of a completely new branch of physics called fluid mechanics. Not only did he invent the concept of physical similitude in the actions of all types of fluids (air, water, and so forth), but he derived experimental results that were so advanced, they were not equaled until the middle of the nineteenth century. Leafing through Leonardo's notes, we see that he was interested in such varied yet connected problems as bird and human flight, the current flow of rivers, the shapes of fish, and the formation of river deltas; he was particularly fascinated by the forms of spirals and vortices.

Isaac Newton's work represents an inferior viewpoint of physical hypothesis compared to Leonardo's. In particular, the concept of friction in fluids, and the

resulting vortical effects, were misunderstood by Newton—a very important methodological error. The same could be said for the theory of flight.

Leonardo's importance as a scientist was clear to researchers at the beginning of the nineteenth century, especially after Venturi's 1797 exposition of Leonardo's hydraulic works at the Ecole Polytechnique in Paris. It is merely an aberration of the modern post-Bertrand Russell school, that only those in the Aristotelian tradition are recognized as scientists, and algebraic formalism is preferred to physical hypotheses.

Leonardo understood that the physical universe is fundamentally coherent, knowable and harmonic, and that its actions are propagated in hydrodynamic form. This allowed him to grasp immediately the similarity in the behavior of air and water, in particular, which can be applied to the phenomena of light and magnetism as well. In so doing, Leonardo gave us the physical basis for the mathematical tools later developed by Bernhard Riemann, which are today the core of the LaRouche-Riemann economic model.

Leonardo studied, both physically and geometrically, the fact that changes in such types of manifolds propagate in the form of waves, and that such continuous processes tend to produce singularities in the form of something analogous to what are generally called "shock waves." He specifically studied the formation of such singularities as vortices, hydraulic jumps, and "vertical waves," in connection with the problem of viscosity. That is, what appears as an "energy loss" caused by friction, is in fact producing phase changes in the behavior of the fluid as a whole, which are made visible by the formation of new kinds of structures. It is the use of the mathematical, Riemannian formulation of such processes, which allows us today to best approximate the effect of realizing, or not realizing, new technologies in the economy as a whole. Thus, we can view Leonardo as the founder of political economy.

Water and Air Flow Experiments

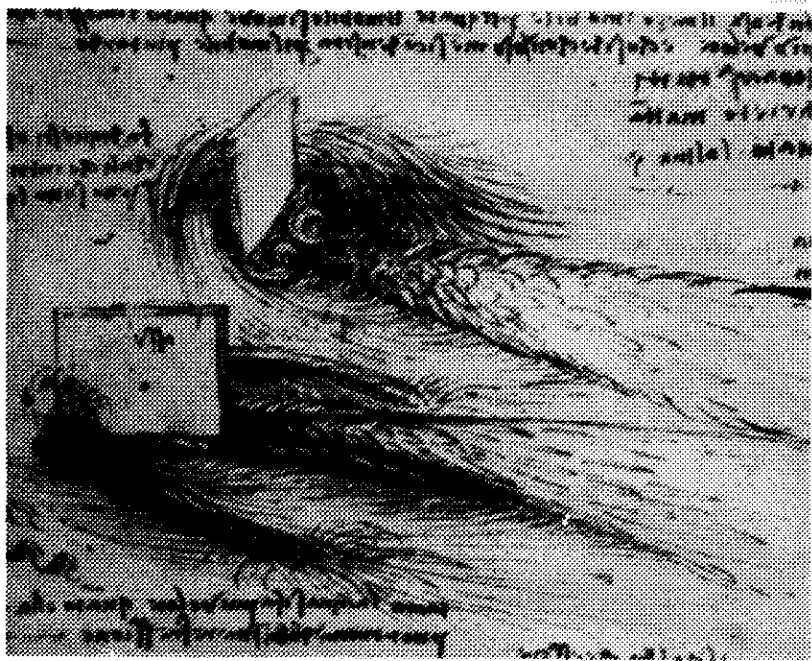
Leonardo filled page after page with studies, experiments, theories, and equations relevant to his analysis of storms, of wind turbulences, wind movements, rain, condensation and evaporation, of phenomena derived by the interface of air and water, water currents, and so forth. He did this with one explicit principle in mind: The laws governing water currents, wind currents, and fluids in general, are characterized by common properties. This rather obvious fact took 300 years to be understood again! Here is what Leonardo says:

In all cases of motion, water has great conformity with air [Codex Atlanticus, 361v-a].

The motion of water within water proceeds like that of air within air [Codex Atlanticus, 184v].

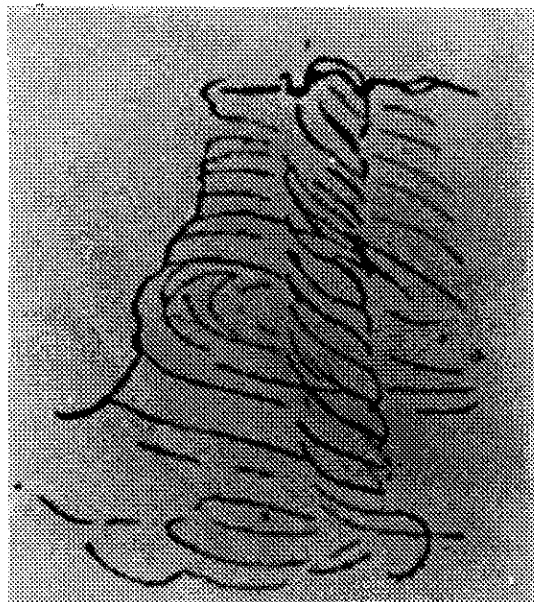


Cylindrical (three-dimensional) water waves, shown in ▲ various interference patterns ►

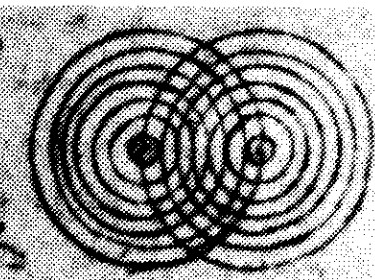


▲ Cylindrical waves from water courses around objects. The "braided" structure is particularly clear in the drawings.

Air turbulence: cylindrical wave ▼



Leonardo's sketch of circular sinusoidal wave interference in water (right) is a perfect match for the modern experimental photograph below.



If you want to see the movement of air penetrated by a mobile, take the example in water, then move the object and you will see the revolutions of the water which must be in a transparent container.

There are many similar passages in Leonardo's studies on wind turbulence. In fact, Leonardo gives many detailed examples of how current flows and water turbulence could be made visible by injecting colored water or tiny particles into the fluid—the same methods employed by researchers today.

Leonardo's interest in motion in air arose not only because he strove to understand meteorological phenomena, but also because he wanted man to conquer nearby space. He performed extensive aerodynamic studies, often by first testing his hypotheses in water. At the same time, however, he grasped the key difference between air and water:

Air has no resistance if it is not condensed . . . air is not condensed if it is not moved, and when it moves faster, it becomes more dense and its weight increases.

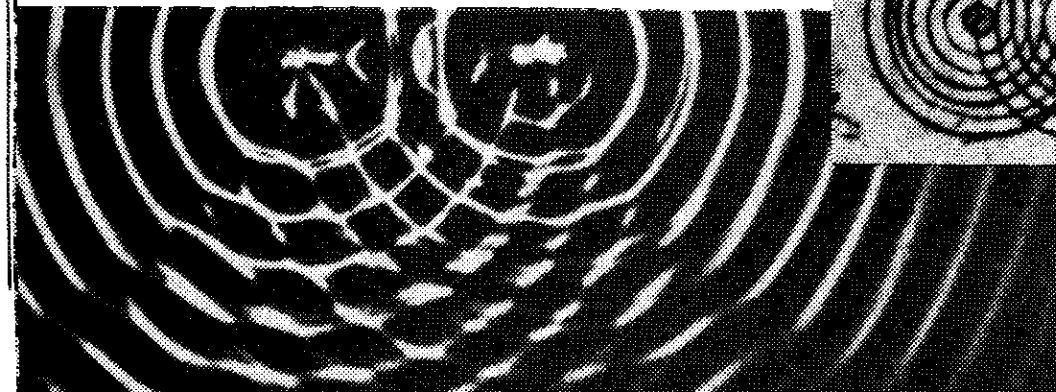
That is, he realized that although water is incompressible—as he stated elsewhere in his notebooks—air can be compressed.

From this, he studied the phenomena of condensation under pressure and of drop formation, and the reason for their spherical shape—which is akin to Nicholas of Cusa's studies of the isoperimetric properties of the circle. And from this, he correctly explained the mechanics of rain, of wind direction in relation to differences in temperature, and, further, the relationship between the discontinuities in gusts of wind and those of sea waves. These problems were later solved "analytically" only by H. Lamb in 1925.

Leonardo realized that the greater the wind speed, the heavier the object it could carry. Thus, he deduced that, in order to make a heavy object fly, one would require a very powerful engine and a shape based upon aerodynamic properties. This led to his incredibly advanced studies of the wings of birds.

It was by conducting these studies, that Leonardo strongly rejected the Aristotelian thesis of the "non-resistance" of air, and arrived at the conclusions which led, ultimately, to the successful realization of ballistic missiles. This was the answer to the question which initially drew this writer's attention: "How was it possible for Leonardo to conceive of stabilizers for missiles?" Leonardo's discovery opened the way to

WAVES AND VORTICES. Leonardo was the first scientist to realize that waves were an indication of a physical transformation in which energy is transported. He studied sinusoidal waves and their interference patterns, and conceptualized the existence of both three-dimensional cylindrical waves and, astoundingly, the phenomenon of shock waves.



two completely new domains: the study of waves and of turbulences.

Leonardo's Studies of Waves and Vortices

Leonardo was the first scientist to realize that waves were an indication of some kind of physical transformation, the creation of a singularity which acted as if it were an object, transporting energy. He discovered the manner in which fluids transmit motion in the form of simple sinusoidal waves; in the more interesting form of singular waves, they present an example of shock waves.

The hydrodynamic approach he developed implies that we cannot take as *a priori* the incoherent behavior of individual particles, but must instead discover the quality of organization of the flux, and the qualitative changes derived from the action of such fluxes. Leonardo's studies of sea waves caused either by objects or by wind, led him to the realization that wave transport is not based on the movement of matter, but instead on the transport of energy.

The harmonic sinusoidal waves that Leonardo studied in sound, water, and light phenomena, do not transport matter in the direction of the propagation of the wave; instead, they represent simple vertical harmonic vibrations.

The reader can demonstrate this for himself with a cork in a container with artificial waves, as Leonardo did. The cork will move up and down, but not horizontally. Leonardo wrote:

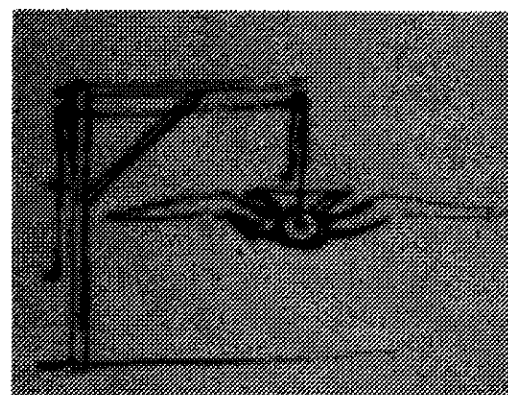
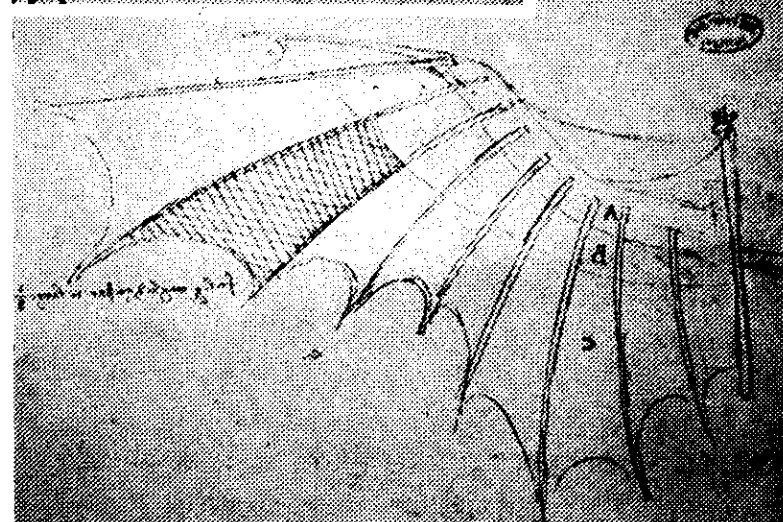
... although there appears to be some proof of movement, the water does not leave its location, and this motion may be called trembling rather than motion. . . . Since this sort of response of water is trembling rather than moving, the circles cannot break one another in meeting [Manuscript A, fol. 61r].

This quotation is part of a long study, in which Leonardo performs the same experiments and reasoning which were repeated later by Huygens. We see from this passage, that he was already studying wave interference, which he then defined as present both in air, water, and light.

In another experiment, Leonardo placed a flame in front of a singer's mouth. In this case, the flame remained stable, no matter what the level of intensity

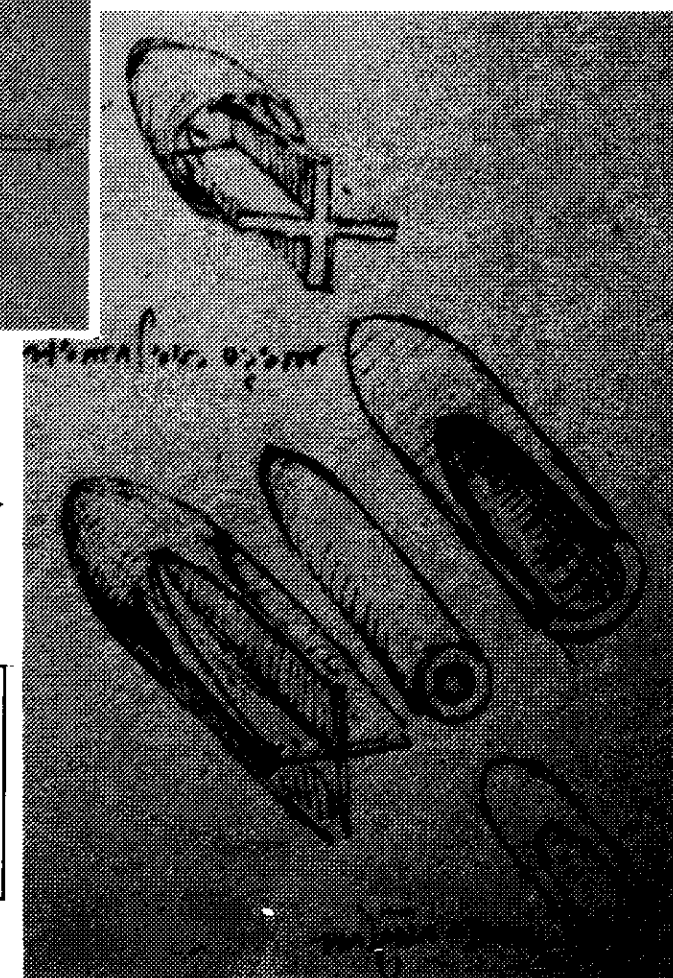


▲ Leonardo's systematic studies of flight in nature led to plans for flying machines and gliders. The wing below was to be constructed of young fir, fustian with glued feathers, and starched taffeta.



▲ Among aerodynamic experiments, Leonardo included this "wind-tunnel" study of the structure of birds

Ballistic missiles require an aerodynamic shape and stabilizing wings to combat the resistance caused by air turbulence



MOTION THROUGH AIR. Leonardo's interest in patterns of motion in air arose not only out of his studies of weather, but because he wanted man to conquer nearby space. He performed extensive aerodynamic studies, often first testing his hypotheses in water. His knowledge of air resistance led to the extraordinary studies of the wings of birds, and to the seemingly prescient invention of stabilizers for ballistic missiles.

of the voice. Such notions are extremely important, for they prove that movement is solely a form of organization of a flux. Such waves accomplish "action at a distance" without transport of matter; an example is given in the phenomenon of resonance, again a phenomenon of organization and directionality of fluxes. A singer will not cause the flame before his mouth to flicker, but he can break a crystal glass at a distance of some meters!

There is a book called *Del moto e misura dell'acqua*, which is a collection of Leonardo's writings assembled by F. L. Arconati in 1643, that is a beautiful illustration of all the domains of research into hydrodynamics.

Through his observations, Leonardo was able to clearly state what is today called the "law of continuity," i.e., "The speed of a steady flow varies inversely as the cross-sectional area of the channel" (see Manuscript H, fol. 54v; Manuscript A, fol. 57v; Codex Atlanticus, fol. 8lv; Codex Hammer, fol. 6v). In dealing with currents, Leonardo identified the crucial importance of the formation of vortices, both as a theoretical problem and as a natural phenomenon destructive to human society. Here again, he studied vortices from every conceivable standpoint, defining their speed, their variation, their physical effects, the intensity of their impact, their erosive effects, and so on. We can compare drawings taken from the Codex Hammer with modern photos of the same phenomena.

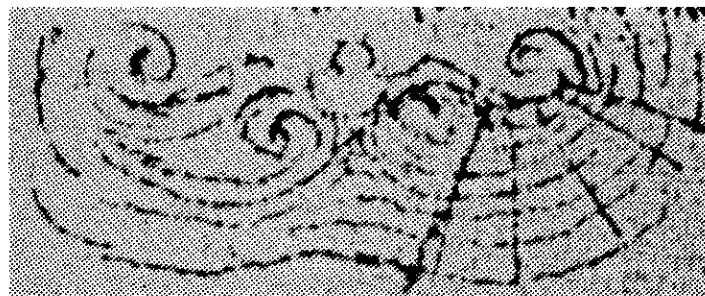
It was also Leonardo who first formulated the law of "equal circulation": "The product of speed times length is the same on each circle of flow." Leonardo wrote:

The helical or rather rotary motion of every liquid is much quicker as it is closer to the center of its revolution. What we propose is indeed worthy of our admiration, for the motion of the circular wheel is so much the slower as it is closer to the center of the rotating thing [Codex Atlanticus, fol. 296v-b].

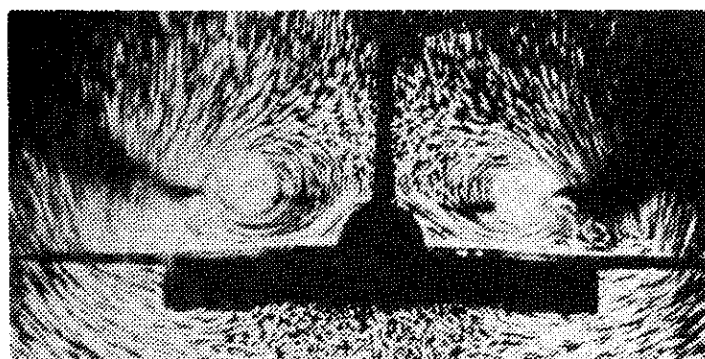
All simple waves have a group of specific characteristics, such as refraction, diffraction, interference, and superimposition, all of which phenomena Leonardo discovered to be similar whether in water or in sound.

While this may seem to be coherent with Clerk Maxwell's description, it actually contradicts Maxwell. Where Maxwell had to ignore the source of a wave disturbance in order to describe the propagation of a wave, Leonardo was especially concerned with precisely such discontinuities. This places him in direct relation with Bernhard Riemann and his studies on mathematical discontinuities. The distribution of motion in fluids, under certain conditions, favors the creation of discontinuous movements that break the apparent periodicity of sinusoidal waves and create the particular waves which Leonardo called "vertical" or "cylindrical waves."

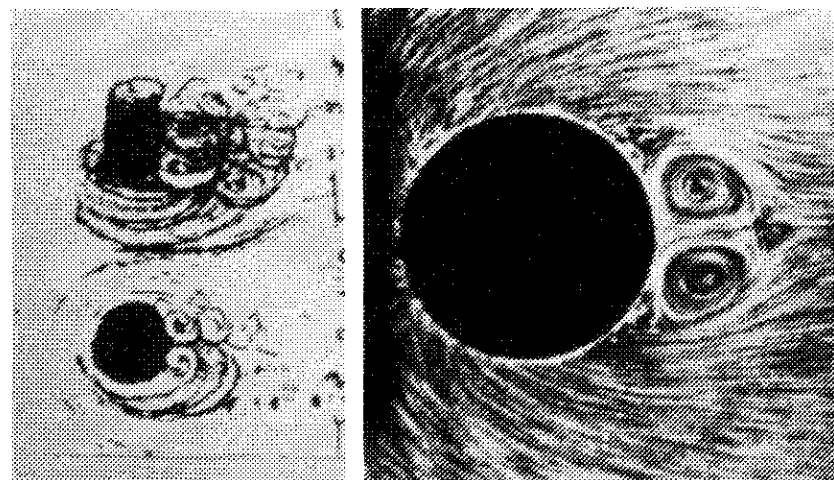
HYDRODYNAMICS: TURBULENCE. Leonardo's hydrodynamic approach implies that we cannot take as *a priori* the incoherent behavior of individual particles, but must instead discover the quality of organization of the flux. He applied his method equally to turbulence in water and in air.



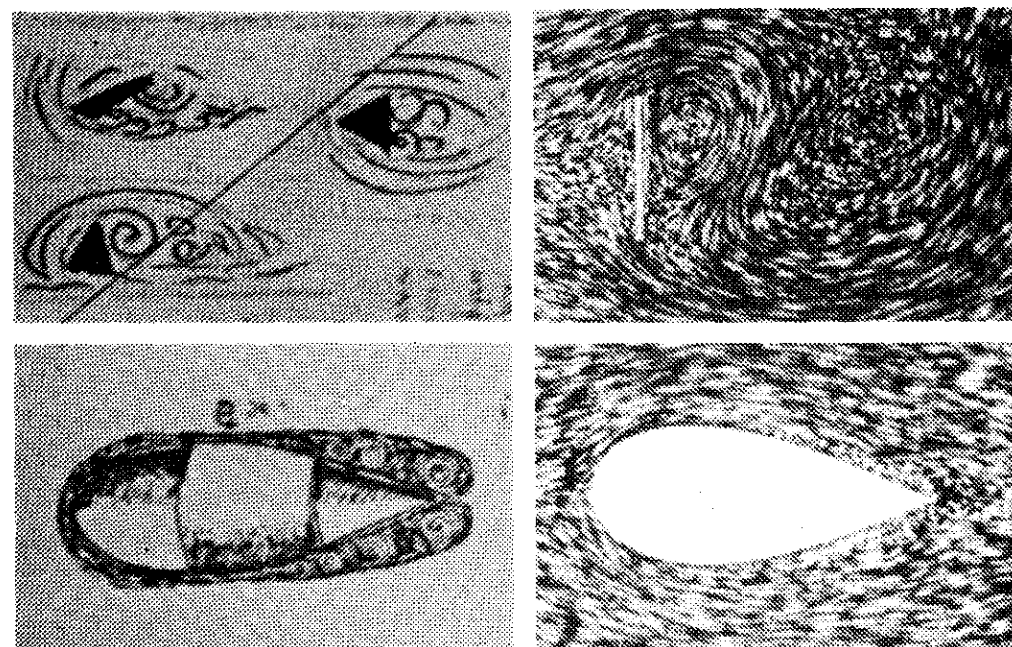
▲ Leonardo's drawing of air flow above and below a bird in flight (above) is remarkably similar to a modern wind-tunnel photograph of air flow around an ▼ airplane.



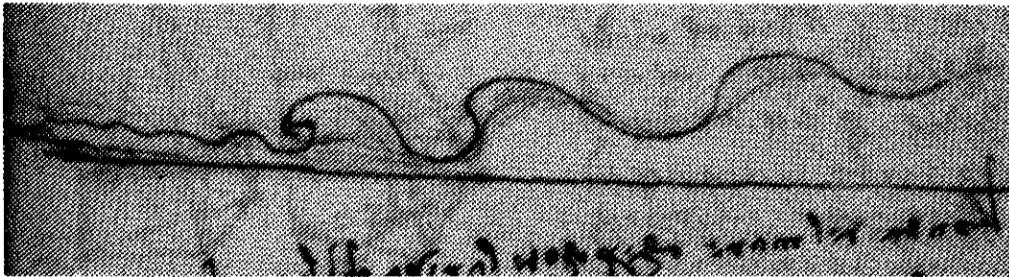
▲ Drawn by Leonardo, this vortex structure is today known as the van Karman "vortex street" which forms in the wake of a moving airplane.



▲ Leonardo's studies of turbulence in water flow around objects is remarkably ▼ precise, as shown in these comparisons to modern experimental photographs.

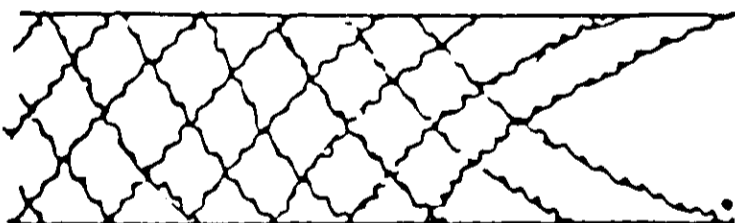
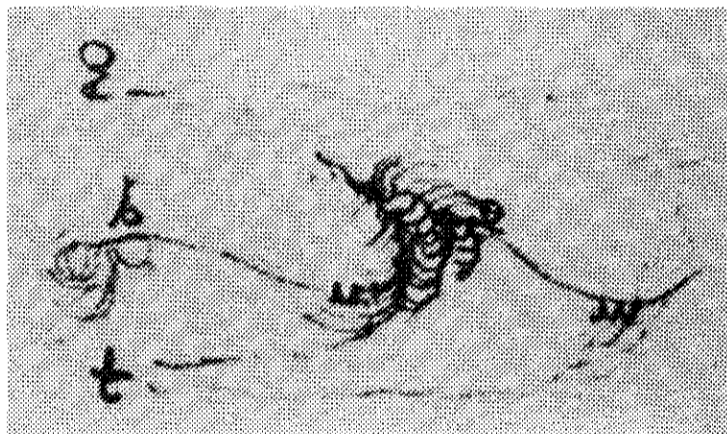


HYDRODYNAMICS: SHOCK WAVES. Under certain conditions, the distribution of motion in fluids favors the creation of discontinuous movements, which Leonardo called “vertical” or “cylindrical” waves. When the velocity of the flux becomes supercritical or “supersonic,” then Leonardo noted the formation of special waves that “transported matter” in the direction of the wave. These moved like vertical bodies, as occurs among shock waves of sound.

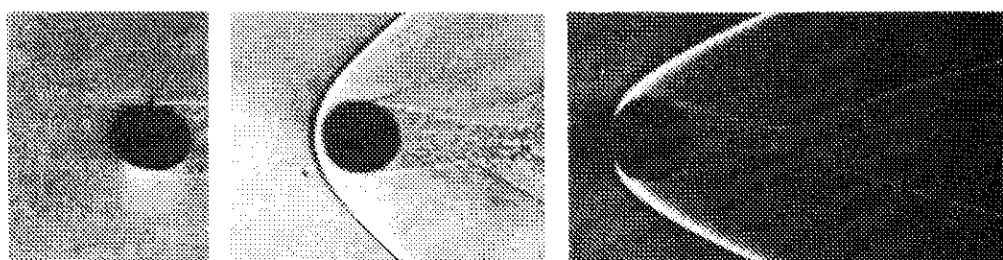
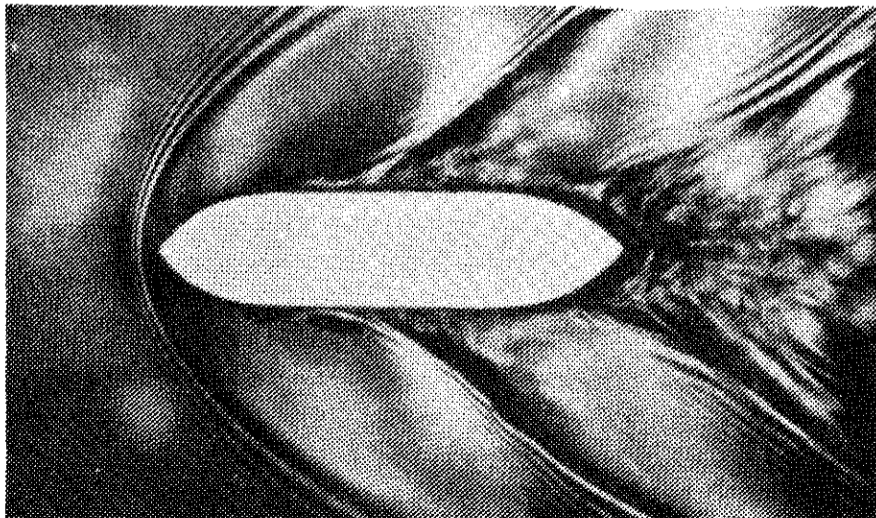


▲ The “breaker” is a discontinuity in the sinusoidal wave. It “transports matter” to accomplish work, analogous to the operation of a shock wave in sound.

Leonardo depicts a “hydraulic jump”—another “shock wave” phenomena ▼



▲ Leonardo’s drawings of cross waves, bow waves, and other surface wave phenomena (above) are mirrored by the modern experimental photographs below.



Such waves are formed only when the flux reaches critical velocity. A wave has a velocity that is a characteristic constant for given physical conditions; for example, the velocity of sound in air, or a wave in a pond, or a light wave. Leonardo had noted this fact, by noting that the form of a wave in a pond was always circular, regardless of the shape of the object which caused it.

When the velocity of the flux became super-critical or “supersonic,” then Leonardo noted the formation of special waves in the water that had the characteristic of “transporting matter” in the direction of the motion of the wave. This was carrying out “work.” This is typical of ocean waves near the shore, which create the breakers that allow one to go surfing.

There is a particular behavior that can be seen in interference phenomena viewed from above. “Vertical waves,” Leonardo noted, did not interfere, but on the contrary, they lined up one behind the other. They moved like vertical bodies, as occurs among shock waves of sound. Leonardo used this phenomenon in his engineering works, to counterbalance the unfavorable effects of such waves on river banks, and otherwise noted the connection of such types of waves with the formation of vortices.

Such phenomena often appear when one “performs work” in a fluid, such as in the case of a boat moving through water. The boat creates waves, and at the same time it moves through the water (or, alternatively, we can consider the fluid to be moving against the boat, according to the relativistic notion of motion explicitly adopted by Leonardo). It was Leonardo, not Newton, who discovered the phenomenon of hydro-aerodynamic reciprocity, according to which, the effects are the same whether a fluid moves toward an object, or vice versa.

Thus, Leonardo noted the formation of discontinuities in river currents at super-critical velocity, called “bow waves,” or the formation of a frontal wave and its vortices as a ship moves through the water. From this, Leonardo derived solutions for more efficient aerodynamic forms—the same problems which were to come up later in supersonic flight.

Leonardo and Military Technology

Many pacifists are shocked by the depictions in Leonardo’s studies of defensive and offensive weapons; they cringe at the idea that such a “humanist,” who got up at six in the morning to free birds from their cages (for his experiments on flight), would allow himself to work in such areas.

Leonardo, like all humanists, hated war, which he defined as “bestial madness”; but like all true republicans, he understood perfectly well the necessity for defense, studied warfare, and achieved technological breakthroughs in the field of weaponry. Two aspects of his military work must be understood.

First, Leonardo, like Machiavelli, and Lazare Carnot much later, had an approach to military questions that was radically opposite to the feudal concept of population wars, or wars conducted as a political game. No feudalist would ever have agreed to recruiting citizen-soldiers motivated to defend the country. Nor could a feudalist grasp the importance of advanced artillery to win wars. It is the idiotic bucolic "pacifism" of such feudalists which allowed many nations to be destroyed by hordes of mercenaries.

The second aspect is visible in Leonardo's drawings themselves. Weapons as such are unproductive. Their only use in an economic sense is through their effect of increasing productivity in the civilian economy, by generalizing new technological discoveries first made out of necessity in the military field.

Leonardo understood perfectly well that the rulers who employed him would never be able to understand the importance of the development of steam-powered excavation machines, but that they would easily understand the importance of such machines for defense. And this is what Leonardo did with his military inventions. It is precisely what Lazare Carnot wrote about and realized several centuries later with the Ecole Polytechnique. From this, the notion of the Italian *ingegnere*, and the French *genie*, arose: the idea of civil engineering done in tandem with military research.

The same challenge lies before us implicitly today, in the Strategic Defense Initiative development of beam weapons.

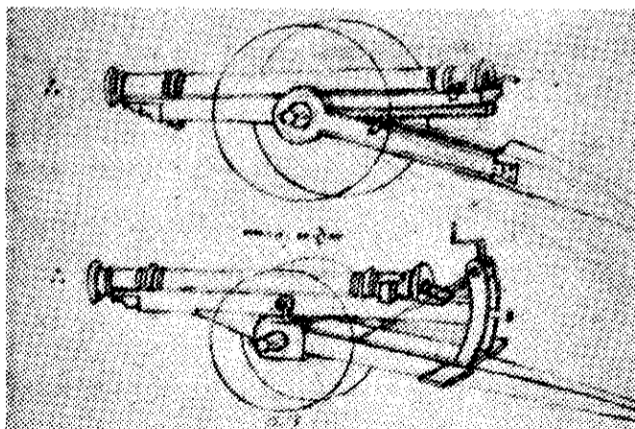
Leonardo da Vinci is a troublesome figure in the cultural war that the feudalist oligarchy has waged for millennia. Were it not for the scientific labors of Leonardo, it would be much easier for them to reduce the entire Italian Renaissance to a simple semi-occult, quasi-Arcadian phenomenon, which in every case expressed more or less mere tactile values, surface emotions.

Now, we have begun to reclaim Leonardo as our own, as a giant figure in the republican scientific tradition, who made crucial discoveries not only for his own time, but for all times. Leonardo's approach to the discovery and mastery of the laws governing the universe represents the method by which our scientists today can successfully resolve the problems encountered on the frontiers of science: a unified approach which will apply the breakthroughs required in biophysics for the conquest of disease, to man's colonization of the Moon and Mars.

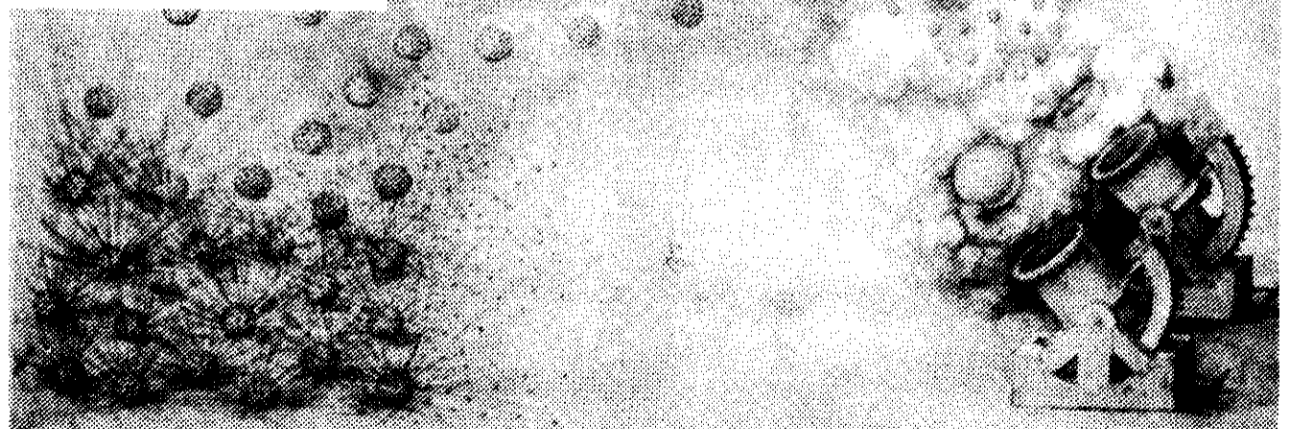
NOTE

1. See, for example, Ladislao Reti, ed., *The Unknown Leonardo*, New York: McGraw-Hill, 1974.

MILITARY TECHNOLOGY. Leonardo studied warfare for defense and achieved technological breakthroughs in the field of weaponry. He viewed military inventions as a means to gain support for his civilian engineering projects.



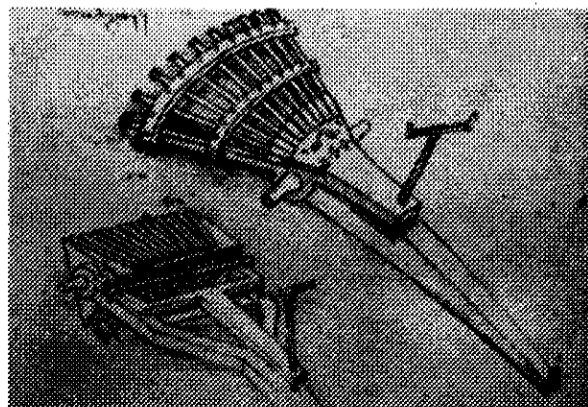
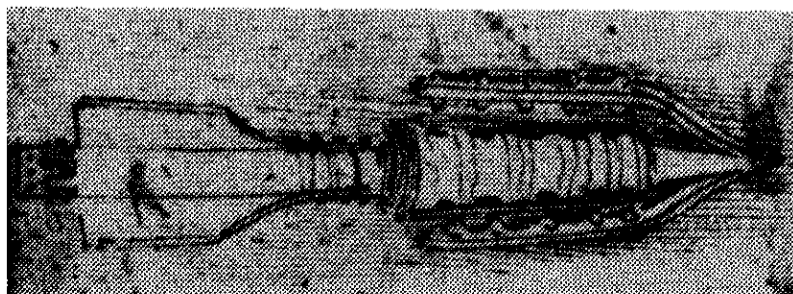
▲ Mobile cannon with elevating arcs, for use by infantry



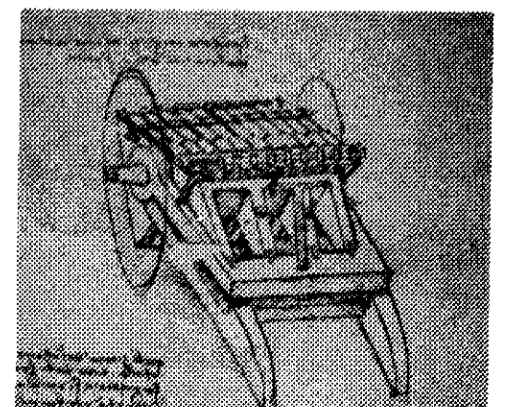
▲ Mortars with exploding cannonballs, for use against moving targets

◀ Leonardo proposes to piggyback the firepower of a rocket onto the force of a cannonball

▼ Artillery shell to be fired from a catapult



▲ Multiple musket barrels are joined together to increase the volume and speed of fire—a 16th century machine gun





by Hartmut Cramer

Mozart and the Circles of Benjamin Franklin

Speaking before God, and as an honorable man, I say to you: Your son is the greatest composer I have ever known, either personally or by reputation. He has taste, but even more, he has the greatest knowledge of the science of composition. —Joseph Haydn to Leopold Mozart, 1785

It would seem easy to understand Mozart. The beauty of his music, the musicality and yet the humanity evident in the dramatic tension of his operas, the joy and freedom of his chamber music that brings out both its musical rigor and lawfulness, all these would lead one to say: The person who wrote this must have been a wondrous and noble man, a man whom I must absolutely get to know.

But if one really desires to learn about Mozart's life, one faces a dilemma. First and foremost, one must be prepared to set aside the vast tangle of myths, legends, and lies, in order to truly do justice to this great musical genius. The above citation from Mozart's father's friend Joseph Haydn, just a snippet from the

Hartmut Cramer is a West German representative of the Schiller Institute, whose research on music and cultural questions over the past several years has led to frequent interviews with practicing musicians in Europe, as well as India.

extraordinary volume of literature on Mozart, is all too seldom quoted, and whenever it is, the special meaning of "the science of composition" is not discussed.

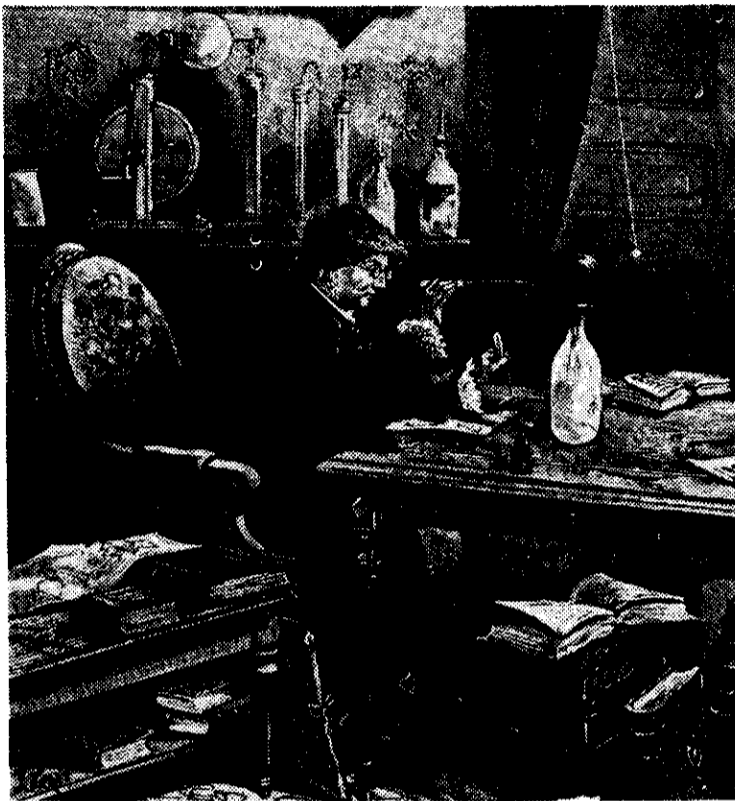
Truly, Mozart was a scientist, whose "head was always filled with music, and with other studies as well," as his sister reported shortly after his death. He had nothing of the romantic visionary about him; his cutting irony, sharp polemics, and engaging wit were all too on the mark. But if we were to believe the world's musicologists, Mozart was a prodigy who came out of nowhere, an incomprehensible genius, who was also nothing but a naive, infantile personality with a penchant for bawdy antics. All these foolish prejudices can be refuted with but a single argument: Mozart's music itself!

A "naive, impulsive, childlike" personality could not have written music such as Mozart's string quartets, so contrapuntally compact, so lawfully rigorous, and yet so artistically free. An "impractical dreamer" could not have written Mozart's operas, with their realistic portrayal of characters with all their strengths and weaknesses, a portrayal rivaling such masters as William Shakespeare and Friedrich Schiller. A basically "crude and obscene" person is utterly incapable of writing poetically beautiful and lyrically sensitive songs



Mozart followed the events of the American Revolution closely. In drafting the Declaration of Independence under the leadership of Benjamin Franklin (left), the American founding fathers sought to replace European feudalism with an "Age of Reason." At age 22, Mozart met Franklin in Paris.

Republicans like Franklin and the poet Friedrich Schiller, sought to create "a purer, more gentle humanity, the highest possible freedom of the individual by means of the greatest flowering of the state." Man would be uplifted through the sciences and classical culture, to realize his potential. Right: Schiller reads his works. Below: Franklin in his laboratory.



such as Mozart in fact wrote; indeed, it could be said that he created this particular artistic form with his "Veilchen" ("Violet"). And Mozart's *Requiem*, composed in the last days of his life, stands as an eternal rebuttal against all accusations of spiritualism or mysticism; this work contains emotion to move every man, and universal laws that all must find so compelling, that it confidently stands alongside the greatest works of religious music, Johann Sebastian Bach's *Mass in B Minor* and Ludwig van Beethoven's *Missa Solemnis*.

Yet, nearly 200 years after his death, the critical question, the key to understanding the real Mozart, has still not been answered: Who, or what, was responsible for the education that made him a genius? Which persons and what outside influences, either musical or otherwise, shaped his thinking, later to take shape in his musical works? Who were the friends who supported his work, and who were the enemies working against him? In short, what was the nature of the cultural and political relations which decisively molded his life, and which he was obliged to confront with his alert and open mind?

When all these questions are answered honestly, keeping the primary sources of that time before us, then nothing remains of the popular myth of "Mozart the romantic." Instead, we encounter the actual Mozart, who is much more interesting than all the scribblers

would have us believe, and whose relevance remains undiminished for us today.

The Age of Reason

Mozart was, in one sense, a typical product of his time, a time of social upheaval which was threatening to drive the hated system of European feudalism from the world's stage forever, permanently replacing it with the "Age of Reason." Humanists and republicans around the world saw their hopes confirmed by the victory of the American Revolution, which had been fought and won by a transatlantic conspiracy. The ideals of this revolution, first formulated in the 1776 Declaration of Independence, and then forged into their final form in the United States Constitution of 1787, were the same humanist ideals that every classical period in the past had held up as a model. Every bit of progress that humanity has ever made, is indebted to these ideals:

We hold these Truths to be self-evident, that all Men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are Life, Liberty, and the Pursuit of Happiness—That to secure these Rights, Governments are instituted among Men, deriving their just Powers from the Consent of the Governed, that whenever

any Form of Government becomes destructive of these Ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its Foundation on such Principles, and organizing its Powers in such Form, as to them shall seem most likely to effect their Safety and Happiness.

It is in this way that the Founding Fathers, under the leadership of the scientist Benjamin Franklin (whom Mozart met in Paris in 1778), expressed the religious and philosophical notion of the "Filioque" in the Declaration of Independence. The Filioque, from the Nicene Creed, expresses the concept that every human being carries within himself a creative, and hence God-like potential. He thus requires an education designed to enable him to realize this potential, by enriching and developing his fellow man, his nation, and all of humanity. Or, as the ardent republican Friedrich Schiller so aptly and poetically expressed it in his 1788 "Letter on Don Carlos," "The favorite topic of our decade" is to effect the "spreading of a purer, more gentle humanity, the highest possible freedom of the individual by means of the greatest flowering of the state, in short, the most perfect condition of humanity that lies within reach of its nature and powers."

Mozart, who in his youth was kept informed of current political developments by his well-educated father, closely followed the events of the American Revolution and its concomitant social consequences in Europe. Thus, it was no accident that he adhered to the humanistic ideals, so eloquently expressed in Schiller's dramatic works. Moreover, Mozart fully expressed these ideals in his music.

Schiller's dramatic-poetic genius provides us with the general key to understanding Wolfgang Amadeus Mozart's dramatic-musical genius. In his second "Letter on Don Carlos," Schiller wrote:

As occurs with all great minds, the [great and noble personality] emerges in a realm between darkness and light, an exceptional, isolated phenomenon. He is formed at a point in time when there prevails a universal ferment of minds, a struggle between prejudice and Reason, an anarchy of opinion, the dawn of truth—from time immemorial, the hour when extraordinary men are born. The ideas of freedom and the nobility of man, thrown upon the susceptible soul by happy circumstance, or perhaps by a favorable upbringing, astonish the soul by their novelty, and act upon it with all the force of the unusual and surprising.

Both of these preconditions, great social upheaval, and a favorable upbringing, were ideally brought together in Mozart. The background of Mozart's development was the American Revolution, which as we have seen was actually a transatlantic republican conspiracy against the European oligarchy. Many of



Leopold Mozart (top) sought to provide his son Wolfgang with the comprehensive education required to produce a genius. Right: Wolfgang at the piano, with his father and sister Nannette.



Mozart's personal friends actively took part in this conspiracy. Against this background, the origin of Mozart's genius is easy to understand, if one takes into account Mozart's father's central and overriding role in the young Wolfgang's upbringing.

Education of a Genius

It would be impossible to overestimate Leopold Mozart's influence on the education of his son. Wolfgang's own declaration as a child makes this clear: "Right after beloved God comes Papa." Leopold Mozart was himself extraordinarily gifted in art and music, and he was also astonishingly well-read in philosophy, literature, politics, and history. He was an excellent teacher as well, and he brought to bear all of his assumptions about what constituted a good upbringing, upon the education of his son. He took great pains to see that his son received a comprehensive education.

Leopold Mozart's recognition of the importance of the scientific method of the "north German school" and its most important representative, Johann Sebastian Bach, proved decisive for Wolfgang's musical education. Leopold's relation to the north German school was multifaceted. His most important compositions are three clavier sonatas which, in their structure and artistic character, are closely related to the clavier sonatas of Carl Philipp Emanuel Bach, the most well-



Leopold Mozart recognized the importance for Wolfgang's education of the "north German school," whose greatest exponents were J.S. Bach (below) and his son C.P.E. Bach (left).



known son of J.S. Bach. His reputation as both a musician and a rigorously educated artist brought him, in 1753, the honor of membership in the Society of Musical Scholars, in Leipzig. This society had been founded by Mizler, a student of J.S. Bach, and Bach himself had belonged to it. The society published a journal of correspondence among the most important scholars and composers concerning musical questions. One of its publications was the musical theory of Bach's friend, the great mathematician Leonhard Euler.

Leopold Mozart was fully aware of the importance of this society. In a letter to his publisher Lotter on November 24, 1753 he wrote, "they are thinking of nominating me as a member of this corresponding society of musical scholars. How about that? That gives me a lift!"

Surely Leopold's greatest accomplishment in musical theory was his *Treatise on the Thorough Method of Playing the Violin*, written in 1756, the year Wolfgang was born. This pedagogically excellent violin curriculum quickly became the most well-known of its time, and ranks along with the earlier flute and clavier curricula of the "north German" masters Johann Joachim Quantz and Carl Philipp Emanuel Bach.

The influence of C.P.E. Bach is especially striking. His *Treatise on the True Art of Playing the Clavier* can be

taken as a sort of musical last will and testament of his father, the great J. S. Bach.

For both Bachs, the highest goal of a musical performance is a "simple and natural singing" of the instrument. And it goes without saying, that both composers considered music to be a *science*, whose laws could be grasped by anyone with a proper grounding in the many branches of this science.

Leopold Mozart's violin method was more than just a pedagogically clever introduction to violin playing; it familiarized students with the method of scientific thought in general, in keeping with the tradition of J.S. Bach.

Leopold Mozart recognized his son's extraordinary talent very early, and systematically brought him up on these principles. This was one of the decisive influences, from which we can explain how Wolfgang Amadeus Mozart's genius came about. Of course, an important precondition was the young Mozart's natural musical gifts, as well as the fact that he was raised in an environment that could be said to have "sung," one in which music sounded from morning until midnight, and where music was the chief topic of conversation. But the essential was absolutely the scientific method used to systematically raise and develop the budding talent, allowing it to ripen into true genius. Decisive for both Mozart's and Beethoven's development was the early systematic assimilation of the contrapuntal music of J.S. Bach's "north German School," even though this was much more intense with Beethoven.

The biographer Hermann Abert is the only one to point out the importance of the north German influence. At the beginning of this century, he found direct proof of this connection. Abert reports that in the "Second Notebook for Wolfgang," written in 1762, there is an entire section containing pieces written in the "north German" style, including several based on C.P.E. Bach. Abert attributes this to Leopold Mozart's methodical mind, and his complete knowledge of the musical literature.

Mozart's Travels

Despite his comprehensive education and his wide range of personal relations, Leopold Mozart nonetheless faced a difficult problem in raising his gifted son. How would this germinating talent blossom in such impoverished circumstances, and in such a pitiful small town as Salzburg? To be sure, Leopold could and did instruct his son in music, as well as in other fields such as history, languages, literature, and mathematics. But where were the great challenges against which his son could measure himself and develop his genius into maturity? And where were the patrons who could recommend his son, without whose support, then as now, an artistic career was impossible?

Considering Leopold's limited financial means, as

well as the ruling feudal system, the only way out seemed to be carefully organized performance tours. This would create the ability to make his son known in all of Europe, and give him access to the concert halls of all cultural centers. Above all, it would enable Wolfgang to be presented to all the arbiters of musical style. So Wolfgang's musical tours were the best thing his father could have done, given the circumstances. The tours broadened Wolfgang's conceptual horizons, and brought him into personal contact with the musical and political elites of his day.

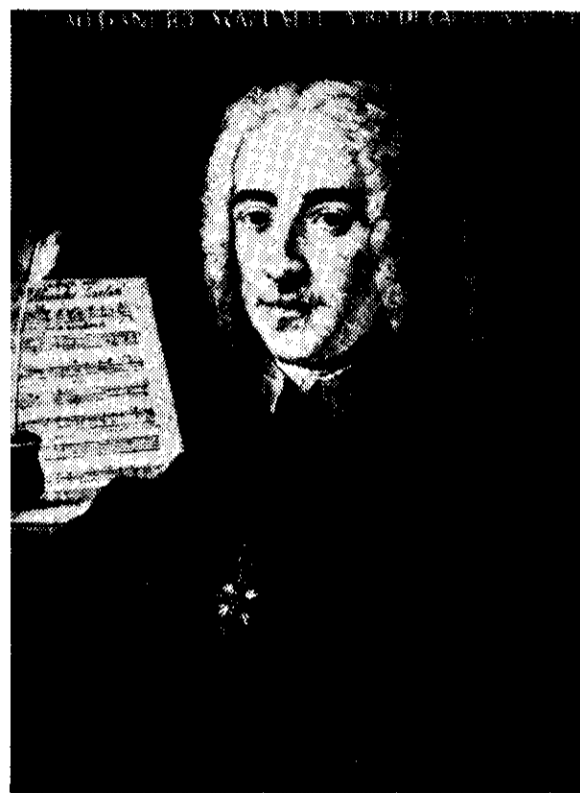
Even as a child, Wolfgang met the future "reform emperor" Joseph II in Vienna. Joseph immediately recognized Mozart's talent, and later included him within his reform plans. Joseph's letters of recommendation opened the doors of the enlightened nobility of Italy, so Mozart's repeated journeys there became great artistic successes. The unsurpassed art of singing found in Italy, as well as the architecture, left an indelible impression on the young Mozart.

Later, the 22-year-old Mozart arrived in Paris, shortly after the signing of the American Declaration of Independence—an event which shook the contemporary world like no other. Mozart met the father of the American Revolution, Benjamin Franklin, and this information alone makes clear on which side the Mozart family stood in this great world-historical conflict. "Write me," wrote Leopold Mozart on April 6, 1778 to his wife and son in Paris, "if *France has really declared war on England?*—now you will meet the American minister Dr. Franklin. France has recognized the independence of the 13 American provinces and has concluded treaties with them [emphasis in original]."

Leopold was generally pleased that the development of his son's musical abilities and character was making continual progress. Since Leopold was conscious of the crucial importance of training in counterpoint, and since Wolfgang was weak in that area, he sent his son to the most famous teacher of counterpoint in Europe, the school of Padre Martini in Bologna. From that time on, Wolfgang carried on a regular correspondence with Martini, who was so impressed by Wolfgang's abilities that he provided him every conceivable support while studying in Italy.

Beyond this, there was no stinting on general education and political instruction. Many of Leopold's letters to his son, especially those written while the latter was in Paris, closed with a short but comprehensive summary of the political situation in Europe. Thus the usual account of Wolfgang Amadeus Mozart as a political uninformed person, is absolutely ridiculous. Are we to believe, as most accounts would have it, that an open-minded, enthusiastic young man traveled through all the courts of Europe, meeting all strata of the population, and all the leading families as well; that he does this for 20 years, during a century of mighty political and social upheavals, while the entire civilized

Leopold Mozart sent Wolfgang to Italy, to study counterpoint. The "Italian school" of Alessandro Scarlatti (below) and Arcangelo Corelli (right) was the additional great influence on Mozart's musical development.



world had its eyes turned upon the American Revolution, a struggle which all knew would prove decisive for the further development of mankind; that he receives letters from his father and holds discussions with his family concerning the most important affairs, such as the banning of the Jesuits in 1773 and the American Revolution; and that all this is to leave no trace in Mozart's thought?

The fact that Mozart, unlike his father, seldom or never dealt with day-to-day politics, and rarely wrote about it, proves nothing. Mozart's language was that of music, and it is in that language that he resolved to achieve his political aims, especially during the time he spent in Vienna. His operas unequivocally show that his aim was no less than the education and ennoblement of mankind.

Even though Mozart's life of restless travels which he led until 1780, may have always brought him into contact with the most favorable influences, as is clear from his days in Mannheim, his father had sent him on his way with scientific-musical fundamentals, and continued to instruct him in methodical thought, such that he not only assimilated every style and new impression, but also struck out on his own path.

And so, this singular education produced a 24-year-old man who knew his own artistic worth, knew what his artistic goals were, and was entitled to the



Mozart's tours of the royal courts of Europe brought him into contact with the musical and political elites of his day. Right: Crown Prince Joseph, later Mozart's sponsor as the "reform emperor" Joseph II, presents young Wolfgang to the Viennese court. Above: Benjamin Franklin is fêted at the French court of Versailles.



most beautiful hopes for the future. It was Leopold's principles, a thread running through every one of his letters to his son, that had produced this genius; these principles stated that whoever had the greatest talent, also had the greatest responsibility to use that talent to uplift humanity. The constant reiteration of these principles had produced the desired result: a musically brilliant, thinking humanist, who in every professional and personal decision, despite the inevitable mistakes made along the way, would always make the right decision whenever his musical and creative integrity was concerned. This would also prove to be a disadvantage that would produce dire circumstances for his family, but it is precisely this uncompromising attitude toward one's own creative development that is the mark of true genius.

The Cultural Policies of Joseph II

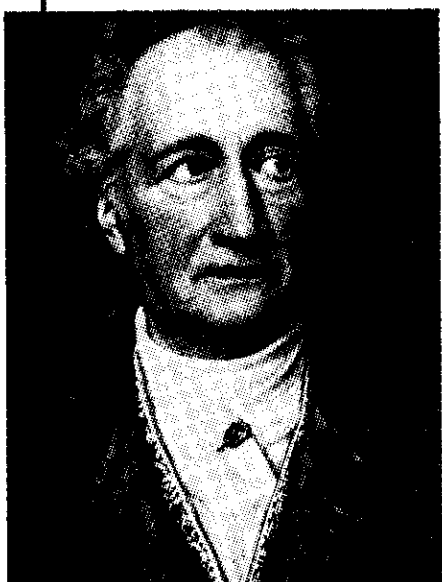
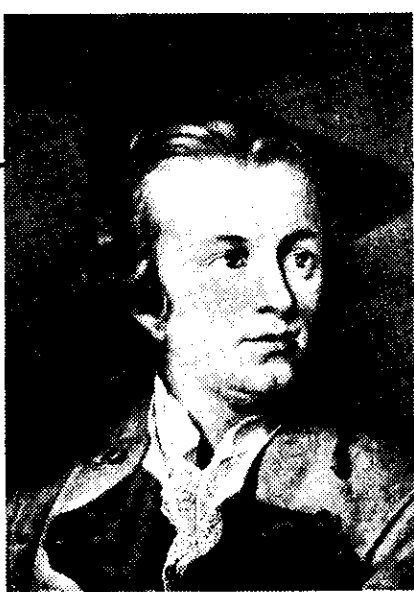
Mozart had every reason to want to go to Vienna after his disputes with his masters in Salzburg, which he found so degrading to his sense of honor. Besides, in 1781 Vienna was certainly the cultural capital of the German-speaking world, and ranked only after Paris and London as a great cultural metropolis of Europe. It was only one year earlier that Joseph II had ascended the Habsburg throne. Joseph was known as the "Revolutionary, by the grace of God," the "reform emper-

or," and the "terror of the nobility." It was hoped that through the "Enlightenment Party," closely connected to Joseph, the ideals of the American Revolution might finally be realized.

This "enlightened" monarch was strongly influenced by Leibniz's ideas. Indeed, in just a few years, Joseph pushed through far-reaching reforms that went a long way toward transforming the bankrupt feudal tract bequeathed to him by his mother Maria Theresa, into a modern nation-state.

In his travels, Mozart had seen all the works of Shakespeare, Lessing, Schiller, and Goethe that were performed at that time, so the dramatist in Mozart was especially drawn to the "National Theater" in Vienna. For in 1776 Joseph had established, in the Schillerean sense, a "national theater as a moral institution."

In setting up this theater, which later became famous as the Wiener Burgtheater, Joseph consulted with the playwright Lessing, and later prevailed upon him to become its director. Maria Theresa and her party attempted to prevent this appointment. Five years previously, Mozart had received the same treatment, when Maria Theresa personally instructed her son Ferdinand in a shameless letter, not to offer Mozart any employment in Milan, since he was to be counted among the "good-for-nothings" and "beggars." Joseph was of a completely different mind. He brought to Vienna the best German actors so that outstanding



In 1776, Emperor Joseph II established a national theater—the Wiener Burgtheater—in Vienna (lower right). Joseph prevailed on the great German playwright Lessing (top) to serve as its director. Franklin’s correspondent Gottfried Van Swieten (inset) oversaw cultural policy for Joseph II, and was Mozart’s chief Vienna sponsor. The Burgtheater saw performances of Shakespeare, and the contemporaries Schiller and Goethe (far left).

performances of the major works of Shakespeare, Lessing, and Goethe could be staged.

Direction of Joseph’s cultural policies was undertaken by Gottfried van Swieten, whose importance for the general cultural climate in Vienna, as well as for Mozart personally, cannot be overrated. Van Swieten’s father, the physician Gerard van Swieten, came from Leiden, Holland, which was the city of Rembrandt. Despite his reluctance to leave Holland, which was a republic, the elder van Swieten had come to Vienna to organize medical institutions. In addition to his medical activities in Vienna, he was director of the court library, and was responsible for educational institutions. He was one of the sharpest opponents of the Jesuits, the religious order which had ceaselessly tried to thwart his cautious reform plans. Van Swieten died in 1772, and therefore did not live to see the banning of the Jesuits in the following year.

Gerard van Swieten’s successor was another physician from Leiden, Jan Ingenhousz. Ingenhousz, one of Benjamin Franklin’s closest friends, regularly provided the court at Vienna with information concerning the progress of the American Revolution.

Gottfried van Swieten entered upon a diplomatic career which led him to Berlin, where he encountered the circles of Carl Philipp Emanuel Bach, the so-called “Bach community.” After the death of his father, van Swieten assumed direction of the court library at

Vienna and of the “Study Commission.” He became Culture and Science Minister, an office that became one of the controlling positions of Joseph’s reforms.

Van Swieten was a true humanist and republican. He completely revised the curriculum of schools and universities, and his ideas concerning education were the same as those of Wilhelm von Humboldt and Friedrich Schiller, as a look into his *Guide to the Study of History* makes clear. “History concerns all times and all peoples,” he writes, “and we will not look at it as a mere collection of facts, or as an amusement, but rather as the companion of all science, as a study of mankind, a school of life, of intelligence, and of morals. [History] must . . . be elevated from the periphery of power, from mere idle remembrances, to a high rank of reflection and wisdom.”

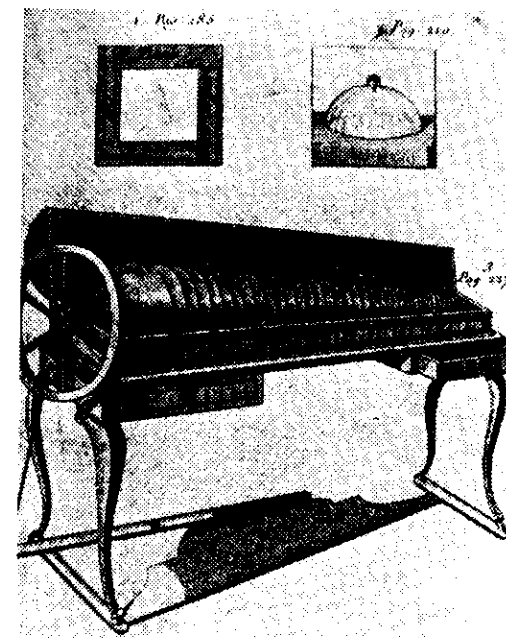
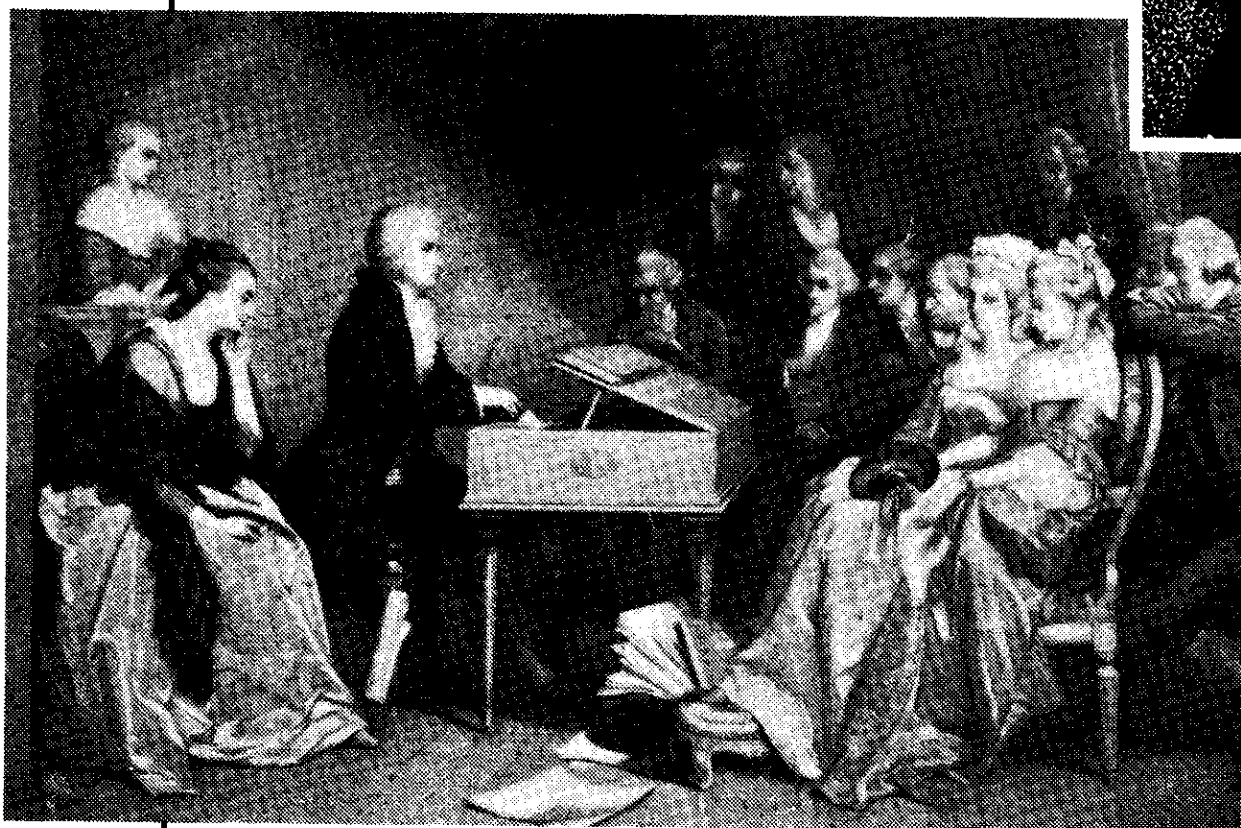
Mozart and van Swieten

Van Swieten had similarly expressed himself concerning the study of aesthetics, philosophy, natural science, and languages. He himself was an extraordinarily learned person, and was also very artistically talented, which was important for his relationship with Mozart. His many discussions and studies with C.P.E. Bach and his friends in Berlin, had convinced van Swieten of the surpassing importance of the polyphonic contrapuntal method of the “north German school.” Thus,

Mozart gave weekly recitals to his Vienna circle (below), which included Countess Thun (right) and the metallurgist Ignaz von Born (far right), two members of the Vienna republican network in touch with Franklin.



Franklin developed the glass "armonica" (below), an instrument which, like the keyboard instruments, was played with both hands, and hence facilitated performance of contrapuntal music. The instrument was popular in the late 18th and 19th centuries, and Mozart wrote for it.



he was able to give Mozart's artistic development a strong push in a contrapuntal direction, which was to have a lasting effect on Mozart's later works.

Mozart himself wrote to his father on this subject in April, 1782: "I've been going to Baron van Swieten's every Sunday at noon, and only Handel and Bach is played there. I've even made myself a collection of Bach's fugues, both *Sebastian* as well as *Emanuel* and Friedemann Bach [emphasis in original]."

Ten days later, Mozart wrote to his sister:

The reason that these fugues have come about, is really because of my dear Constanze. Baron van Swieten, whom I visit every Sunday, has given me (after I've played them through) all the works of Handel and *Sebastian* Bach to take home. When Constanze heard the fugues, she fell completely in love with them. *Fugues* are all she wants to hear now, I mean to say, nothing but fugues of Handel and Bach [emphasis in original].

These Sunday studies in a small private circle of just four or five participants, are among the most fortuitous moments in the history of music. For it was there that Mozart, through the mediation of van Swieten, entered into an intensive, creative dialogue, a true Platonic dialogue, with the polyphonic counterpoint of J.S. Bach. This was to be as fruitful for him

as was his earlier grounding in this method with his father and with Padre Martini. And not the least important share in this belongs to his beloved wife Constanze, who, as Mozart reports, held Bach's fugues to be the "most artistic and most beautiful in music."

How greatly Mozart profited from these studies, and how much he learned from J.S. Bach, is shown in the letter written in 1790, reproduced below. This letter was considered lost for many years, and was finally published in 1815 by Röchlitz in the *Allgemeine Musikalische Zeitung*. Its authenticity was later called into question by many pedantic critics, but it was considered authentic by Mozart's surviving contemporaries. It had been published in many newspapers of Mozart's time, and Goethe took a great interest in this letter, as Eckermann reports. The musicologist Heinrich Schenker, on the occasion of Mozart's 175th birthday in 1931, wrote an article expounding on the authenticity of this letter, with the telling argument that Mozart himself was able to write about the lapse of his creative processes. The letter reads:

... so my manner of writing and elaborating ... when I am, as it were, completely myself and of good cheer, say, traveling in a carriage, or walking after a good meal, or during the night when I cannot sleep; that is when my ideas flow like a stream. Whence and how they come I cannot say. Those

ideas that please me I retain in memory, and hum them to myself, as I have been told. If I continue in this way, it soon occurs to me how I may turn this or that morsel into a good dish; that is, agreeably to the laws of counterpoint, to the peculiarities of the various instruments, etc.

This inflames my soul, whenever I am not disturbed. It grows continuously and I broaden it ever wider and brighter and *the thing becomes truly almost complete in my head, even if it is long; so that from that point on, I view it with a single glance, exactly like a beautiful picture or a pretty girl, from above, in my mind. And I don't hear in my imagination the parts successively, one after the other, but I hear them all at once. That is truly a feast!* All of this inventing, this producing, proceeds in me only as if in a powerfully beautiful dream; but the over-hearing, everything together, that is the best. What has been thus produced is not easily forgotten, and this is perhaps the best gift the Lord God has sent me.

When I am ready to write down my ideas, I take out of the bag of my memory what I've already collected there, in the way I've just described. For this reason, the committing to paper is done quickly enough, for everything is, as I've said, already finished; and it seldom differs on paper from what it was in my imagination [emphasis added].

The relationship to Bach's "stretto" and to Beethoven's thinking is very evident. Schenker reasoned that the recipient of these letters, a certain unnamed baron, could only be Gottfried van Swieten. Among the nobility that belonged to Mozart's friends, van Swieten was the one with whom the profoundest questions of artistic creations were raised.

In addition to composition, van Swieten also wrote librettos, including those for Haydn's *Four Seasons* and *The Creation*. In the latter work, van Swieten relied heavily on the great epic poem *Paradise Lost* by the English republican John Milton. *Paradise Lost* had an immense influence on the American Revolution; nearly every settler in the American colonies owned a copy of it, making it probably one of the most-read books in America, second only to the Holy Bible.

Mozart's debt to the influence of the humanist teacher van Swieten cannot be disputed. That influence played a great part in enabling Mozart to support the emperor's cultural policies by composing operas, and, "jestingly and playfully," to raise the population up to his own brilliant level and thereby ennoble their character.

Mozart's Circle of Friends

Beyond van Swieten and Haydn, a look at his circle of friends in Vienna proves that Mozart also regularly associated with other influential advocates of the Enlightenment Party. One of the most important of these

was the learned Countess Thun, who was a close confidante of Joseph II. Her father-in-law had already helped to advance Mozart's career in one of the latter's earlier journeys. Her house was a gathering spot for the leading humanists and republicans of Vienna. The frequent, informal gatherings at the Countess' house appear to have been the place for animated discussion not only with Mozart, but also with such people as Georg Forster (later president of the ill-fated Republic of Mainz), Ignaz von Born, and Prince Kaunitz, who was Joseph's privy councillor. Mozart also played clavichord concerts at the home of Prince Kaunitz.

Mozart also associated with the family of the world-famous botanist Jacquin, at whose home the most learned people of Vienna would assemble each Wednesday night for piano concerts, often given by Mozart, as well as discussions on scientific and artistic questions.

One of the closest friends of Mozart was the geologist Ignaz von Born, the head of the Department of Coinage and Mining. Von Born is often considered to be the model for Zarastro in Mozart's opera *The Magic Flute*. Von Born was not only the "intellectual leader" of Vienna, but was also an extraordinarily successful natural scientist, in the tradition of Leibniz's Freiberg Mining Academy in Saxony. He developed a method for separation of metals that revolutionized production of gold and silver mines of that time. His methods of smelting precious metals was spread throughout the independence-minded circles of Ibero-America by Alexander von Humboldt in his South American tour around the turn of the nineteenth century.

To Mozart's many Vienna friends must be added Christian Gottfried Körner of Dresden, who was a close friend of Schiller as well. Körner's home in Dresden was one of the most important meeting places for republicans in Dresden, and was where Schiller wrote his famous "Ode to Joy." Körner's sister-in-law, Dora Stock, had by that time completed the famous silverpoint engraving of Mozart. Körner had a high opinion of Mozart, as he told Schiller in his letters.

All of these friends of Mozart had one thing in common: they were all in close contact with Benjamin Franklin, the "Prometheus of the Eighteenth Century," and the founder of the American republic. For example, Franklin was in constant correspondence with the Enlightenment Party in the court at Vienna, especially with Jan Ingenhousz, the imperial physician. In addition, Franklin wrote Joseph II to commend Ignaz von Born for his metallurgical discovery mentioned above.

Mozart himself, of course, was also familiar with Franklin. In addition to his scientific work, Franklin was also very interested in music. He composed a few songs, and also composed a string quartet, a fact which

alone indicates close intellectual bonds with Haydn and Mozart, to whom we are indebted for the development of this musical form.

But Franklin was best known in the field of music for his further development of the "armonica," a refinement of the glass harmonica, whose use was widespread in Europe. Before Franklin, the glass harmonica consisted of wine glasses carefully filled ("tuned") with varying amounts of liquid; one rubbed the edge of the glass and produced the corresponding tone. Although the armonica did not fulfill the great expectations of some of Franklin's friends that it might equal or even surpass the pianoforte, Franklin's technological refinement of this instrument is nonetheless very interesting. As Franklin communicated to the Italian physicist Giambattista Beccaria in 1762, he arranged 37 glass bowls of varying sizes and thicknesses on a rotating spindle, such that this well-tempered instrument had a range of three octaves. Since the spindle was operated by a foot pedal, the instrument could be played with both hands, allowing the playing of several voices.

Mozart became acquainted with this instrument on one of his trips to Italy, and played it with great amusement, as his father Leopold reported. He later wrote several works for the armonica, which demonstrates the interest he had for technological innovations of his time, as well as his ties to Benjamin Franklin. He was no less interested in the new pianoforte, and always had to have the most technically advanced model.

Mozart's Performances

Supported by such an array of acquaintances, Mozart turned to the educational task before him—a problem which he solved brilliantly. Two forms of organization are most striking: his performances (called "academies") and his operas. He was equally successful with both.

Mozart performed either publicly or in the homes of friends and patrons, often in the presence of the always enthusiastic emperor. The concerts were arranged frequently; Mozart stated that he performed no less than nineteen times in March 1784! The highlight of these performances were the piano concertos, almost all of which he composed for the occasion. A 1782 letter to his father shows just how and why this was done:

The concertos are right in-between being too difficult and too easy. They're quite brilliant, agreeable to the ear, of course without being banal. Now and then there is something to please *even the connoisseur*, but in such a way that the musically unlettered can also be satisfied, without knowing why [emphasis in original].

Mozart soon became very famous for these concerts; their programs show that around these "moderately difficult" concertos were also grouped "higher" and "lower" pieces. The impression gotten is that Mozart was speaking to three different levels of listeners, or three developmental levels in each listener!

Light opening pieces, almost always arias, were received favorably by the public because of the beautiful singing (and the equally beautiful singers). This grabbed the attention of the audience, who although certainly interested in music, were largely uninformed. Thus Mozart prepared them for the "jump" to the next level. This second level, the level of the piano concertos, offered the possibility of providing the listeners "without knowing why" a glance into the laws of composition, thus preparing them for the third level. This third level is for those who, understanding the lawfulness of composition, wish to understand and experience the *science* of composition; it is this highest level that Mozart calls upon in writing his symphonies, his quintets and quartets, and above all the fantasies for piano, of which, happily for us, he wrote several.

Thus, Mozart proved himself to be a pedagogical and psychological master, since he not only systematically uplifted the musically naive listener up to his level of musical thought, but also provided the same to the musically sophisticated, thus simultaneously offering all three levels a direct glimpse into the creative process. Science cannot be grasped in a more living, a more exciting, manner!

Mozart's Operas

Mozart's operas were written in the same living, exciting, *dramatic* sense; they are remarkable in many respects.

First of all, it is astonishing how the texts which Mozart chose for his operas, and reworked when necessary, corresponded not only to his own view of the world and of mankind, but also to the reforms of Joseph II. The creation of the opera *The Abduction from the Seraglio* was precisely contemporaneous with the emperor's 1781 Decree of Toleration. The main theme of the opera deals with the ecumenical unity of all religions that look upon man in the manner of the Filioque, that is, in the image of God, as being capable of reason, regardless of sex or color. This corresponds exactly to Joseph's Decree of Toleration: a tolerant attitude towards all men striving towards reason, and strong opposition to those marching under the banner of superstition and irrationalism.

The Marriage of Figaro and *Don Giovanni* are both deadly attacks on the inhuman nature of the feudal system.

The text of *Figaro* comes from *The Fantastic Day, Or The Marriage of Figaro*, a comedy written by the

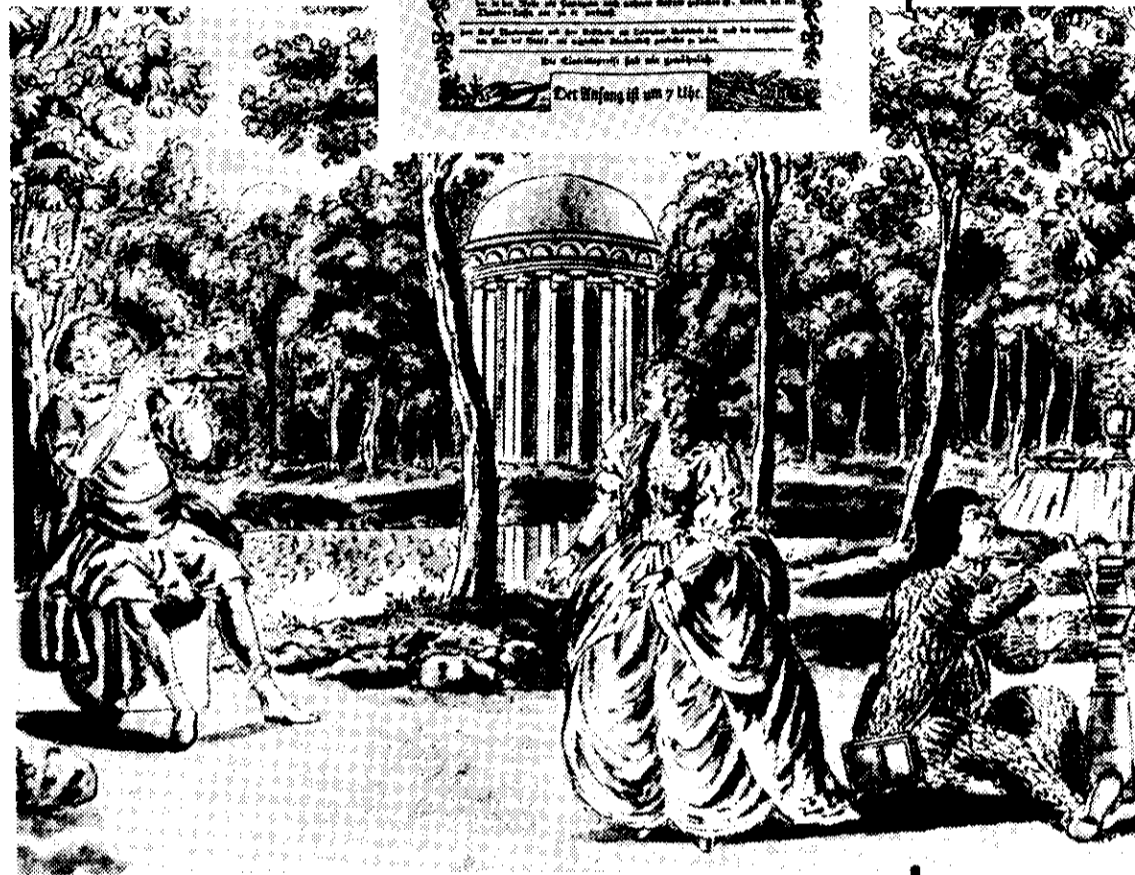


Playbill from *The Magic Flute*.

The themes of Mozart's operas all address the political issue of the day: the oppressive feudal system, and the republican principles opposing it. Mozart's *The Marriage of Figaro*, adapted from the play by the French agent of the American revolution Beaumarchais (left), exposed the hedonistic immorality of the aristocracy. His *The Magic Flute* exposed the conspiratorial intrigues of the Freemasons, at a time when the secret society was divided into factions of republicans (Franklin, Lessing, Beaumarchais, and Mozart himself), and their bitterest oligarchical enemies.



Playbill from *The Marriage of Figaro*.



French republican Beaumarchais. The same year Beaumarchais was writing this comedy, which stirred all of Europe, he was also rushing from one corner of France to the other, commissioned by the Ministry of War to procure weapons, ammunition, uniforms, and capable soldiers to send to the aid of George Washington's revolutionary army. One of Beaumarchais' best "recruits" was the Prussian general staff officer Baron von Steuben, without whom the war against England could not have been won. Beaumarchais also obtained financing to aid the Americans from the French and Spanish governments. He worked closely with Benjamin Franklin, and he held such an influential position in the "American Party" at the court at Versailles, that the draft of the royal proclamation recognizing American independence was confided to him.

Beaumarchais' comedy castigated the scandalous feudal system, in which immoral feudal lords could disregard all human rights, and rule their actions solely according to their own wishes and desires. Mozart collaborated with his own librettist Lorenzo da Ponte in adapting the text, but in all important points it was

Mozart who with the finest musical irony prevailed, such that the opera far surpasses Beaumarchais' comedy. The lines, "If the Count wishes to venture a little dance, just have him say so, I'll strike it up," were enough to enrage the opposition to the reformists both in Vienna and elsewhere. Was it just the fictional characters Figaro and Susanna with which they had to deal? Or was it a real republican that they were up against—someone such as Franklin, who could respond with all his wit, courage, resolution, and, if necessary, with the right portion of insolence?

The oligarchy was cornered by Mozart's operas, their games held up for all to see through. They were driven to defend themselves, lest their whole system be destroyed. This was shown to us by Mozart in *Don Giovanni*, where the character of that name is shown to be not just a rakish ladies' man, not just a charming heartbreaker, but a thoroughly immoral and brutal "gentleman," who resorts to naked force whenever his charms fail to snare his game. Human feelings, not to mention any desire for personal development, are totally foreign to him. And Mozart's portrayal of Don

Giovanni is thus totally consistent: he *must* perish and go directly to the deepest circles of Dante's Hell, if humanity is to have any chance for survival.

Don Giovanni, the model for a true oligarch, is often compared with the all-too-repugnant Casanova. But the historical Giacomo Casanova was in reality only a miserable spy, a paid agent for the black nobility of Venice. Mozart does not dwell for long on the Casanova-like qualities of his Don Giovanni, but attacks all that Casanova represents. Mozart's Don Giovanni shows the oligarchy as it really is: Venice unmasked!

The Art of Irony

Mozart's true masterpiece of dramatic and poetical form, and his sharpest polemic against his opponents, was *The Magic Flute*. With one single stroke he tore through all the intricate webs of intrigue and conspiracy spun by the oligarchy in order to nullify the influence of the humanists.

Mozart belonged to the humanist wing of the Freemasons, just as did Franklin, Lessing, Herder, Beaumarchais, and many of his Vienna acquaintances, such as Ignaz von Born. They all sought to use this cult-like secret society for their own purposes. The Freemasons, founded in England in 1717, operated exactly as did the Jesuits, as an instrument of the oligarchy to advance the cause of superstition and cultishness, and to be used against the republican networks. (The same is true today, as shown by the 1981 revelation of the P-2 Lodge conspiracy in Italy.) Their goal in Mozart's day was to destroy all that Leibniz had built up.

Mozart turned these methods on their head. In *The Magic Flute*, he collaborated with the librettist and Shakespearean actor Emanuel Schikaneder to cleverly integrate many of the Freemasons' cult symbols and myths, but only so as to fill out this abstract form with a text whose real content diametrically opposed that cultism. In order to more starkly highlight the intrigues of the Freemasons with this brilliantly ironical method, he set the most outspokenly cultish passages to the most rigorously contrapuntal music, so as to force the listener to recall to mind J.S. Bach. Paradigmatic of this is the song, near the end of the opera, of two armored men, who lead into the breaking of the conspiracy of Queen of the Night, who represents the cult earth-goddess Isis.

Just as Bassa Selim of *The Abduction from the Seraglio* brings to mind the great Arab humanist Harun al Rashid, a forerunner of Joseph II, the philosopher-king of *The Magic Flute*, Zarastro, recalls the priests of Ammon of Egypt. These were the priests who advised that student of Plato's Academy, Alexander the Great, to wipe out that cult-ridden horror, the Persian Empire.

Next to Schiller's *The Ghost-Seer*, *The Magic Flute*

is one of the most effective direct attacks on the subtle methods of the oligarchy, with which they sought to prevent an "Age of Reason." It was effected in typically Mozartian fashion, with the use of irony, which Mozart could wield just as masterfully as Shakespeare before him. Irony is certainly interlaced throughout all of Mozart's works, but it is most visibly brought to bear in his operas. For, it is here that Mozart had to deal most with the least-educated section of the public.

The constant interplay between comic and tragic elements, which distinguishes all of Mozart's operas, was pointed out to Schiller in a 1794 letter from Körner. Mozart is "the only one," Körner wrote, "who can make the comic and the tragic equally great." This is the quality demanded by Plato, the quality that forces the audience to sit up and listen, that thoroughly shakes the audience, and thereby creates the intellectual readiness to participate in the unfolding of ideas, and to be able to understand new things.

His instrumentation is yet more refined. We have already referred to the aria in *Figaro* which introduces the Count. Mozart handles his other characters similarly. Cherubino, the archetype of the infantile and cunning courtier, is sent off to battle with ruffles and flourishes, when his inglorious end is all too foreseeable. The filthy, academic stuffed shirt Dr. Bartolo gets the entire orchestra to back him up, to help express his "sweet revenge" against Figaro, but he never reaches the ironic expressiveness of Figaro's "If the Count wishes," which Mozart purposely orchestrated very sparingly. The sharp pizzicati of the violins literally "impale" the Count and all his ilk.

Against these comic elements, the natural, pure, human emotions stand out especially strongly. Mozart represents his noble characters, such as Belmonte, Constanze, Susanna, Pamina, and Tamino, in the most lyrically beautiful arias imaginable.

Opposites are often brought directly into juxtaposition, or are fused together, in order to palpably demonstrate the superior power of Reason. Hence, the duet between Pamina and Papageno, "Men who feel love," in which Pamina succeeds, at least temporarily, in lifting the banal (Rousseauvian) "child of nature" Papageno to the level of Reason, causing him to sound the best strings within his soul. Or consider the absolute opposition in melodies and harmonies of Pamina and the Queen of the Night, between this blackest of souls, and the golden soul of her daughter.

Through such ironies, and many others, the listener is mentally prepared to understand Mozart's real message: Human love is the basis for creative reason, and the advancement of love makes possible the development of all humanity.

Mozart's Last Years

This pedagogical conception Mozart employed in his performances and in his operas was as popular as it

Joseph II: A Philosopher-King

Joseph II, Emperor of Austria from 1765 to 1790, was a humanist monarch belonging to the enlightened strata of the nobility, who were closely allied with Benjamin Franklin and his republican networks in Europe. He was the head of the so-called "Enlightenment Party" at the court in Vienna, which was bitterly opposed by the party of the feudal nobility and the clergy. The latter grouping was made use of by Joseph's mother, Maria Theresa, to further her own ends. Joseph, even as he was being prepared to succeed his mother on the throne, in 1765 laid out his ambitious reform plans in the form of a memorandum, thereby drawing upon himself the bitter hatred of the oligarchy.

"Scholarship must be improved," wrote Joseph, "and new universities will be founded. . . . Religious institutions must be reorganized to serve the general welfare. . . . The army is to be called upon to do public works. . . . Religious tolerance, lenient censorship, no secret police and no snooping on people's private affairs. The principles of government must be the promotion of business and trade through the exclusion of all foreign merchandise (with the exception of spices), the abolition of monopoly, and the establishment of trade schools. We must do away with the premise that nobility is incompatible with gainful employment."

Furthermore, Joseph proposed in this memorandum to drastically restrict the class privileges of the nobility, to secure greater rights for the "third estate," to gather all talented individuals around the throne, and to unify the administration of all the imperial provinces.

After the death of his mother, just as he had announced 15 years earlier, he acted to put through all these reforms at a single stroke: administrative reform (centralization of the political system); economic reform (fostering of commerce, trade, and industry); tax reform (abolition of the tax immunity for nobles and clerics); agrarian reform ("the liberation of the peasantry," i.e., the abolition of serfdom); judicial reform (the abolition of the death penalty and of torture); educational reform (including compulsory education for both boys and girls).

In addition to his social measures such as the elimination of child labor, his "Decree of Toleration" ended the oppression of non-Catholics, par-



Joseph II, the "reform emperor."

ticularly Jews. Also, the abolition of censorship and the guarantee of freedom of the press, contained in the twelve "Ground Rules for Regulating Book Censorship in the Future" drafted by Joseph himself, caused a sensation both in Austria and elsewhere because of their progressive character.

But Joseph's greatest historical service lies in his participation in the international humanist conspiracy against the hated Jesuits, who, on Joseph's instigation, were banned by Pope Clement XIV; and Joseph's support for the American Revolution, whose constitutional ideals and economic policies he not only knew, but also went a long way toward instituting in his own country.

Just one month before the preliminary treaty between the American colonies and England was to be signed, Joseph instructed his ambassador in Paris to immediately seek an agreement with the American representative John Adams, "to exploit the advantages of a free America." In the future, wrote the emperor to Paris, trade with America would be of great importance, and he added, "I am anxious to know if the new united provinces will approach me to send an ambassador, or at least a consul. I would be thoroughly satisfied if they did."



Spain expels the Jesuits, 1773. Under Joseph's instigation, Pope Clement XIV banned them altogether several years later.

was brilliant, and it brought him great, including financial, success. He was literally deluged with requests for more “academies.” “Since I’ve been here, your brother’s fortepiano has been carried out of the house to the theater or to another house at least 12 times,” wrote Leopold Mozart from Vienna in 1785 to his daughter. And the success of these arrangements lasted a long time, at least until 1788; that is, long enough to destroy the legend that Mozart was only successful so long as he adapted to the superficial tastes of the public, and that his success ended when his “late works” were no longer understood.

And it is not only the overwhelming success of the anything-but-superficial *Magic Flute* which disproves this nonsensical argument. Mozart’s outstanding success in Prague, shortly before his death, showed that the public was clamoring for his “fantasies” and improvisations, which he often performed using a theme from an opera that had been called out or sung to him from the audience.

In general, Mozart’s financial situation until shortly before the end of his life was not all that bad. His father, visiting him in 1785, was astonished at the financial independence and social position that his son had achieved as the first “free” artist in Viennese music history. The basis for Mozart’s difficulties cannot be attributed to his purported inability to follow the dictates of popular taste, or his unwillingness in the late 1780s, to write more “easy to understand” pieces. The reasons for Mozart’s difficulties lie much deeper.

What came to pass toward the end of Mozart’s life, and certainly contributed to the end of his all-too-short life, was something much more far-reaching, over which Mozart had not the slightest control. The age of the “Enlightenment” (not to be confused with the bestial doctrines of Rousseau or Voltaire’s pornographic cynicism) had been distinguished by a cultural optimism not seen since the Renaissance, an optimism which pulled all sectors of society, even many members of the nobility, along in its wake. This wave of cultural optimism brought with it a completely novel development, the American Revolution. Such a thing was completely “unthinkable” for the logically pragmatic oligarchy, for whom “creative Reason” was but a high-sounding phrase. This contradiction caused some of them, like George III of England, to literally lose their minds.

Things were even worse for these oligarchical circles. Their colonies in North America had been lost; it would only be a matter of time before Franklin and his European co-conspirators, such as Lafayette, Herder, and Schiller, repeated the development in Europe. The oligarchs were faced with the end of their rule.

Thus, following the adoption of the United States Constitution in 1787, the oligarchy began to instigate a cultural “turn,” with the aim of creating a climate of cultural pessimism in Europe, in which the republican networks could be stifled.

The key event in this grand strategic game was the French “Revolution,” which at root was the diametric opposite of the American Revolution. One incident alone is sufficient to prove this was so: Franklin’s friend, the chemist Lavoisier, was guillotined, with the excuse, “The Revolution needs no scientists.” And Lavoisier was not the only republican in France to meet this fate.

Even Emperor Joseph II himself was caught up in this wave of reaction in Vienna, to such a degree that he was compelled to revoke many of his reforms. Mozart, always the subject of intrigue anyway, tersely noted this development in 1789, when his performances began to be sabotaged. He wrote in a letter to the merchant Puchberg that

I must mention that despite my miserable condition, I determined to give a subscription concert . . . but even this failed me. My fate is so sorrowful (*though only in Vienna*) that I cannot earn anything no matter what I do. I sent the subscription list around two weeks ago, and the only name on it was *Swieten!* [emphasis in original].

It is scarcely surprising that Mozart’s successful musical educational work brought him so many difficulties. Even someone no less influential than van Swieten, who in July 1789 still dared to support Mozart, came under such fire that on Dec. 6, 1791, he lost all his official positions—one day after Mozart died!

Mozart himself told his wife Constanze just a few days before his death that he thought he was being poisoned. This is not as far-fetched as it first appears. Considering the dimensions of his musical activities, and the ironical and polemical sharpness of his epistemological weapons, which he had just once again put to the test in his enormously popular *Magic Flute*, his enemies had everything to fear from him. Moreover, the Paris mob’s reign of terror (misnamed “Revolution” by the anarchists Danton and Marat, who had been groomed for their dirty work in England), shows that Mozart’s enemies were not exactly squeamish, especially when it came to dealing with those, like Mozart, who were constantly attacking flanks they could not protect.

Was Mozart in fact murdered? Ideas cannot be murdered, especially not those great ideas which have positive influence on the entire development of humanity. It is not difficult to imagine what Mozart might have accomplished, had he been able to work together with Beethoven. But that is idle speculation now.

Like every great genius, Mozart provides us with a direct glimpse into his creative thought processes, and we today have the opportunity, and the obligation, to develop our own thinking along the same path. And then, hopefully, we can soon bring forth a new generation of musical geniuses.

In the beginning Was the Word

by Muriel Mirak

In the following sequel to Plato's dialogue Cratylus, Muriel Mirak breaks new ground in the science of language, by synthesizing the discoveries of classical philology from an advanced geometrical standpoint, to present a coherent explanation of linguistic development. Drawing on the tradition of Panini, Humboldt, Grimm, Herder, Bopp, and her own contemporary collaborators, Mirak wields Plato's method of hypothesis in a devastating refutation of today's academic linguists, who deny the lawful creativity of great music to the principles of human speech.

SOPEDANTES: Oh, Cratylus, wait up, I have something important to tell you.

CRATYLUS: I shall wait for you Sopedantes, you need not run so hard; nor huff and puff as you do. If you run out of breath how will you be able to lecture to your students at the university, who flock to hear you speak, hanging on every word of your erudition?

SOPEDANTES: Yes, that is a consideration. But the reason I have come running to you is to relate to you

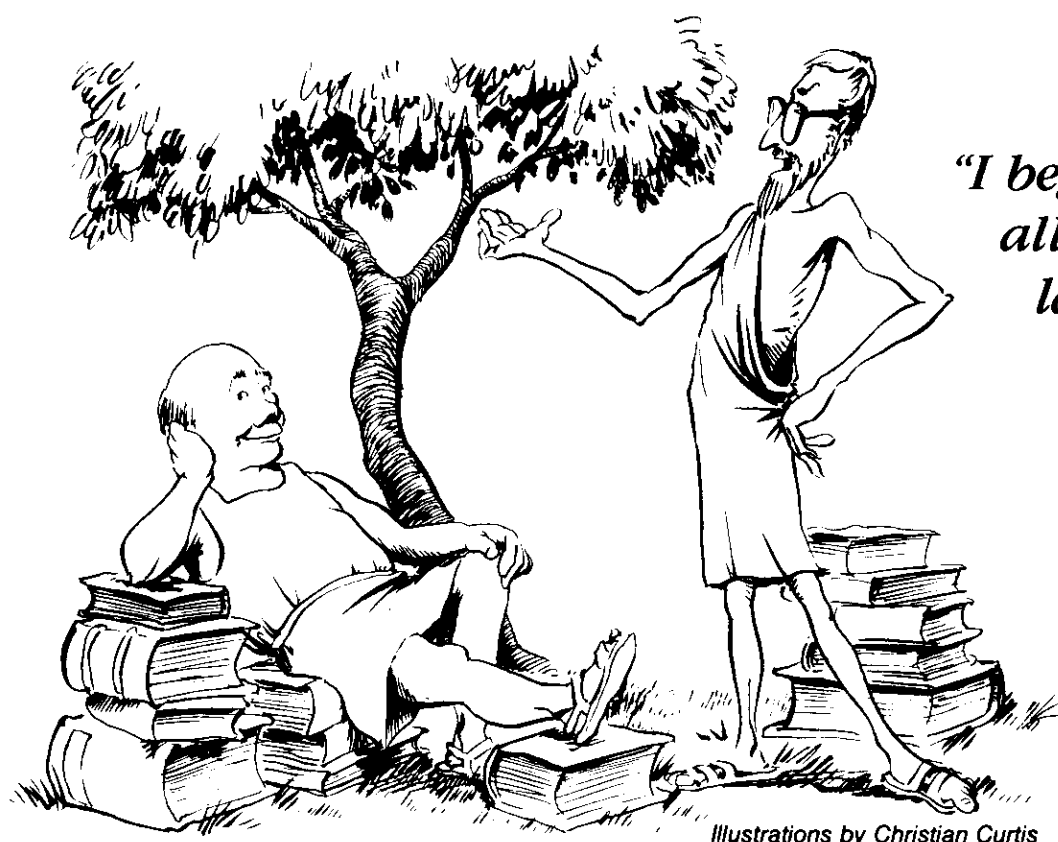
Muriel Mirak last appeared in Campaigner with "How Dante Used Poetry to Start the Scientific Renaissance" (April 1980). Dr. Mirak is the drama director of the Wiesbaden Academy for Humanistic Studies, and serves as president of the European Anti-Drug Coalition.

what that great teacher Philodantes has just unfolded to me, concerning the nature of language.

CRATYLUS: Ah, now you're talking. Tell me, I pray, word for word, how your discussion proceeded, for I have been waiting some weeks for him to expound to us his newly developed theory. Pray tell with no further delay.

SOPEDANTES: As you know, good friend, my memory does not rival that of the elephant, so accordingly I have carefully noted down every word of the discussion I had with Philodantes. Therefore, I can reproduce it for you faithfully, without error or omission.

CRATYLUS: Ha! Then your many years of copious note-gathering have finally served you a good purpose! But, unloose your tongue, and proceed.



Illustrations by Christian Curtis

"I began to provide the master with the all-encompassing definition of language..."

SOPEDANTES: Very well. You must know that I went to Philodantes yesterday to put to the test of his intelligence the results of my last fourteen years of study on the subject, years dedicated to consulting all the major (as well as minor) writers who are considered authorities by the authorities who know. I carried with me to the designated appointment, in fact, numerous weighty tomes (so weighty that I scarcely could walk under their burden!). Philodantes, on seeing me thus approach, the volumes borne on my back, invited me to put them down, so that he (or so I thought) could commence a thorough examination of their contents. Instead, he arranged them in two neat piles by the grove of trees where we met, and placed one, which I believe was the complete works of Sossures, at a slight distance from the others. On one pile he sat, gestured me to take my seat on the other, and on the solitary tome, he gently rested his foot.

"Now, my wise friend," he said, "tell me what you have gleaned from these ponderous books concerning the noble matter of human language." I stood up (for so is my nature when discoursing on philosophical matters) and began to provide the master with the all-encompassing definition of language, which I had carefully compiled, by putting together all the definitions which the lexicographers and linguisticians have thus far pronounced, when he suddenly interrupted me. "Leave off with such complicated definitions," he said, "for as you know, Sopedantes, I am not so erudite as you. Having never studied these texts, I cannot reason by way of them. Let them provide whatever support they can afford us, but, in order for me to assimilate your ideas, I fear we must begin with the very simplest of questions." "Whatever you say," I said. And our discussion proceeded as follows.

PHILODANTES: Let us begin, then, by posing the most elementary of questions regarding language. Let us ask

ourselves quite simply: why does French sound so bad?

SOPEDANTES: *Mais, qu'est-ce que vous voulez dire, mon ami?!**

PHILODANTES: Precisely! If you have ever had occasion to overhear an exchange between two Frenchmen, it cannot have escaped your notice that, as they assume a characteristic pose, of one hand holding up the opposite elbow, with the hand of the latter rotating loosely around, punctuating the movement with periodic thrusts of the limply extended forefinger, they simultaneously raise both eyebrows and open wide the eyes (except when squinting to ward off the fumes of smoke emanating from a lit cigarette), then jut forth the lips in the manner of the catfish (also known vulgarly as the sucker). What pours forth from the thus-positioned mouth is a stream of inchoate noises originating from the upper recesses of the usually enlarged nose. If you have ever witnessed such a performance you cannot have reacted other than as one reacts upon entering the Frenchman's private boudoir, that air-tight chamber where the bedclothes and cherished objects are preserved in the dank atmosphere of antiquity.

SOPEDANTES: *Mais, Monsieur, c'est la tradition. . . .†*

PHILODANTES: Aha! But, not at all. In point of fact (although your own authoritative sources may have overlooked this evidence), French did not always sound that bad. Listen, for instance, to the earliest known French poem, which tells the moving story of Saint Eulalia, a woman who resisted the pagan king Maximilian's efforts to force her to renounce her Christian faith. It goes like this:

Buona pulcella fut Eulalia:
 Bel auret corps, bellezour anima.
 Voldrent la veintre li Deo inimi,
 Voldrent la faire diaule servir.
 Elle nont eskoltet les mals conseilliers,
 Qu'elle Deo raneiet chi maent sus en ciel.

*"But, what is it you're trying to say, my friend?" (French)

†"But, sir, it's the tradition. . . ." (French)

Ne por or ned argent ne paramenz,
 Por manatce regiel ne priement;
 Niule cose non la pouret imque pleier
 La polle sempre non amast lo Deo menestier.
 E por o fut presentede Maximilien,
 Chi rex eret a cels dis soure pagiens.
 Il li enortet, dont lei nonque chielt,
 Qued elle fuiet lo nom chistien.
 Ell'ent arduret lo suon element:
 Melz sostendriet les empedementz
 Qu'elle perdesse sa virginitet.
 Por os furest morte a grand honestet.
 Emz enl fou la getterent com arde tost:
 Elle colpes non auret, por o nos coist.
 A czo nos voldret concreidre li rex pagiens,
 Ad une spede li roveret tolir lo chief.
 La domnizelle celle kose non contredist,
 Volt lo seule lazsier, si rovet Krist.
 In figure de colom volat a ciel.
 Tuit oram que por nos degnet preier
 Qued aisset de nos Christus mercit
 Post la mort, et a lui nos laist venir
 Par soue clementia.*

SOPEDANTES: Why, that's not French, it's Italian!¹ Oh, Philodantes, you are trying to pull the wool over my eyes, but my ears nonetheless can discern that what you have just recited is Italian.

PHILODANTES: You see, Sopedantes, how rapidly you are learning. Indeed, the noble tongue celebrated at the court of Charlemagne by this poet, sings forth with the harmonious beauty of its mother tongue, Italian,



the language which the Roman legions disseminated throughout the area of the empire.

SOPEDANTES: However, if you will allow me to note, that language changed in the period after the ninth century.

PHILODANTES: How true, my learned friend, how true. It evolved into the magnificent instrument of song refined by the Troubadours, those poets whom the great master Dante studied, to forge the most powerful poetical language known to the modern world. Do

* An English translation of the *Sequence of Saint Eulalia* reads:

A good young maiden was Eulalia:
 Fair was her form, yet fairer her soul.
 The enemies of God did want to seize her,
 They wanted to force her, the devil to serve.
 She listens not to evil advisors,
 Who say to abandon her Lord up in heav'n,
 Nor gold, nor silver, nor beautiful robes,
 Nor threats from the king, nor any prayer:
 Not any thing could force her to bend,
 Could ruin her love of serving her Lord.
 Thus was she led before Maximilian,
 Who in those times o'er the pagans did reign.
 He exhorteth her vainly, she nothing responds,
 That she should give over her Christian name.
 She to her spirit new courage doth muster:
 Better withstand the harshest of torture
 Than that she yield up her virginity.
 Thus would she perish in honor, yet pure.
 In flames did they thrust her, that she might burn:
 But as she was guiltless, no fire did her harm.
 This would the pagan king scarcely believe,
 And he order'd her head be cut off with a sword.
 The maiden did nought, t'oppose the command:
 This world she'd fain leave, and pray'd to her Christ.
 I' th' shape of a dove to heaven she flew.
 Let us all pray, that we may be worthy,
 That on our souls, Christ haveth compassion
 After our death, permit us to join Him,
 Out of His bountiful mercy.

"The Frenchmen raise both eyebrows, and jut forth the lips in the manner of a catfish..."

you not remember, Sopedantes, Dante's encounter on the mountain of Purgatory with the Provençal poet Daniel Arnaud?

SOPEDANTES: Let me see, yes that was Canto XXVI, line. . . .

PHILODANTES: As the Poet meets his predecessor, he asks him to identify himself, and says:

El cominciò liberamente a dire:
"Tan m'abellis vostre cortes deman,
qu'ieu no me puese ni voill a vos cobrire.
Ieu sui Arnaut, que plor e vau cantan;
consiros vei la passada folor,
e vei jausen lo joi qu'esper, denan.
Ara vos prec, per aquella valor
que vos guida al som de l'escalina,
sovenha vos a temps de ma dolor!"
Poi s'ascose nel foco che li affina.*

SOPEDANTES: Really, Philodantes, it is unkind of you to now pull my leg. Surely, Dante has translated Arnaud's language for the *Commedia*. But, then, there does seem to be a difference between the two. I wonder. . . .

PHILODANTES: Wander no further, my one-footed friend. Come, sit down by me and listen. It stands to reason that if Dante could incorporate the language of Arnaud so effortlessly into the terza rima of his poem, then the poetical laws governing the French of that time must have been coherent with those underlying Italian itself. Just as two branches stemming from the same root will diverge and develop their own direction and leaves, still proudly growing as one tree, so the limb which was French reached out from the Italian trunk to bear beautiful fruits.

SOPEDANTES: But what happened to French? For as you said earlier, the French that modern Frenchmen speak bears little of that beauty.

*Dante queries the Provençal poet, who then answers him in Provençal, which is fully coherent with the music of Dante's own Italian:

. . . And he spoke freely:
"So does your courteous request please me—
I neither could nor would conceal myself
from you. I am Arnaut, who, going, weep
and sing; with grief, I see my former folly;
with joy, I see the hoped-for day draw near.
Now, by the Power that conducts you to
the summit of the stairway, I pray you:
remember, at time opportune, my pain!"
Then, in the fire that refines, he hid.
Dante Alighieri
Divine Comedy: Purgatory XXVI,
translated by Allen Mandelbaum

PHILODANTES: It is a tragic tale, but true. What occurred was that the conniving pedants of the French Academy took knives to the tender branch, saying they were pruning it to enhance its growth. Instead they cut and slashed, stripping its bark and amputating its finest members. They sapped its very life-blood. First, they took the sound that the leaves make while rustling in the wind, and cut it out. Whereas all other Italic languages, like Spanish and Italian itself, say *bestia* and *scuola* or *escuela* (or even the German *Schule*, whence English *school*), the French say *bête* and *école*. Therefore they placed the circumflex (ˆ) over the "e."

SOPEDANTES: Wherefore? I do not understand.

PHILODANTES: Surely, if some academician came and cut off your "s," you would be circumflexed too, would you not?

SOPEDANTES: Egregious master, I firmly believe that the gravity of the matter merits a like attitude of more seriousness on your part. I pray you, proceed.

PHILODANTES: I am merely trying to humor you. Now listen to how the Frenchman ceased using his God-given mouth to shape words and delegated that function to his nose. The words *sunu* and *manu*, meaning "his" and "hand," respectively, clearly show their phonetical relationship to Italian in *suo* and *mano*. But the lazy Frenchmen tired of pronouncing the last vowel, and went to emitting scarcely articulable sounds, as when blowing the nose, thus *son* and *main*. Why, to indicate a bath, (something displeasing to their nature), instead of saying *bagno* (when they catch sight of soap and water), they simply imitate the renunciatory bleating of the sheep and say *bain!*

SOPEDANTES: Wait a minute, Philodantes. I have just had a thought.

PHILODANTES: That is indeed what I have been waiting for. Let me hear it *tout de suite*.

SOPEDANTES: I recall from my reading on the subject, I believe from that book by Sossure under your foot, that although languages may be related historically, yet they change, sociologically, so to speak, in an inarrestible process which we have no right as mere humans to judge this way or that. Is this not true?

PHILODANTES: I would not be so sure. If language, being the sensuous expression of human reason, change through time, then that change must reflect, and indeed mediate, the more general process of change which mankind produces in society, nature, and the universe. Is that not true?

SOPEDANTES: Right.

PHILODANTES: Then just as societies may either progress or decay, so indeed do languages.

SOPEDANTES: True.

PHILODANTES: Yet neither progress nor decay can be a matter of chance; if that were true, we would have to say that God the Creator were indifferent to the direction of His Creation.

SOPEDANTES: That's a good point.

PHILODANTES: Since God created the universe as an act of love, He endowed it with the means to further develop itself, endowing man, his preferred creature, with a like power to create and to thus become ever more like to Creator, by continually perfecting himself and the universe.

SOPEDANTES: But what has this to do with French?

PHILODANTES: Everything. To create is to perfect oneself and the Other, and that is the meaning of striving for the Good.

SOPEDANTES: Good.

PHILODANTES: Then language, which God gave uniquely to man in order that he communicate his ideas in striving for the Good, must needs itself progress and become ever more perfect. The proof of this lies in those languages which have undergone progressive changes, perfecting themselves in strict coherence with

the laws that God endowed the universe and man's mind with.

SOPEDANTES: Do you mean to say that there are some sound changes in languages which are good and others which are evil?

PHILODANTES: You took the words out of my mouth. You certainly have read the works of our English poet Geoffrey Chaucer, have you not?

SOPEDANTES: Yes, *The Canterbury Tales*, *The Book of the Duchess*, *The . . .*

PHILODANTES: And those of the playwright William Shakespeare?

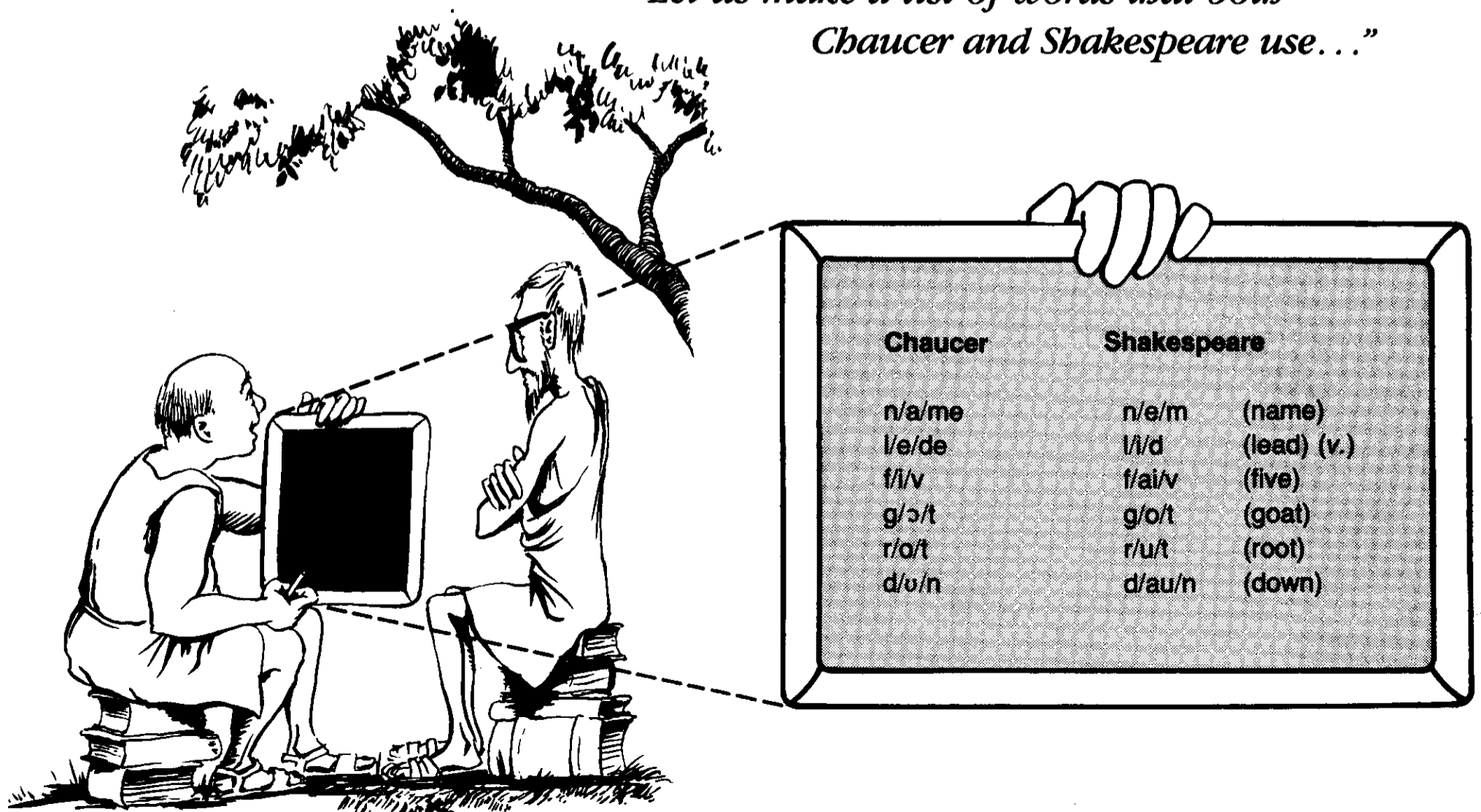
SOPEDANTES: Why, of course.

PHILODANTES: And have you noticed a difference in the language that they use, such that Shakespeare's commands a greater power to embody ideas?

SOPEDANTES: Yes.

PHILODANTES: And wherein lies the difference? What kind of change can have taken place between the fourteenth and the sixteenth centuries such that one robust poetical language could evolve into an even higher form of speech?

*"Let us make a list of words that both
Chaucer and Shakespeare use. . ."*





*“When I am trying to understand a new concept,
I am overpowered by a desire to sleep...”*

SOPEDANTES: It would be better if you would explain that.

PHILODANTES: Oh, Sopedantes, you know I have no answers ready to these questions, but only know that we can discover the truth if we ask the right questions. Let us make a list of words that both Chaucer and Shakespeare use and examine how the pronunciation of them changed. Then we shall ask ourselves what principle underlies that change. Do you agree?

SOPEDANTES: Of course.

PHILODANTES: Chaucer uses the word *lede* which was pronounced in two syllables, with an Italian or German “e,” such that it would rhyme today with English word “made.” We use the phonetic symbols /e/de to show this. Do you follow?

SOPEDANTES: Wherever you lead.

PHILODANTES: He also uses the word *name*, pronounced /name/, in which the “a,” again like Italian and German, would sound like the “a” in the English word “father.” The word *goat* in Chaucer’s day was pronounced /gɔt/, like “got”; *root*, /rot/, would rhyme with today’s English “boat”; and *down*, /dun/, was pronounced as if rhyming with “moon.” The number *five*, /fiv/, would rhyme with “leaf.”



SOPEDANTES: But how do you know they were pronounced that way?

PHILODANTES: That emerges from comparing these words with many others with which they rhyme in Chaucer’s poetry.

SOPEDANTES: All right. Now what?

PHILODANTES: If we examine the same words in Shakespeare, and see what they rhyme with, we discover that all the vowel sounds have gone through a change. Shakespeare does not say /lede/, but /lid/, as we do today, in the verb “lead.” He says not /name/ but English “name,” /nem/, as in today’s “name”; /gɔt/ has turned into /got/ or “goat”; /rot/ has become /rut/, or “root”; /dun/ has turned into /daun/, as in today’s “down”; and /fiv/ you can now count on as /faiv/ in our word “five.” [See Table page 57]

SOPEDANTES: That is very interesting indeed. But what does it all mean?

PHILODANTES: I can see you are getting a bit tired, Sopedantes, but that will actually aid us in our endeavor. We first must determine what the vowels are, and then examine the significance of their change.

SOPEDANTES: Excuse me, Philodantes, but often when I am trying to understand a new concept, I am overpowered by a desire to sleep.

PHILODANTES: As I said, no matter; it will aid us. Now, Sopedantes, please yawn.

SOPEDANTES: I beg your pardon?

PHILODANTES: Yawn.

Standard phonetic symbols (modified), with English examples and dictionary markings.

Phonetic symbol	English vowel	Dictionary marking
/a/	father, calm	à
/e/	may, aid	ā
/æ/	add, band	a
/i/	each, feet	ē
/ai/	ice, eye	ī
/o/	old, boat	ō
/ɔ/	law, ball	ò
/au/	out, cow	au
/u/	do, cool	ū
/ʊ/	look, put	ù

SOPEDANTES: If you insist. Believe me it will require no great effort.

PHILODANTES: Good. All ideas which at first seem difficult afterwards will appear to be easy. But, please, yawn.

SOPEDANTES: *iiiiieeaaaaaooooouuuu*. That feels better.

PHILODANTES: Good. You have just pronounced the entire spectrum of all possible vowel sounds.

SOPEDANTES: I have? How did I do that?

PHILODANTES: It might have something to do with all those years of studying linguistics. But do it, you did, indeed. For, the vowels are all the sounds you can produce with your mouth open, from very slightly open, as in /i/ and /e/ to wide open as in /a/, to rounded as in /o/ and /u/. But, as you have just scientifically demonstrated, the vowel spectrum is actually continuous, is it not?

SOPEDANTES: Yes.

PHILODANTES: And yet when we speak, we do not yawn.

SOPEDANTES: That is true.

PHILODANTES: Thus there must have been some way in which the earliest men of Adam's age awoke from the slumber of undifferentiated continuous sound, and put their sounds in order.

SOPEDANTES: That seems right.

PHILODANTES: The question is: how?

SOPEDANTES: Oh, Philodantes, how should I know that?

PHILODANTES: You, too, my friend, must wake from your torpor, and think.

SOPEDANTES: I think so too.

PHILODANTES: Let us begin with music.

SOPEDANTES: Oh, that's unfair! You know I cannot sing, nor read a note.

PHILODANTES: No matter, Sopedantes, for you will see that music is but a higher form of speech, the *enfant prodige* of language, if you will, and that since you are a scholar of the one, soon you will be singing the praises of the other.

SOPEDANTES: If you say so.

PHILODANTES: To music, then. You surely remember what our friend Tennenaeus showed us regarding the circle, the spiral, and the cone?²

SOPEDANTES: Oh, but now you are zigzagging this way and that, from language to music and now geometry. I think you have me going around in circles.

PHILODANTES: Trust me to straighten it out, good Sopedantes. You will recall that Tennenaeus showed us that that most perfect and all-encompassing of shapes, the circle, actually derives from the action of rotation, which you can clearly see as you trace that shape with your compass. That derived shape at the base of the cone, the circle, Tennenaeus divided into twelve equal parts. He then traced a spiral up the cone, maintaining a constant angle of curvature, such that one full rotation of the spiral occurred half way up the spiral and, by so continuing to divide the remaining lengths of the axis, moving upwards, he was defining octaves. For as you remember, the octave is produced when you divide a vibrating string in half.

SOPEDANTES: Of course, I know that, for I have studied Socrates, you know.

PHILODANTES: Precisely. Once Tennenaeus had constructed his self-similar spiral on the cone, he projected

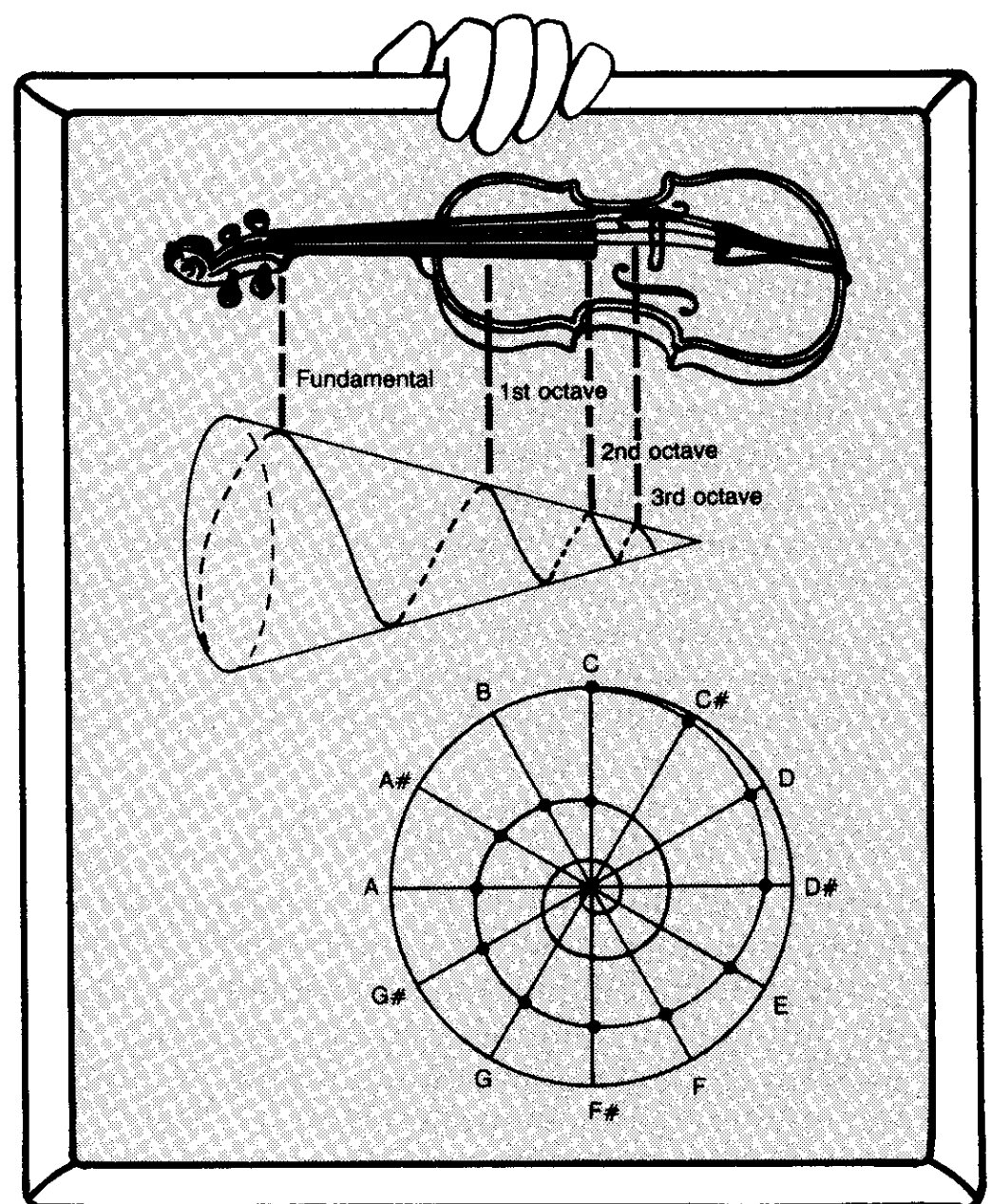


Diagram 1. The Well-Tempered System

A self-similar spiral is constructed on the cone, and the twelve equal divisions of the base are projected upwards. Each point of intersection is a note corresponding to the twelve tones of the well-tempered musical scale.

the twelve base dividing points up onto the spiral, and at each point of intersection was a note, corresponding to the twelve tones of our scale in the well-tempered system. [See Diagram 1]

SOPEDANTES: Do you mean that the cone sings?

PHILODANTES: In a manner of speaking, yes. If you actually construct an instrument as the reflection of the geometrical idea of the cone, you will produce a most marvelous sounding instrument known as the conophone. But the point lies elsewhere.

SOPEDANTES: What, not on the cone?

PHILODANTES: Not on, but in the cone as an idea. It is the self-similar spiral on the cone which gives us the image we require for the ordering of sounds according to geometrically determined proportions. With the cone, we can see how the shift from one key to another is in reality a rotation of the spiral.

SOPEDANTES: Through fifths, you mean?

PHILODANTES: Exactly. Now let us return to the vowels, which, as you know, are also called "sonants," because they sound.

SOPEDANTES: That sounds like a good idea. I was getting a bit wound up on the cone.

PHILODANTES: Now, listen carefully. If the well-tempered system underlying the heavenly compositions of our great musicians is but a reflection, in the realm of sight and sound, of the laws which the Creator shaped to create the heavens and the universe, and if that musical system lies between heaven and earth, as the song of the angels lies between the Creator's mind and man, then it must as well be embedded in the laws of human speech. For although the Creator created the Sun and the stars before he created man, yet He gave to man, His most perfect creature, the task of translating those celestial laws into music, through speech. It is we, Sopedantes, who have taught the angels how to sing.

SOPEDANTES: Most wonderful! But, how?

PHILODANTES: If you examine the vowel sounds we have talked about, you will see that although they do not now in our languages have different pitches, yet they resonate and generate overtones, like notes. Each vowel in fact will reach a resonance peak, or formant, at a specific number of cycles per second. Here, I can show you by tracing on this tablet how it works. The darkest vowel /u/ forms its formant at 330 cps (cycles per second), like the note E (mi); the vowel /o/ is like B (ti); the sound /ɔ/ is like F# (fa#); and so on. [See Diagram 2] Now if we transfer this schematic representation of the formants onto our cone, look what emerges. [See Diagram 3]

SOPEDANTES: Why, they seem to line up in some sort of order!

PHILODANTES: Yes, in harmonic ordering. See how /u/ and /i/, the darkest and the brightest vowels, appear as three octaves apart, just as /o/, /a/, and /e/ are separated by octaves.

SOPEDANTES: So are those other vowels /ɔ/ and /ʊ/. But what about /æ/?

Diagram 2. Vowel Frequencies.

When vowels are spoken, each will generate overtones around a resonance peak, at a specific number of cycles per second.

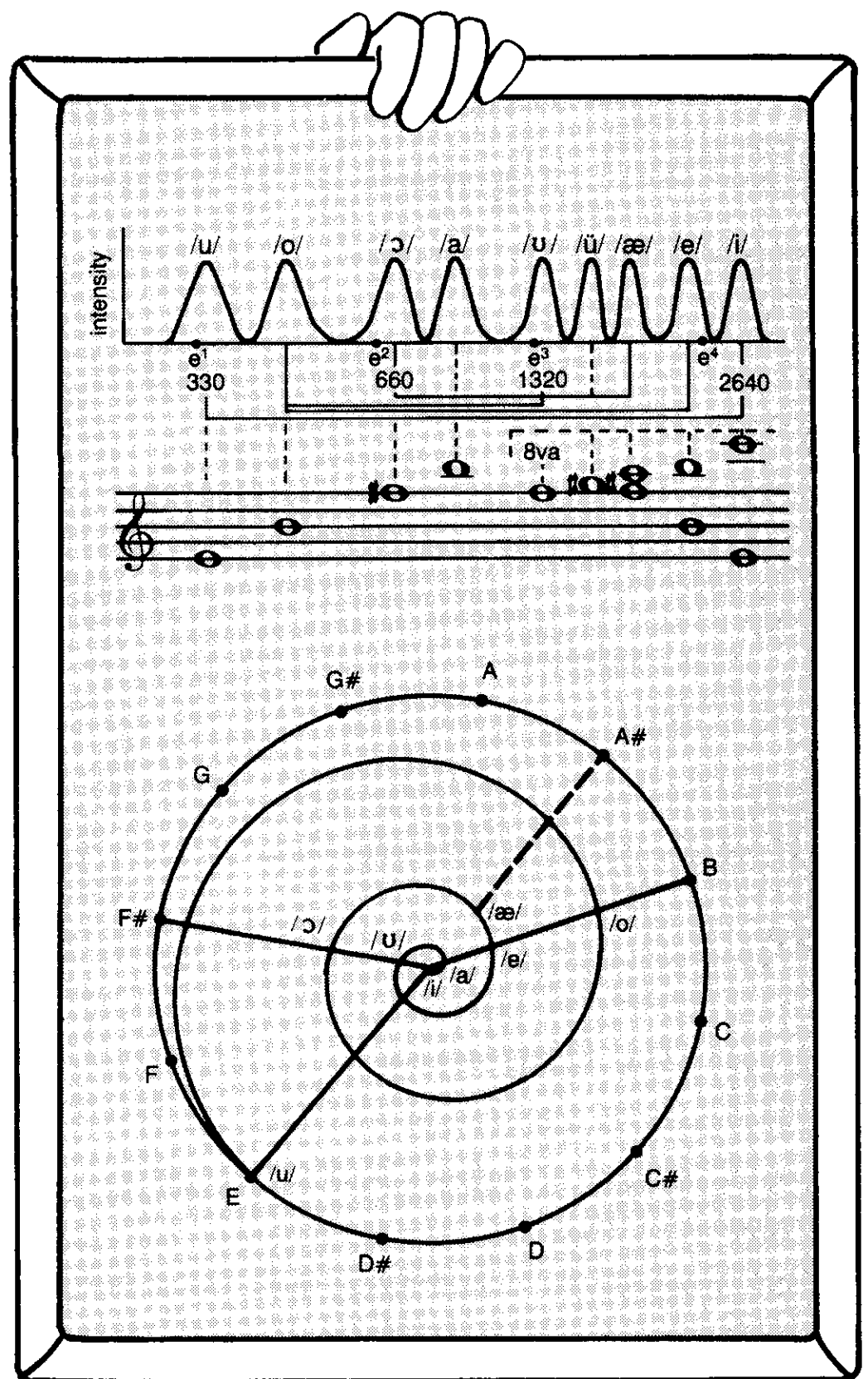


Diagram 3. The Vowel Spiral

When vowel resonance peaks are transferred to the cone, and projected onto its base, the bright and dark vowels line up in harmonic ordering. The change in English vowel sounds from Chaucer to Shakespeare, is expressed as a rotation on the cone corresponding to modulations by these harmonic intervals.

PHILODANTES: Look at the configuration of the whole: /i/ and /u/ are in the relationship of the fifth to the other main group of /o/, /a/, /e/; the intervening sounds /ɔ/ and /ʊ/ are one whole step away from /u/ and /i/, and they are in the relationship of the fourth to /o/, /a/, and /i/. And /æ/, that bastard sound which crept into English, is but a half step below /o/, /a/, and /e/, like the seventh, the leading tone.

SOPEDANTES: This is all very fascinating, Philodantes, but if this ordering is, as you said, analogous to the well-tempered system, how does one compose with it?

PHILODANTES: Think back, now Sopedantes, to our discussion of the change that took place between the time of Chaucer and Shakespeare.

SOPEDANTES: Ah!

PHILODANTES: Now you can grasp those changes, from one to the other, as expressions of one coherent rotation, corresponding to a modulation down one fifth (or up a fourth). The change from /e/ to /i/ is up a fourth; /o/ to /u/, and /ɔ/ to /o/, are both down a fifth. The diphthongization of /u/ to /au/; and /i/ to /ai/, also correspond to glides, down a fifth and up a fourth! And the shift from /a/ to /e/, which actually went through /æ/, corresponds to rising by an octave.

SOPEDANTES: Oh, now I see. Thus the great vowel shift in the English language of Shakespeare's time occurred as if the great Creator had intervened to modulate the melodious language of Chaucer into the bolder harmonies of the great bard. You know, this harmonic ordering of vowels which you have demonstrated, although it seemed new to me at first, now brings to mind an experiment which I heard a curious researcher once tried. He measured the vowel sounds, by forming his mouth as if to speak the sound, then caused it to be filled with a liquid. Each time he ejected the liquid into an appropriate vessel, and, after comparing their relative volumes, found that they stood in relationship to one another as the parts of the Golden Section. Isn't that the same thing, Philodantes?

PHILODANTES: Indeed, it is, since the Golden Section corresponds to the interval of the fifth. But I think your researcher, by his own method, has watered down our concept.

SOPEDANTES: What do you mean by that, Philodantes?

PHILODANTES: That he is all wet, my friend. But to pursue the point further: can you see, Sopedantes, with your accumulated wisdom in classical philology, how our concept of the harmonically ordered vowels sheds light on a hitherto unexplained mystery in Sanskrit?

SOPEDANTES: What is that?

PHILODANTES: I am referring to the fact that /e/ and /o/ in ancient Sanskrit at a certain point disappeared, leaving /a/ all alone. If we take our musical metaphor of the vowel harmonies a bit more literally, we can imagine that language was once actually sung; if that were the case (and certain languages still conserve pitch differences), then the vowel flattening in Sanskrit appears to have been a unification of register.

SOPEDANTES: Aha!

PHILODANTES: Furthermore, I hope this little excursion into the geometry of sound has served you to grasp the import of the elementary question we first posed for ourselves earlier, regarding the sounds of French. The fact is that those unpleasant oinkings, as of pigs, which we are obliged to hear when the Frenchman opens his mouth, are appropriate expressions of the fact that the once great tongue is violating the laws of the Creator's harmonies, as if plucking on the strings of discord.

SOPEDANTES: Yes, I see. And perhaps that explains why the French are always in discord among themselves, seething with rage and never wishing to come to agreement with anyone. But, Philodantes, I have a question.

PHILODANTES: That, my young scholar, is the beginning of true knowledge. Speak.

SOPEDANTES: It occurred to me that perhaps there is more to language than only the vowel series. Can it be possible that man speaks only by keeping his mouth open all the time?

PHILODANTES: No, in fact it is the wisest of men who knows when to close his mouth. When that happy event takes place, we form what are known as consonants, sounds which, as their name tells you, require a sonant or vowel in order to be uttered. These sounds can be articulated in various parts of the oral cavity, and are thus known as labial, labial-dental, dental, cerebral, palatal, velar (or guttural), and labial-velar. They can be actual, or voiced, through the vibration of the vocal chords, or they can remain potential and unvoiced. Compare for example, the voiced labial /b/ in baker to the unvoiced labial /p/ in paper. I am sure you realize what an important difference that makes.

SOPEDANTES: Surely. Without it, one might end up with a rather hot notebook.

PHILODANTES: Or a deliciously aromatic briefcase! Thus consonants have their distinctive characteristics too. They may be uttered as momentary plosives, like /p/, /b/, /d/, and /t/, or they may let the air pass through the lips like a summer breeze, as in /f/, /v/, /s/, and /z/. They may be nasals, which the French prefer, as in /m/ and /n/. Like them, the liquid /l/ and /r/ can

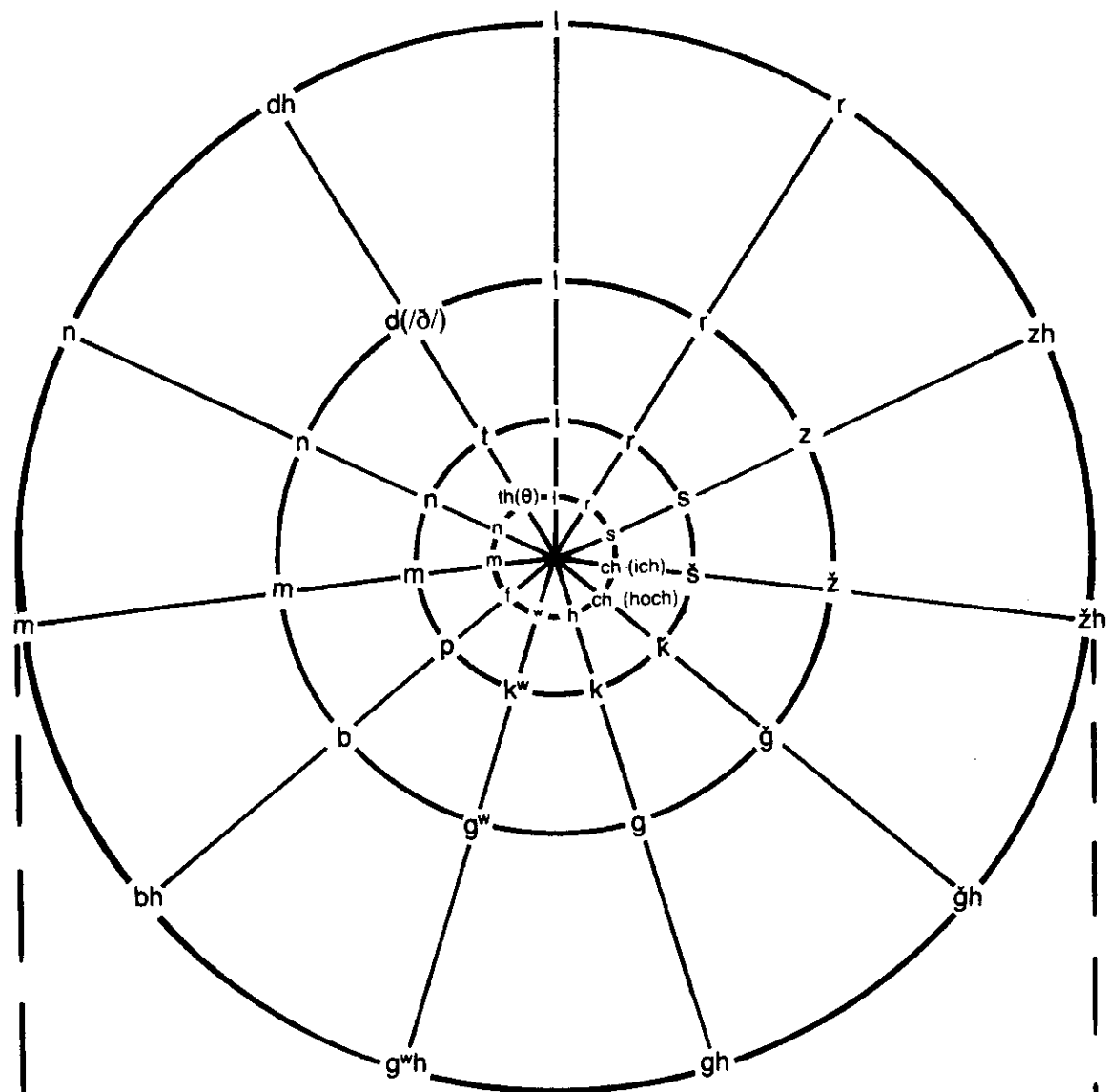
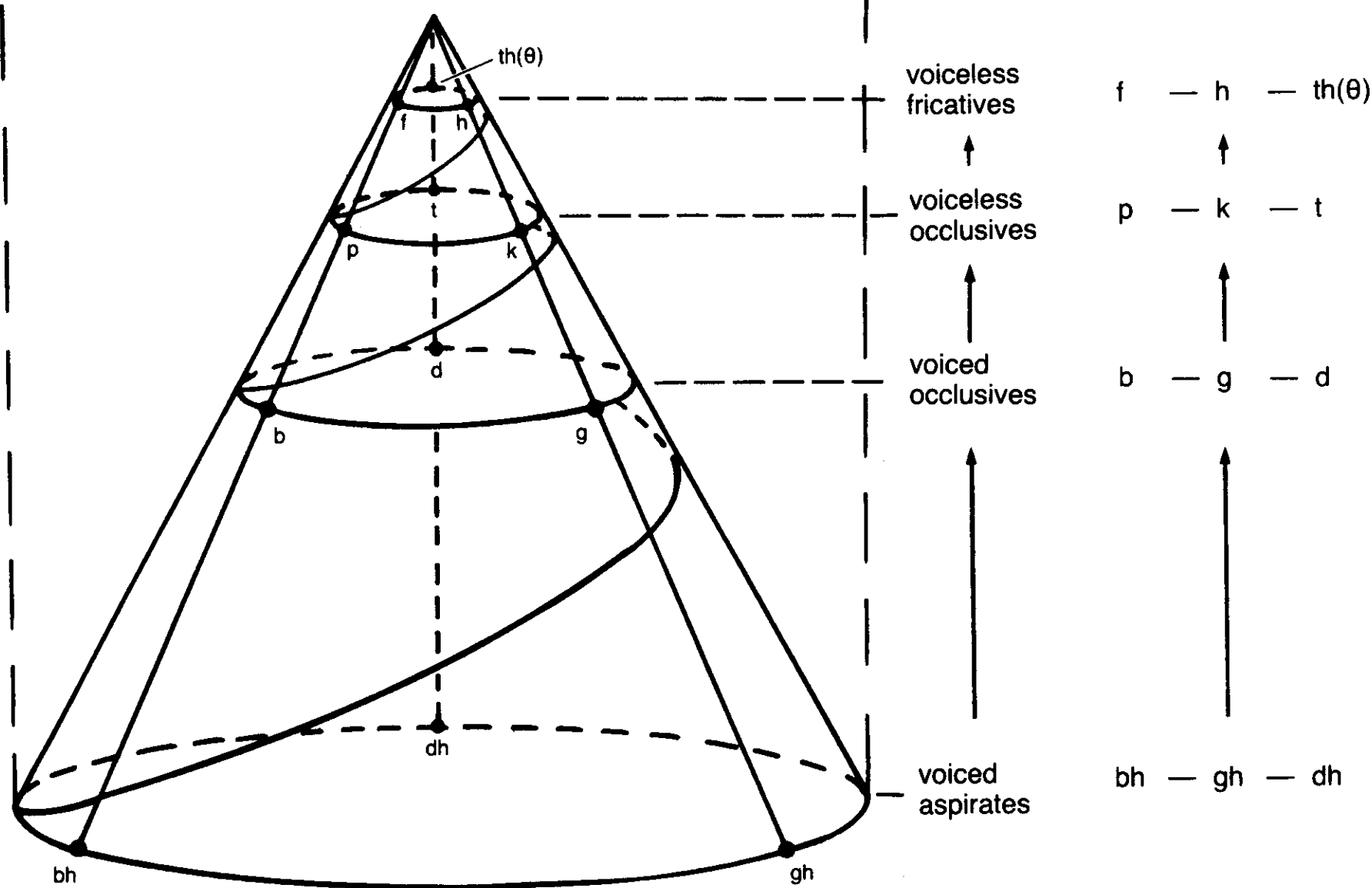


Diagram 4.
The Consonant Series
 Consonants are grouped in concentric circles, according to whether they are voiced aspirates (outermost circle), voiced occlusives, unvoiced occlusives, or voiceless fricatives (innermost circle).

Diagram 5. Grimm's Law
 This concentric organization of consonants, is actually a projection onto the base of the cone. Grimm's Law, which describes the consonant shift in the development of the Indo-Germanic languages—from the voiced, aspirated consonants of Sanskrit, to the voiceless, occlusive consonants of Italian, to the voiceless, fricative consonants of German—is shown to be a spiral rotation up the cone.



function as semiconsonants; and the semivowels /j/ and /w/ sometimes function as consonants.

SOPEDANTES: I think, Philodantes, that I prefer the vowels, for they are much more beautifully ordered. These consonants seem too arbitrary.

PHILODANTES: Suppress, my good friend, your desire to yawn and you will discover that the consonants, though less vibrant than the vowels, are yet highly organized, according to their positions in the mouth and their degree of sonority. Look. [See Diagram 4]

SOPEDANTES: How beautiful! But have you not simply arranged them that way, like flowers in a vase? Or is there some dynamic which keeps them arranged thus?

PHILODANTES: Like plants which the Creator has seeded in this garden of our world, Sopedantes, each has its relationship to each other. And, in a manner similar to the way vowels change, consonants undergo shifts; just as every flower that blooms must first form a bud, so consonants in different languages grow through prior forms. Some stay in the bud, while others blossom forth in magnificent flower, even varying color on the same plant. Thus, in the Indo-European garden, voiceless occlusives remain as /p/, /k/, /t/, and /k^w/ in Italian, but when cultivated on German terrain, they turn into voiceless fricatives, gently swaying in the breeze. [See Diagram 5] Thus we have /p/ and /k/ in the Italian word for "sheep," *pecora*, which derives from an Indo-European root *peku (using linguistic notation), whereas in Anglo-Saxon those consonants have changed into /f/ and /h/, as is evident in *feoh* (corresponding to the Modern German word for "cow," *Vieh*). Where the Italian says *dico* when he speaks ("I speak") the German used to say *tiho, as in the Anglo-Saxon *tiu*; today the German has further refined it and says *ziehe* to draw or pull something out.

And this process is not limited to one group of consonants; if you reflect that the Indo-European languages outside of the Germanic group call one plant *kannibis* (κάνναβις) in Greek and *cannabis* in Latin, while the Old High German word is *hanaf* and Old Norse is *hampr*, you realize that the voiced occlusive /b/ has grown into a /p/; that is why the English call it *hemp* today, whereas the Germans have further transformed it into *Hanf*. Other such voiced occlusives have lost their voices, turning /g/ into /k/, which is why the Greek, full of himself, would say *ego* (εγω) as would the mimicking Latin, but the Goth would settle for the more modest *ik*, and today's German, retiring into shyness, utters a barely audible, but delicate *ich*.

SOPEDANTES: That may be so along the Rhein, where in fact the golden wines further sweeten it to something that sounds like "isch," but I have heard that Gothic sound in the far north!

PHILODANTES: Hear more, Sopedantes, before the vision of the Rheingau deafens your sensibility. You will see that the Germanic tongues seem to have softened all explosive sounds, turning voiced aspirates like /bh/, /gh/, and /dh/ into their respective voiced occlusives /b/, /g/, and /d/. Thus in Sanskrit one says *bharami* and *madha*, but the Englishmen say *bear* and *mead*.

SOPEDANTES: Does this signify that the Germanic languages are more beautiful than the other Indo-European ones? Would that not reflect negatively on the noble Greek and Italian?

PHILODANTES: What constitutes their beauty, my good aesthete, is not this or that particular sound, but, as in every growing thing, their coming into being through evolution of perfectly harmonious laws of change. Take all the single changes we have just enumerated and conceptualize them anew on the consonant spiral as one perfect rotation. So you see, Sopedantes, our entire universe of sound, reflecting that shaped in the heavens by our Creator, comes into being through rotation, and further rotating on itself, differentiates itself into the multiple galaxies and solar systems of human speech.

SOPEDANTES: *Gherschaaaafvzpfchiiu!*

PHILODANTES: *Gesundheit!*

SOPEDANTES: Oh, thank you, Philodantes, but that was no sneeze you heard. I was merely trying to put all this new knowledge to good use, but I seem to have failed. Perhaps you can help me.

PHILODANTES: Gladly

SOPEDANTES: I cannot seem to get the words out of my mouth, but what I am trying to say, I think, is important.

PHILODANTES: I have no doubts that it is, given its high-sounding prelude. But remember, for it to be truly important, it must be a question of the most elementary sort.

SOPEDANTES: That it is, have no fear. Rather, I fear it is too simple.

PHILODANTES: There is nothing, Sopedantes, still to be discovered which is too simple. Come, loosen your tongue.

SOPEDANTES: Well, very simply, then: where do words come from? That is to say, you have shown how the vowel and consonant sounds are created through a geometrical process which harmonically orders the sounds of which the human voice is capable. But it appears to me that there must be another step in the process to actually make words.

PHILODANTES: Bravo, Sopedantes. It is scholars like yourself who make ignorant students like myself find the untrodden path towards true knowledge. How are words formed? Now we have come to the root of the matter! What do you think is the answer?

SOPEDANTES: Well, on the one hand, my friend Cratylus claims that everything has its own name through an innate nature, whereas on the other hand my other colleague Hermogenes is convinced that names are assigned to things through an agreement among men.³ Then again, Lipnitsis⁴ asserts that there is no direct correspondence between the name and the thing, except in so far as a certain necessity relates the name to all other names, analogously to a necessity binding all things. It seems to me that this latter notion, which I confess I have not fully grasped, is the one which the great Humbarchus⁵ also considers, when he rules out any symbolic capacity of sound to imitate the thing so named; rather he, who has indeed seized on sound as the very stuff of language, teaches that even though words whose meanings lie near one another have similar sounds, that does not mean that the meaning lies in the character of the sounds themselves. And yet, somehow, I cannot drive away the notion that if a certain sound designates a certain thing, certainly there must be a reason for it. I am quite confused.

PHILODANTES: You have reason for it, my friend. Let us attempt to untie this knot, by reflecting on what we have thus far uncovered. We have seen that the Creator shaped his most wondrous creature, man, such that he might, using his eyes and ears, mind and voice, transform the inchoate universe of sound into a harmonically ordered whole. We must consider now the following: if man so orders his sonorous universe according to the idea of the self-similar conical spiral, thus prefiguring the geometrical ordering of the well-tempered system for music, then that very act of ordering constitutes a thought, a judgment. In other words, the very fact of human ordering of sound is a footprint of the creative process which gave rise to it. When the mind then forms a thought, to be expressed through the tools that it itself has shaped, the articulation process must necessarily reflect the same kind of (though not necessarily the same) ordering principle. Therefore we must hypothesize that root formation in language as a whole obeys certain laws, coherent with the harmonic laws we know now.

SOPEDANTES: I think I follow, but where exactly do we begin?

PHILODANTES: In the beginning, Sopedantes, in the beginning. In the beginning was the Word. And the Word became flesh. That is where we must begin.

SOPEDANTES: Then, I pray you, you begin.

PHILODANTES: We must begin, as we did with Tennaeus's circle, with self-evident existence. We begin therefore with the only premise for human knowledge, which is that we exist. We, being not the first men, know that we do not, however, exist existentially (which is to say, we are not all French).

SOPEDANTES: Thank God for that.

PHILODANTES: I do, Sopedantes, I do. We exist, therefore, as a species which has achieved a relative potential population density of more than four billions. As the great thinker Rolaches has proven,⁶ the fact that the human species has reached this level from a much inferior baboon-like stage, points necessarily to a secular course of human development which we term negentropic. That negentropic development has emerged through successive technological revolutions, products of the human mind, which have vastly increased the power of humanity as a whole to do efficient work on the universe. The question which arises, Sopedantes, is: How do we express our existence in language? What must be the first statement from which, like the circle, all else must flow?

SOPEDANTES: Hmm. I don't think I know, Philodantes.

PHILODANTES: All language must begin with the statement "I am," which uniquely corresponds to the circle. "I am" is the only statement which is true by virtue of its expressing the action of rotation, which is self-reflection. It is only as the mind reflects upon itself as a species that the statement "I am" can have meaning. Unless there is the self-reflexive statement "I am," there can be no meaningful discourse.

SOPEDANTES: But Philodantes, I see a problem here. You surely must know that there are languages, like the Arabic, the Hebrew, and even the Russian, which do not have the verb "to be" in that present form. Certainly there are others. What can you say to that?

PHILODANTES: Consider, my friend, the following. If someone were to approach you with a desire to expound on the character of human speech, you would certainly first ask this newcomer who he is. If he cannot say that he is, I would advise you to lend him your ear no longer. As for Russian, Sopedantes, your observation sheds new light on a curious feature of that beleaguered people's life, whereby individuals who disappear from public view are hastily classified as "non-persons." As for the Arabs and the Hebrews, I am sure they once possessed a robust verb of being, but have sacrificed it in the course of the austere measures they have been subjected to. That notwithstanding, Sopedantes, were there even no language still alive with a verb of being, still the statement "I am" must provide the starting point.

SOPEDANTES: "To be, or not to be?"

PHILODANTES: That is, indeed, the simple question. Now, if "I am" uniquely expresses the action of human existence as it has emerged through the negentropic development of the universe, then "I am" is not merely self-evident.

SOPEDANTES: Wait a minute, Philodantes, you have just said that it was. I am totally confused.

PHILODANTES: So you are, Sopedantes, but you will not be for long. "I am" is self-evident, as the circle is, but, like the circle, it is the result of coming-into-being. "I am" really means "I am, in that I have brought that, which I could become, into being." "I am" is the result of conscious, deliberate action.

SOPEDANTES: But what action? If you were not, then you could not have performed any action.

PHILODANTES: Let us think through this question carefully, without losing ourselves. If "I am" results from deliberate, self-reflexive action, then does that not mean that there must have existed in the universe the potential for that action?

SOPEDANTES: That seems reasonable.

PHILODANTES: Then the idea of the circle must have existed before the circle.

SOPEDANTES: True.

PHILODANTES: And the conscious self-reflexive action, which is the action of rotation, must have been such as to causally transform that potential into actuality. Do you remember that the Creator

Not increase of His own good to proclaim
(Which is not possible), but that His own
Splendour might in resplendence say "I am";
In His eternity, where time is none,
Nor aught of limitation else, He chose
That in new loves the eternal Love be shown?
Dante Alighieri
Divine Comedy: Paradise XXIX

SOPEDANTES: Yes, I remember.

PHILODANTES: The Creator, reflecting on Himself, chose to transform the potential for existence into being. Thus, in the void, He drew the great circle with His compass, bringing into being "I am." Thus He appeared to Moses and said His name, "I am that I am."

SOPEDANTES: I am beginning to understand.

PHILODANTES: And it is lawful that you are, Sopedantes, for as you see, everything must have its beginning. But let us proceed. Now we can identify in this process of coming-into-being three distinct, necessary phases, as: potential, willful action, and

existence or being. These phases determine the three, and only three, fundamental moods in all language. Surely, your deep immersion into classical philology has taught you what the moods are.

SOPEDANTES: Oh, yes, of course, all scholars agree that there are different moods; however, those of the authorities whom I have consulted have ascertained many more than you appear to claim.

PHILODANTES: Would you agree, Sopedantes, that there are five and only five regular solids in visual space?

SOPEDANTES: Yes, of course; I have read Plato, you know.

PHILODANTES: And that the faces of each of the solids can be reduced to a combination of triangles, which the great Timaeus teaches us was the polygon that the Creator used to shape the universe?⁷

SOPEDANTES: Why, yes.

PHILODANTES: Then, for the same reasons, you will see, if you reflect upon it, that all the moods are but variations on the basic three, which express potential (which we call the subjunctive), willful action (the imperative), and being (the indicative). It is these three moods which allow us to express all transformational action, or coming-into-being, through time. Although, as Timaeus teaches, the eternal "being" is not susceptible of change or transformation, yet the ephemeral, with which we mortals are sometimes forced to deal in pushing the universe forward, does indeed require a temporal metric. That is time, the "eternal moving image of the one and unmoving eternity, the image which moves according to a metric." Do you remember how Timaeus spoke of this metric?

SOPEDANTES: Well, I am sure that I have it here in my notes somewhere. Yes, here it is. Yes, yes, this must be it. Timaeus said, "All these parts of time, the 'was' and 'will be,' are artificial kinds of time which we, incorrectly, mistake for the eternal substance. For we say that 'it was,' 'it is,' and 'it will be,' when only 'is' represents the precise term when referring to eternity. On the contrary, 'was' and 'will be' should only be used with respect to the notion of becoming which takes place within time, because these are movements, while the eternally invariant, which remains unchanging and unmoving, cannot become either older or younger throughout the course of time, nor did it ever become so, nor is it ever becoming so now, and neither will it be so in the future, given that absolutely nothing which the act of becoming bestows to the changing realm of the senses belongs to eternity, since these are the forms of time which imitate eternity and revolve according to a metric." But, Philodantes, where does this metric come from, if you said that all must come from something, or be created?

PHILODANTES: It comes, Sopedantes, as all things do, from rotation. Just as the circle, rotated on its axis, generates the line, thus generating the metric of one-half, and a further rotation generates the point, and the metric of one-quarter, so the eternal "I am," reflecting on itself as we have seen, defines the image of a metric of time, which we call tenses. Tenses are the temporal metric we use to express the process of sameness and otherness (or becoming) of the One.

SOPEDANTES: Oh, Philodantes, you are messing things all up again, and counting apples with pears. Every competent linguist knows that moods, which you say express the phases of transformation, are quite distinct from tenses, which express the time in which actions take place. In fact, you have a present indicative, but you also have a present subjunctive. You should be more careful, Philodantes, in keeping your categories straight.

PHILODANTES: Let us put it to the test, Sopedantes, and examine the ways in which action transforms potential into actuality. Then you can see how man has shaped the tool of language to express it. We begin with the primary action of the universe, rotation. As you can see from the spiral, that rotation may be continuing, as it climbs ever upwards and around; or, it can be seen as completed, as each great rotation, coming back to itself, completes a cycle.

SOPEDANTES: That's true.

PHILODANTES: And is this not the same as the distinction we make in verbal action between aspect and modality?

SOPEDANTES: How so?

PHILODANTES: Verbal action, in our most ancient tongues, may be momentary and comprehensive, as when the circle is closed; or it may be iterative or continued, as when the spiral climbs. As far as aspect is concerned, it may be perfective (which means it is seen in its totality) or it may be imperfective (or seen in the process of its unfolding).

SOPEDANTES: Yes, but that is what I was saying. There is the present perfect indicative tense, the imperfect indicative, the pluperfect . . .

PHILODANTES: Perfection, my friend, is not a thing, but a process. Let us see. Our ancient languages show us that to form the verbal form when the action is momentary and perfective, we use the aorist theme or stem. That is how they did it. But if the action is continued or iterative, then we must keep using the present theme. It is these two themes or stems together which we use to express the indicative and imperative. In order to express the subjunctive, we must modify this "temporal" stem and create what we can call a "modal" theme. So you see, Sopedantes, that what

you call the "present" and "past" (or "aorist") are not *a priori* categories which you stamp on verbal roots; they themselves come into being as differentiations of the way in which action takes place.

SOPEDANTES: I think you had better show me how this works on the cone, if you can, that is.

PHILODANTES: Not only can I, Sopedantes, but I will. [See Diagram 6] See the spiral as it winds up the cone,

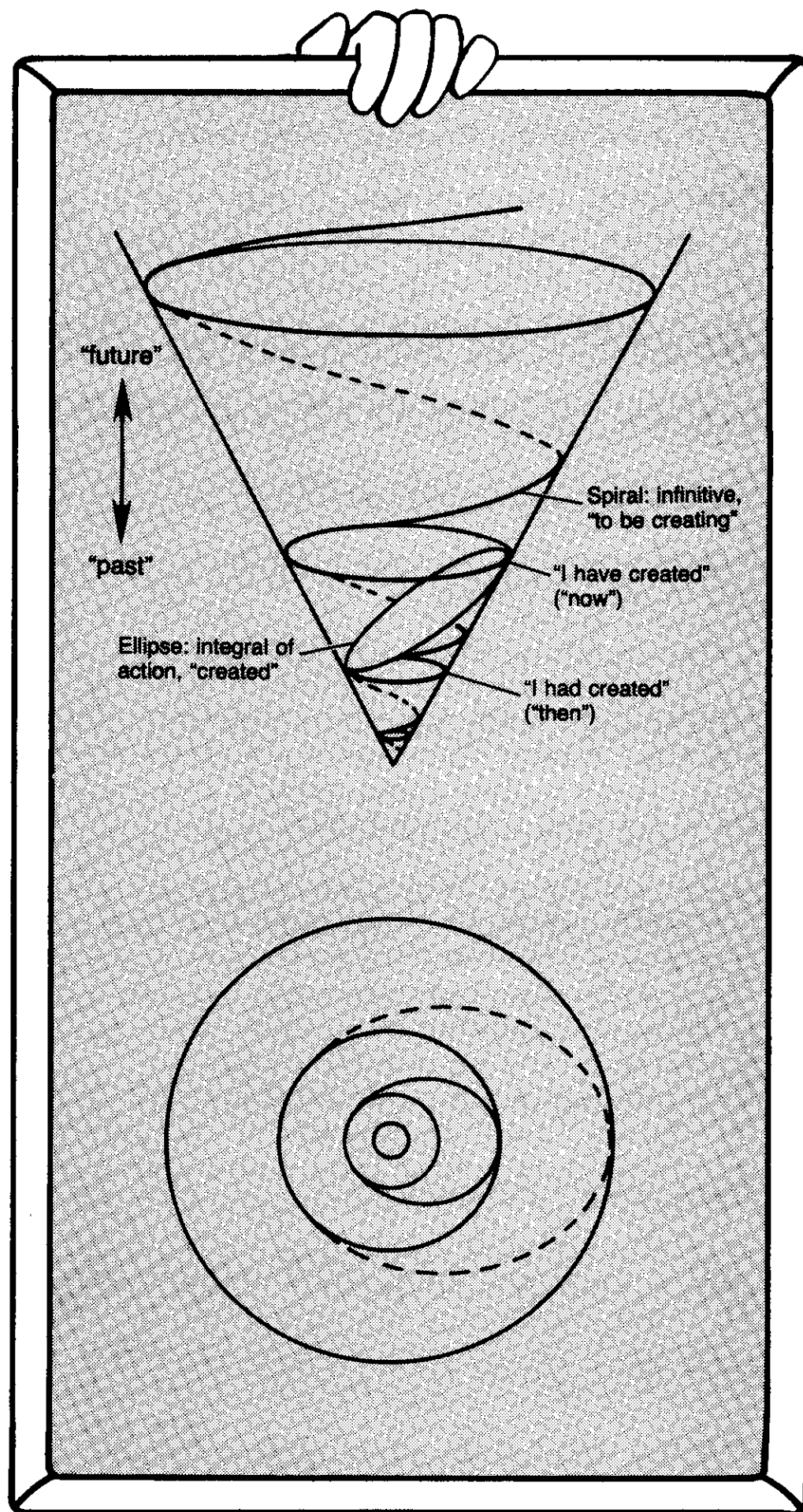


Diagram 6. Verbal Action

The process of creating, represented by rotation up the spiral, creates a succession of circles, each of which is a "now." Projected onto the base of the cone, the concentric circles are past "events" seen from any point "now."

expanding its radius as it moves? Let us call that infinite, self-expanding process the infinitive of "creating." Now, as I complete one cycle of the spiral, I create a circle, right "now." As I shall continue upwards and around, I shall create another circle; there, I have done it, again, "now." Look at the ellipse connecting the two successive circles; that is the "created." No matter how far I continue on my journey upwards, continuing to create, I can always look back, like the poet Dante on his ascent to the heavens, to see the succession of concentric circles reflecting my past, completed actions, as eternally contained in the present, having given rise to the present. Thus "I am" in that I have brought that, which I could become, into being.

SOPEDANTES: Then, is that the reason why the Creator appeared to Moses as "I am that I am"?

PHILODANTES: Yes, my clever young scholar. And now you can appreciate the significance of what the Creator really said to Moses, which your scholarly translations have not allowed you to know. What he really said in Hebrew was: "I shall be that I shall be." For only that way could He fully communicate that His being in the "now" contains within it the undying potential to become in the infinite future.

SOPEDANTES: Well, I'll be a monkey's uncle!

PHILODANTES: I sincerely hope not, my friend, nor even its nephew!

SOPEDANTES: Take me not wrong, Philodantes, I was merely using a *mot juste* to show you how full of awe I am at the marvelous workings of our language. Yet there is still something more, I think, that must be clarified.

PHILODANTES: *Id est?**

SOPEDANTES: It is this: although I understand why you had to begin, in the beginning, as you say, with being, which in turn, turned out to have been created, yet I cannot think that being and creating are all there is in this universe. Surely, we speak about many more

*"I.e.?" (Latin)

"Oh, if I knew what that Urwort were, I would surely know the key to language..."

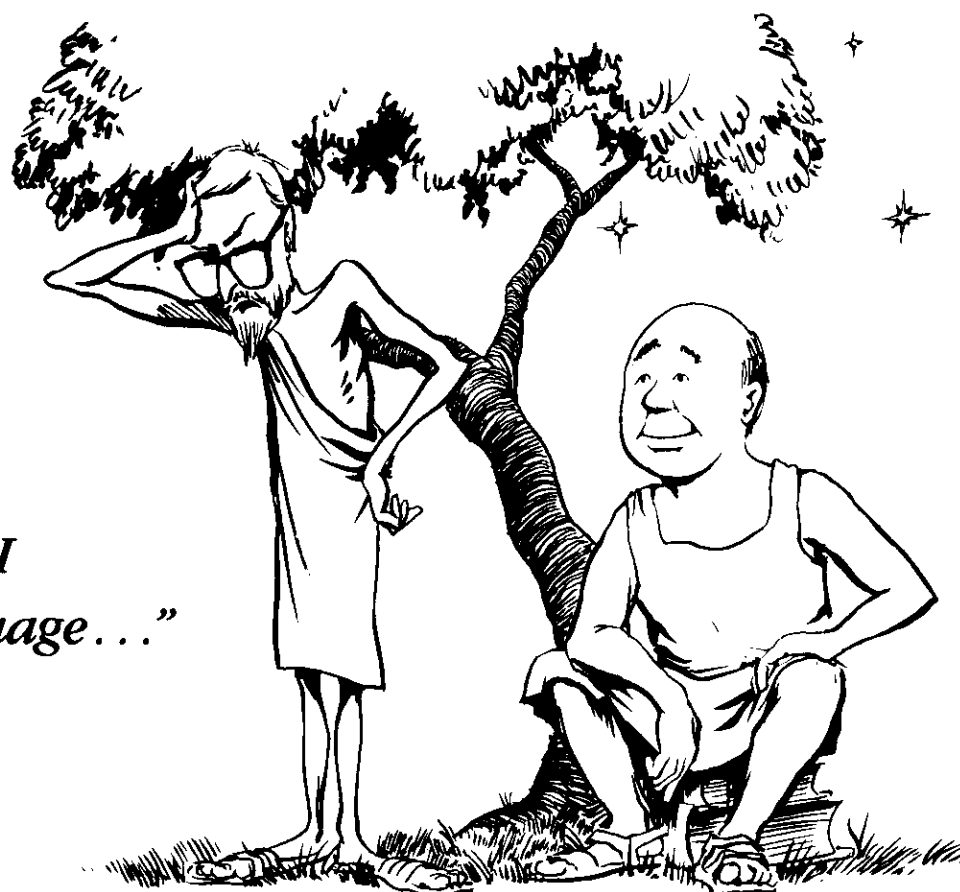
things, and we do indeed perform manifold actions in the universe.

PHILODANTES: Think, always, from the standpoint of the Creator, that is, from the standpoint of the universe as a whole. Clearly, all action "in" the universe is in reality action that the universe exerts upon itself, through which it, always identical with itself, becomes other than itself, moving itself to a higher, more ordered stage of existence. This means that all verbal action is essentially reflexive, as it is the universe acting on itself. Yet, as the universe's action on itself creates discrete, individual existence, in the form of singularities, the universe's action is reflected in the form of action through and on singularities. Therefore, we do indeed perform multiple actions, but they are all merely differentiated forms of the primary action of creating, specifically, of the universe's primary action of creating existence or being.

SOPEDANTES: Just so that I might be certain I have fully grasped your concept, Philodantes, would it be too much to ask that you illustrate, so to speak, precisely how the differentiation of verbal actions derives from the primary action of creating?

PHILODANTES: So be it, my audacious philologist. Let us plunge into the primary action of creating existence. From that flows all else.

SOPEDANTES: Then perhaps we shall finally come to answering my earlier question, which, if you recall, regarded the way in which words are actually formed. If I have understood you correctly so far, then, not only ontologically, so to speak, does everything derive from creating, but also down in the nitty-gritty of single words and roots, everything must come from



one primary root. Oh, if I knew what that *Urwort** were, I would surely know the key to language in general, would I not?

PHILODANTES: In a manner of speaking, yes, you would.

SOPEDANTES: But which is it then, “being” or “creating”?

PHILODANTES: You forget too soon, Sopedantes, that it is not I who hold the treasure which you so ardently seek. I can but search for the key which unlocks the great door to the chamber which guards that treasure, and thereby indicate for you the path which you must follow. Let us interrogate the ancients, those of our wise forefathers who shaped the language whose secrets you long to uncover.

SOPEDANTES: Which language shall we suppose was that of our first fathers? I know the authorities differ widely on that issue.

PHILODANTES: We must take those languages on that branch of the tree of mankind, Sopedantes, whose limbs and leaves are still sturdy and brilliant, yet whose roots reach down into the depths of the past. We will take those languages of the Indo-European, more precisely called Indo-Germanic, branch, whose harmonious blends of sound we have already seen ordered according to the Creator’s laws of perfection.

SOPEDANTES: So be it. Please, speak, for I am all ears!

PHILODANTES: Then if we listen to the voice of our ancients speaking to us from the past, we hear them asserting their existence, saying, in Sanskrit *bhav-a-ti* where we say in German *ich bin*. The Lithuanians say *bu-ti* for being and the ancient Bulgarians say *by-ti* for the same. Thus their being all springs from the same root *bheu-ə*.

SOPEDANTES: Oh, then *bheu-ə* must be the *Urwort* I was seeking!

PHILODANTES: Do not let your tongue wag while your mind sleeps, my anxious friend, but let us continue to explore what *bheu-ə* holds for us. We know that being is not simple, but is created, do we not?

SOPEDANTES: Yes, true. Then is it not lawful that the root *bheu-ə*, planted in Greek soil, says “I generate” (*φύω; φύο*) and, by generating itself, then exclaims “I am born” (*φύο-μαι; φύο-μαι*)? The Latin states “I become” (*fit*) and proudly glances over to his future becoming, in his “son” (*filius*) named after the Italian

figlio. Is it not wonderful that the Albanians have a similar “son” (*bir*), while the Armenian, more concerned with his garden, bears a “fruit” and a “plant” (*boys, busoy*)?

SOPEDANTES: But, if I am not mistaken, although I am as a result of my forefathers’ *bheu-ə*, what of others, who *ist* and *sind*?* They seem not to recognize the paternity of this *bheu-ə*.

PHILODANTES: That is not the case, at all, my skeptical colleague. For what “is” in German, “is” (*as-ti*) also in Sanskrit, and “is” certainly (*εσ-τι; es-ti*) in Greek, if that may be permitted (*εσ-σεται; es-setai*)! In Albanian too, what “was” (*ishte*) certainly still “is” (*eshte*); and the Italians will insist that they “are” (*sono*) no less than any others. All these peoples planted their root of being (*es*) in what must have been the same land; because there, where the Indian “lives” (*vas-a-ti*) is where the Goth “was” (*was*). The very “being” (*wisen*) of the Goths came out of the same root (*ues*) as the Sanskrit! *Und da sind wir auch gewesen!*[†] When we “are,” then it must be that we stand in some place, as in Sanskrit, one “stands” (*ti-sth-a-ti*), in the place where one earlier “rose up” (*ud-a-tistha-t*). There the Greek shouts out “I place” myself here (*ι-στη-μι; i-ste-mi*), the Italians “are” (*stanno*) not far off, and the Goths also want to stand there. They all come from the same root place (*st(h)a*). *Das ist wesentlich der Stand. Verstehst du?*[‡]

SOPEDANTES: *Ja, selbstverständlich.* §

PHILODANTES: *Gut*. Now when the Indian “bears a child,” then there is a “son” (*su-ta-s, su-nu-s*), which looks very much like the Goth’s “son” (*su-nu-s*), and thus we see that all our sons spring from the same root *seu(ə)*!

SOPEDANTES: But how the devil are such words really born?

PHILODANTES: Now, I shall tell you, my aspiring little genius. The Sanskrit Indian who “generates” (*jan-a-ti*) becomes therefore a “parent” (*jan-i-tr*) because, like the Italian “parent” (*genitore*) he creates (*genera*) a family—which the Greeks call *γεν-ος* (*gen-os*) and the Latins, *genus*. This is no different from what the ancient Irishman “does” (*gniid*). The root of this wonderful

*German for “is” and “are.”

†“And we’ve been there, too.” (German) “Gewesen” = “been.”

‡“That is essentially where things stand. Do you understand?” (German)

§“Yes, of course” (literally: “Yes, that is self-understood”) (German)

*German: *Ur-wort* = “primordial-word.”

*“Dear Sopedantes,
look up to the heavens...”*

procreation, you can clearly see, is *gen-ə*. Now, in order to generate something, you have to know just what it is that you are doing. The Sanskrit Indian “knows” (*ja-na-ti*) as much as the Italian “knows” (*conosce*) and the Goths “know” (*kunnan*) something as well. The Latins’ claim “I know” (*co-gno-sco*, from the root *gno*) places him in this same gathering of scholars, which is only right, since he is able to “think” (*tong-e-re*) just as well as the Goth can (*thagk-jan*). And if you just think about it a bit, I am sure you can understand it too!

SOPEDANTES: Yes, I think I am beginning to understand. But I confess I have not understood fully yet. Tell me, just *what* does one know, in order to create?

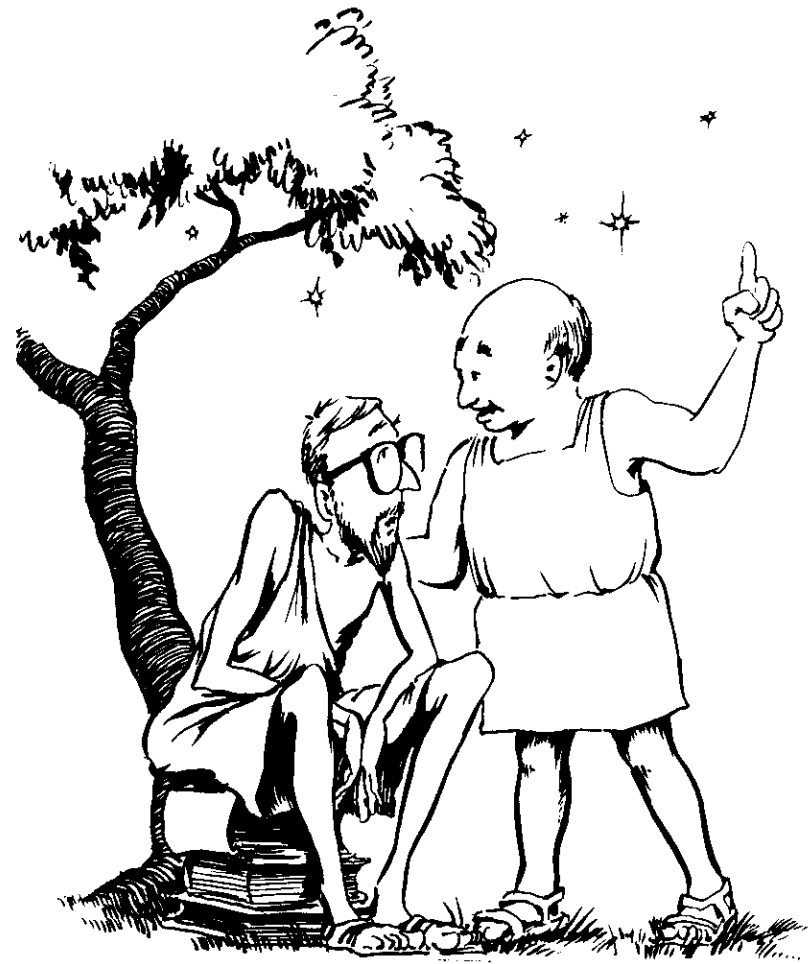
PHILODANTES: Like the Creator, one must know oneself. The ancient Indian Sanskrit “knows” (*vet-ti*) what the Latins and Goths “know” (*video; wait*): that to generate knowledge one must “turn to oneself” (*vert-a-te*); then, and only then, one “is” (*vert-a-te*). A Latin will also say “I turn” (*verto*), if he is able (*ver-sutus*). And the Greek, if he “knows how to rotate” himself, (*πολυτροπος; polutropos*) will prove that he too is made of the same stuff. Thus, Sopedantes, it is what we know that determines what we shall become.

SOPEDANTES: Philodantes, I think you are playing games with me. This is nothing but just a lot of jokes.

PHILODANTES: Not at all, my poor humorless friend. This is true knowledge, or, as the English would say, it is “wit.” Now all this, which revolves around the root form *uert*, touches on the roots *ordh* and *rodh*, which the ancient Bulgarians use to “generate” (*rod-i-ti*) and the Armenians, to bear a “son” (*ord-i*).

SOPEDANTES: Stop, stop, oh please stop, Philodantes! My head is spinning like a top! Can you not simply tell me where it all begins?

PHILODANTES: It begins, as I have already told you, in the beginning, with the Word, which the Creator spoke. First, however, He had to choose to do so. As the Sanskrit scholars know, it is out of His goodness, that the Creator “desires” (*vr-no-ti*) to create. The God of the Goths also “chooses” (*wil-jau*) to act in accordance with the same root desire (*uel*). When He trans-



forms His desire into a command, He says, according to the ancient Bulgarians, “I order” (*vel-ja*), thus exercising the freedom of His supreme will (*vol-ja*). Then God spake and the word became flesh. “I command,” He said (Sanskrit, *vr-a-ta-m*), and that root (*uer*) gave the “word” (*ver-b-um*) to the Latins, and, to the Germans, theirs (Gothic, *waur-d*). It was the Italians, the most poetical of peoples, who understood that the “Word” (*verbo*) was the flesh of the Almighty’s Son Christ (*Verbo*). That, Sopedantes, is the most important of all verbs.

SOPEDANTES: Oh, Philodantes?

PHILODANTES: Yes, what do you say?

SOPEDANTES: I am truly awed at the magnificent birth of the Word. Yet still I long to know the answer to the fundamental question which you do not seem to want to answer.

PHILODANTES: To every question, Sopedantes, must there needs be an answer?

SOPEDANTES: Then tell me, in conclusion to your teaching, what is the *Urwort* of all this, your teaching.

PHILODANTES: Dear Sopedantes, look up to the heavens.

SOPEDANTES: Yes?

PHILODANTES: Do you see an *Urstern** in the skies?

**Ur-stern* = “Primordial-star.” (German)

SOPEDANTES: No, I see many stars. . . .

PHILODANTES: Then why seek an *Urwort* to all language?

SOPEDANTES: That's a good question.

PHILODANTES: Let us put the same question another way: are you, Sopedantes, a son?

SOPEDANTES: Yes, indeed.

PHILODANTES: Then you must be the son of your father.

SOPEDANTES: So I have always believed.

PHILODANTES: And are your brothers and sisters not also sons and daughters of the same father and mother?

SOPEDANTES: That, too, has been my conviction.

PHILODANTES: And when the Creator created the heavens, did He only place there a Sun?

SOPEDANTES: No. . . .

PHILODANTES: Nor could He have done such an act, for His goodness would not have allowed it. The Sun which he placed in the heavens, was, like the Son whom He gave to mankind, the center of universal motion, around which a solar system would move and revolve. And is that system the only one He gave us?

SOPEDANTES: No, not at all.

PHILODANTES: No, He placed it within a larger galaxy, and that galaxy moves with others akin to it, like

sisters and brothers with cousins. Thus, my brother, God's word lives not alone, as the *Urwort*-seekers vainly pretend, but revolves with its kin in the multitude, organized according to the heavens.

SOPEDANTES: You mean that words have their systems and galaxies?

PHILODANTES: Indeed, else they could not exist. Cast your gaze skywards, young Sopedantes, to the stars; there you shall find the answer to your deepest longings.

SOPEDANTES: At that point, Cratylus, our conversation ended.

CRATYLUS: Oh, Sopedantes, can it be so? Did the philosopher say nothing of the whys and the wherefores, of how these galaxies of root-words come into their being?

SOPEDANTES: Not directly.

CRATYLUS: And said he nothing of how the heavenly bodies of this our system of discourse, came to be that which it is now, instead of what else it might be?

SOPEDANTES: Not really.

CRATYLUS: I ask because what I have grasped of the concepts you've laid out before me, seems to lack but one crucial factor.

SOPEDANTES: What's that?

CRATYLUS: How the sibling roots, like *-gno-* and *-ng-* come to mean such different, yet, similar things. Did he say nothing of that crucial question?

"He sang such wondrous melodies, that only the angels comprehend..."



SOPEDANTES: That, dear Cratylus, is what I also sought. But in vain did I query the master. When I repeated again my insistent interrogations, he stood up, stretched his arms out wide as if in prayer, and directed his gaze towards the heavens, as night was coming upon us. "If you want to find the answers," he said, "look to the mind of the Creator displayed in the heavens. Lend your ear to the harmonies of the spheres as they wind their ways through the celestial harmonies. Hear the rhythms of the planets in motion, measure their courses with the times of revolutions. There you shall discover the principle of proportion which regulates the songs of the spheres. There you shall hear the alternate strains which man's speech echoes in its own song."

CRATYLUS: What meant he by that, do you think?

SOPEDANTES: I cannot tell, for no further did he explain. Except for saying that the great wheel of sound (by which I think he meant the spirals of consonants) moved along with the course of the spheres. "The sounds are as spheres in the heavens," he said, "and the vowels are what provides them with motion. First this way, and then that, now /o/ and now /e/, do they

modulate sweetly the chords, such that some may say 'pod,' others say 'ped,' and the meaning evolves through the process. It is like playing upon the harp," he said. "For you see that the chords are all there, numbered and finite. Yet, according to how you pluck them with your hand, with the rhythm and tempo of your touch, you shape melodies new and diverse. Thus it is with the sounds of man's tongue. And thus do human words take on meaning."

CRATYLUS: I find that hard to follow, Sopedantes. Did he not say more to unveil the mysteries of sound and meaning?

SOPEDANTES: Only this: When I pressed him to give concrete answers, he turned from me fully, and directed his gaze to the stars. Arms upward raised, he swayed from me, and broke into marvelous song. Oh, he sang, Cratylus, such wondrous melodies that only the angels comprehend.

CRATYLUS: In what language, I pray, were his songs?

SOPEDANTES: That I cannot know, my good Cratylus, at all. I only know they were not in that hideous tongue which the French persist in calling their own.

NOTES

1. Compare the ninth century French text with the following translation into modern Italian:

Buona fanciulla fu Eulalia:
 Bello aveva il corpo, più bella l'anima.
 Vollero vincerla i nemici di Dio,
 Vollero farla servire al diavolo.
 Ella non ascolta i cattivi consiglieri,
 Che rinneghi quel Dio che sta su in cielo,
 Nè per oro, nè per argento, nè per vesti preziose,
 Nè per minaccia regale, nè per preghiera:
 Nessuna cosa la poté mai piegare,
 Che la fanciulla sempre non amasse il servizio di
 Dio.
 E perciò fu condotta davanti a Massimiano,
 Che regnava in quei tempi sopra i pagani.
 Egli la esorta, di che a lei nulla cale,
 Ch'ella ripudii il nome cristiano.
 Ella afforza il suo animo:
 Piuttosto sopporterebbe le torture,
 Che perdere la sua verginità.
 Perciò morì molto onorevolmente.
 Dentro il fuoco la gettarono, sí che arda tosto:
 Ella non aveva peccati, perciò non bruciò.
 A ciò non si volle arrendere il re pagano:
 Con una spada comandò di mozzarle il capo.

La donzella a tal modo non s'oppse:
 Voleva lasciare il mondo, e ne prega Cristo.
 In forma di colomba volò al cielo.
 Preghiamo tutti che per noi si degni intercedere,
 Che di noi abbia Cristo misericordia
 Dopo la morte, e a lui ci lasci venire
 Per sua clemenza.

2. Dr. Jonathan Tennenbaum, "A Mathematics Curriculum for Creating Citizens," *Fusion*, Vol. 5, No. 7, March-April 1983. More recent work is summarized in "How Man Transforms the Laws of the Universe," *Fusion*, Vol. 6, No. 1, May-June 1984; and "Riemann and the Science of Life," *Fusion*, Vol. 6, No. 3, Sept.-Oct. 1984.
3. Plato, *Cratylus*.
4. Gottfried Wilhelm Leibniz, "Dialogue on the Connection Between Things and Words," in *Leibniz: Selections*, ed. by Philip Weiner. New York: Charles Scribners Sons, 1951.
5. Wilhelm von Humboldt, *Linguistic Variability and Intellectual Development*, trans. by George C. Buck and Frithjof A. Raven. Miami: University of Miami Press, 1971.
6. Lyndon H. LaRouche, Jr., *There Are No Limits to Growth*, New York: New Benjamin Franklin House, 1983; Lyndon H. LaRouche, Jr. *So, You Wish to Learn All About Economics?* New York: New Benjamin Franklin House, 1984.
7. Plato, *Timaeus*. The only authentic English-language translation is in *Campaigner*, Vol. 13, No. 1, Feb. 1980.

EVENTS



National Poetry Competition.

The founding conference of the Schiller Institute in July 1984, launched a number of programs to revive the practice of European classical culture, which reached its pinnacle almost two centuries ago in the works of Friedrich Schiller and Ludwig van Beethoven. The institute's National Poetry Competition seeks to revive the art of recitation, stimulating young people to comprehend and beautifully recite compositions of Schiller, Shakespeare, and other great poets. Top: Finalists in the age 5-9 group. Bottom: Schiller Institute Vice-President Marianna Wertz awards contest winner Karin Churchfield, 15, of Harrisburg, Pennsylvania. Winners in each age group received a one-week tour of West Germany.



Mozart's Requiem Performed. In its new home in Leesburg, Virginia, the Schiller Institute will become the international center of work on the axiomatic principles of great classical musical composition, as epitomized by the works of the late Mozart and of Beethoven. In early July, the Institute sponsored a week-long international orchestral and choral seminar-festival on Mozart's Requiem. Future festivals will strive for complete mastery-by-memory of the Requiem by every participating vocalist and instrumentalist.





Mexico: Vivaldi's Gloria. On August 24 in Mexico City, the joint Schiller Institute-Mexican Labor Party chorus teamed up with the Mexico City Chamber Orchestra for a performance of Antonio Vivaldi's Gloria, guest conducted by John Sigerson, President of the Schiller Institute in the United States. Among the audience at the concert was Maestro Juan Diego Tercero, 90, who had organized the first performance in Mexico of Bach's St. Matthew Passion in the 1950s.



Thailand: Lieder Program. Sophie Tanapura, pictured here with Jonathan Tennenbaum at a recital in Leesburg, Virginia, is leading the effort to introduce great classical music into Thailand, where (unlike in Japan) this music is quite unfamiliar. On August 15 she became the first native Thai to perform an all-German program of lieder, at the Goethe Institute in Bangkok. Tanapura is also assembling the Ibykus Chamber Group, the first amateur chamber orchestra in Thailand.

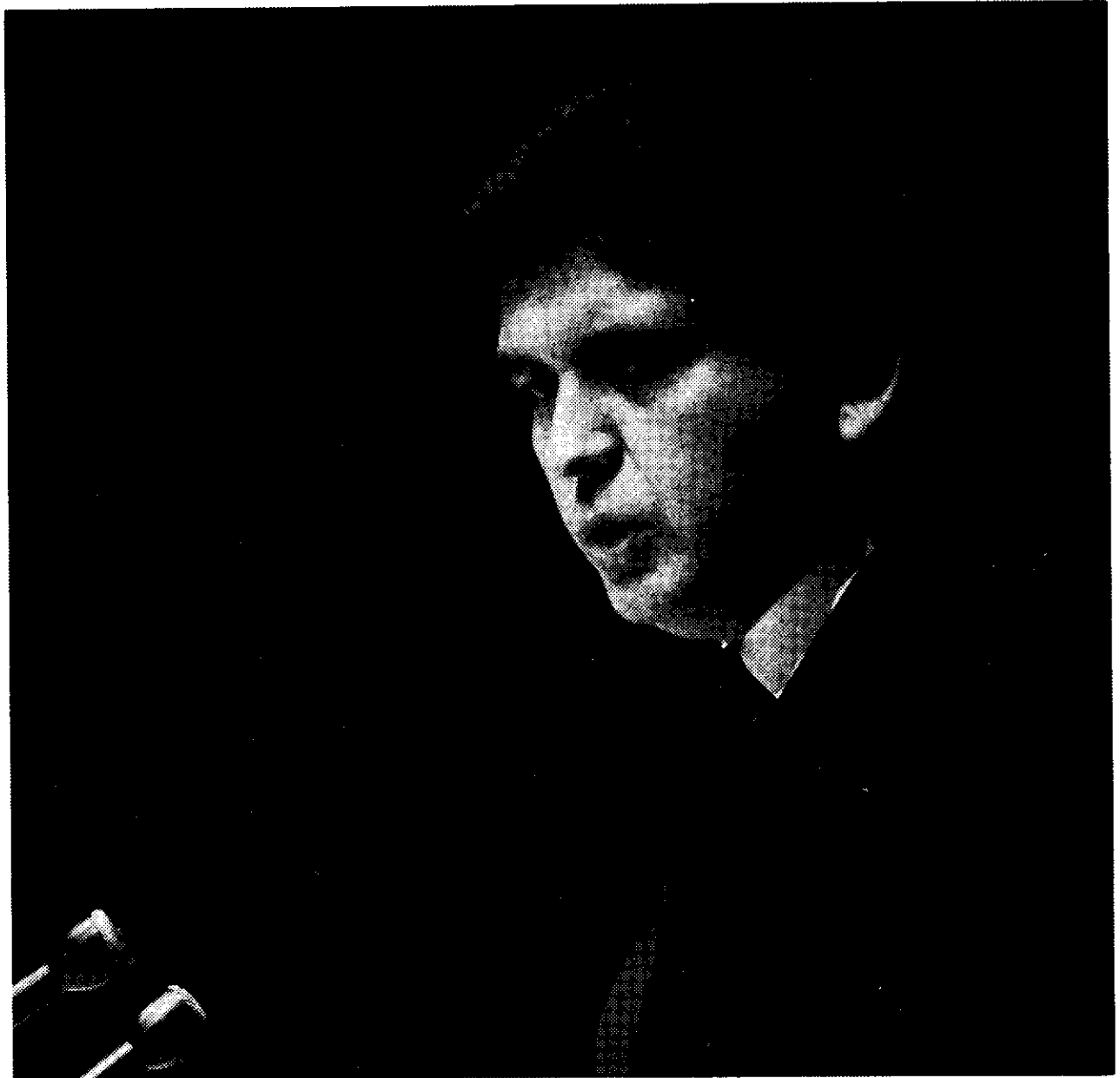
Peru Leads Ibero-America's War on Drugs

When Peruvian President Alan García took office on July 28, he announced that he would restore the sovereignty of his country by fighting the International Monetary Fund (IMF), the international drug mafia, and terrorism. He also enlisted the cooperation of Colombia, Mexico, and the U.S.A., to ensure the effectiveness of his war on drugs. Peru thus took the leadership of a continent-wide movement against the international drug mafia by implementing precisely the program proposed by Lyndon H. LaRouche at a Mexico City conference only months before.

On March 13, at an *Executive Intelligence Review*-sponsored conference on fighting the illegal drug traffic, LaRouche's "Proposed Strategic Operation Against the Western Hemisphere's Drug Traffic" was delivered to a gathering of qualified personnel from throughout Ibero-America. LaRouche declared:

"The greatest political threat to democracy in Venezuela, Colombia, Peru, and other countries, is the use of the billions of revenues held by the drug-traffickers to fund terrorist armies, and to bring corrupted military officers into right-wing coup plots. . . . It is impossible to break the ominously increasing political power of the drug-traffickers in Mexico, Colombia, Venezuela, and other countries, without capturing the billions of dollars of drug-revenues run through corrupt banking institutions.

"Without help of closer cooperation between the United States, Mexico, Colombia, Venezuela, and other nations of this Hemisphere, neither the United States nor any of the other republics could defeat the monstrously powerful complex of criminal, financial, and political forces who are behind the international drug-traffic. The purpose of my remarks . . . is to outline to you a proposed war-plan, for cooperative action against the interna-



Peruvian President Alan García: taking the lead in a continent-wide offensive against Dope, Inc.

tional drug-traffickers, by the governments of this Hemisphere committed to that action."

That war-plan included military-style crackdowns on drug-traffic corrupted officials at all levels of government, to be classed as "traitors" or "spies in time of war"; international "treaties of alliance for conduct of war"; military combat operations against drug-producing facilities; and regulation and dismantling of the drug mafia's financial instruments.

García began his war on drugs by first declaring the economic sovereignty of his country against the dictates of the IMF, by limiting debt payments to 10% of export earnings, and taking

other measures to ensure the inviolability of Peru's national currency, credit, and economic goals. Next, he waged strategic raids on the country's leading corrupt financial houses, the *Giron Ocona*, and ousted the drug-trade corrupted leadership of the Peruvian Investigative Police (PIP). He put the judiciary on notice they were next.

Shooting war

García then began his "shooting war" against Dope Inc., with internationally coordinated raids on the jungle dope labs and dope-and-terrorism redoubts protected by former Prime Minister Manuel Ulloa, former Interior Minister Pércovich, and former President

Belaúnde. On Aug. 13, a top-secret coordinated strike by Peruvian, Colombian, and U.S. DEA agents and military units shut down one of the world's largest known cocaine refining and trans-shipment complexes, Caballococha, on the Peru-Colombia border. Further raids followed in rapid succession against the gigantic jungle dope complexes. At the same time, García's government rushed through emergency legislation to allow the prosecution of Belaúnde government officials like IMF-Trilateral Commission darling and Henry Kissinger crony Manuel Ulloa, the former prime minister and the man chiefly responsible for the flourishing of the drug mafia, their Sendero Luminoso terrorist armies, and their drug-money laundering financial houses.

To win this war, Peru's President García and all of Ibero-America need international support, and the Schiller Institute has been organizing this support, on four continents, among all layers of the population. In contrast to the silence of the liberal media, the U.S. State Department, and most U.S. congressmen, the Schiller Institute has organized international press conferences, telegrams, and petitions of support for the government of Alan García, from West Germany's federal parliament, from trade union leaders throughout Ibero-America, from the Thai Trade Union Confederation, from members of India's Congress Party, and from religious leaders, public officials, and voters across the United States.

—Fay Rosinsky

Report highlights

- The 1976-79 buildup of narcoterrorism, where the Carter administration worked in conjunction with drug mafiosi Alfonso Lopez Michelsen and Robert Vesco, the Nazi International, and Cuban and Bulgarian networks, to transform the Caribbean region into a nest of narcoterrorism.

- The close intermeshing of the pro-terrorist "Marxist revolutionary" forces allied with Castro, and the gnostic "liberation theology" created jointly by the Society of Jesus and the Maryknoll, the Benedictines, and Sacred Heart orders.

- The rise of narcoterrorism in Guatemala from 1980 to the present, its theater of operations, logistics, and foreign components. Here we find profiles of leading agencies and groups, particularly religious institutions, both inside Guatemala and abroad, which form the support apparatus for the insurgency.

- "Anthropology as a Soviet Strategic Weapon of Warfare." Here "indigenism" and syncretic "Mayan" ideology are traced to the work of the French Nazi-Communist anthropologist Jacques Soustelle, and from there, back to Moscow's IMEMO and its Institute of Ethnography, which in turn works closely in the West with the Society for Endangered Peoples.

The report concludes with a review of measures required to eradicate narcoterrorism. Based on proposals drafted in March 1985 by Lyndon H. LaRouche, the plan involves treating the international drug traffickers as a *de facto* nation, and in accordance with this, declaring a state of open war against that nation. This plan has been under review by many governments, and its orientation recently implemented by the nation of Peru (see accompanying article).

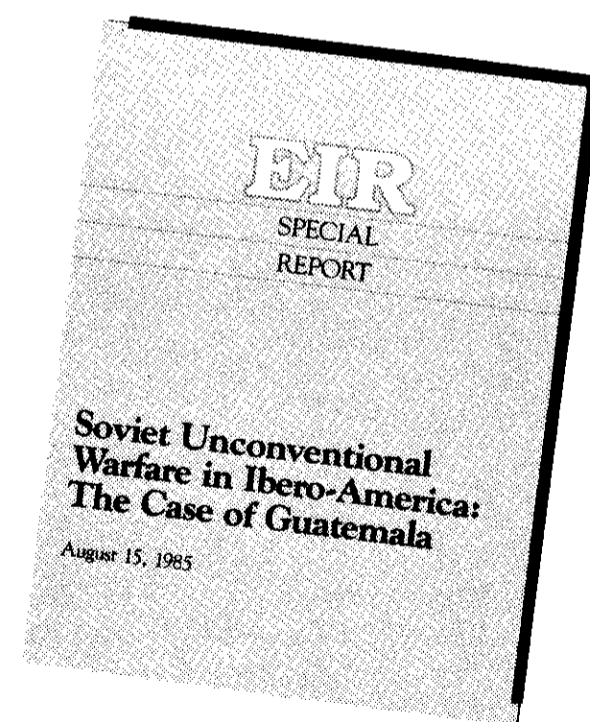
To make the material in this report more accessible for classroom and public presentation, the publishers have also made available a 30-minute videotape which includes interviews with leading Guatemalan officials, and a slide-show kit. For information, write EIR News Service, P.O. Box 17390, Washington, D.C. 20041-0390.

—Mary B. Goldstein

Soviet Narcoterrorism Role Exposed

A recently released Executive Intelligence Review special report, *Soviet Unconventional Warfare in Ibero-America: The Case of Guatemala*, was written as a war manual for defeating narcoterrorism, and is keyed to a strategic map of the insurgency. It situates the specific threat to Guatemala as part of the narcoterrorist threat to all of Ibero-America, and provides abundant information vital to carrying out a serious war on drugs.

Guatemalan officials are requesting urgent U.S. aid to prevent the consolidation of Guatemala as a new base of international drug mafia operations. Poppy cultivation has been introduced to Guatemala; marijuana plantations have expanded greatly, and hundreds of landing strips in the Pacific coastal plain serve as refueling stops for small planes on their way from South America to the U.S. The marriage of the drug mafia with Guatemala's terrorists, carrying out scorched-earth policies as brutal as Peru's terrorist Sendero Luminoso, has produced an insurgency which, equipped with the modern equipment drug-dollars can buy, is



increasingly better-armed than the Guatemalan military.

Yet the U.S. State Department and Congress still maintain the military embargo begun by the Carter administration against Guatemala. The danger is ignored, or unknown. This special report was designed to remedy this U.S. intelligence failure, in time to mobilize the resources required to defeat the threat.



The Connection of Cults to Child Abuse

Over the past two years, probably the most terrifying personal concern in the lives of ordinary parents—particularly those with young children—has come to be the fear that their children could become victims of the drug-cult rings involved in the kidnapping and pedophile sexual abuse of children, such as the well-publicized, and still functioning, Boston and New York-based North American Man/Boy Love Association (NAMBLA). Parents rightly fear that their children could even wind

up as victims of serial mass murder, at the hands of human sacrifice cults that operate within the several-million strong satanic-witchcraft or “Neo-Pagan Movement” in this country, a cult movement created out of the counter-culture project.

Dossiers and photos of the estimated tens of thousands of missing children are now being widely circulated, as every parent knows from the sad pictures of missing little children printed on that day’s milk carton. As far as it



Left: WICCA (Neo-Pagan) priestess performs cult ritual. Above: Missing children, on milk cartons and shopping bags.

goes, that is good, since it lays the basis for a much-needed assault on the broad, engineered “trend” into cultural deviancy, and the associated drug-connected entities that perpetrate these crimes.

But the sheer scale of the crisis tells the real story of what has happened to us, ever since this country began to culturally acquiesce to satanic (dionysian) “popular norms” of drugs, rock music, and music videos, “entertainment” that increasingly portrays and advocates murder, violence, and even cannibalism, as “Saturday night fare.”

The best estimate is that 400,000 children per year are victimized by these categories of child-abuse crimes. This should be compared to a total of 63 million children under age 19 in the U.S. at present, and slightly over 3 million live births per year. Taking into account the cultural shock effects on parents and other family members, this is nothing short of demographic suicide.

• As many as 50,000 small children are kidnapped, sold, traded, and used by “white slavery” child-sex rings such as the infamous North American Man/Boy Love Association (NAMBLA).

- 180,000 teenage runaways are drawn into “Times Square” type drug-dealing cliques, and thence into prostitution and pornography. While a portion of these are then grabbed by the child-sex rings, all are to be counted to varying degrees victims of permanent psychological, and/or physical impairment. According to psychiatrists, small children used as sexual slaves characteristically develop multiple-personality forms of psychosis.

- 180,000 teenage runaways who return home or go into foster care, report exploitation in the “underground economy” trafficking in drugs, pornography, and prostitution using children.

New documentation

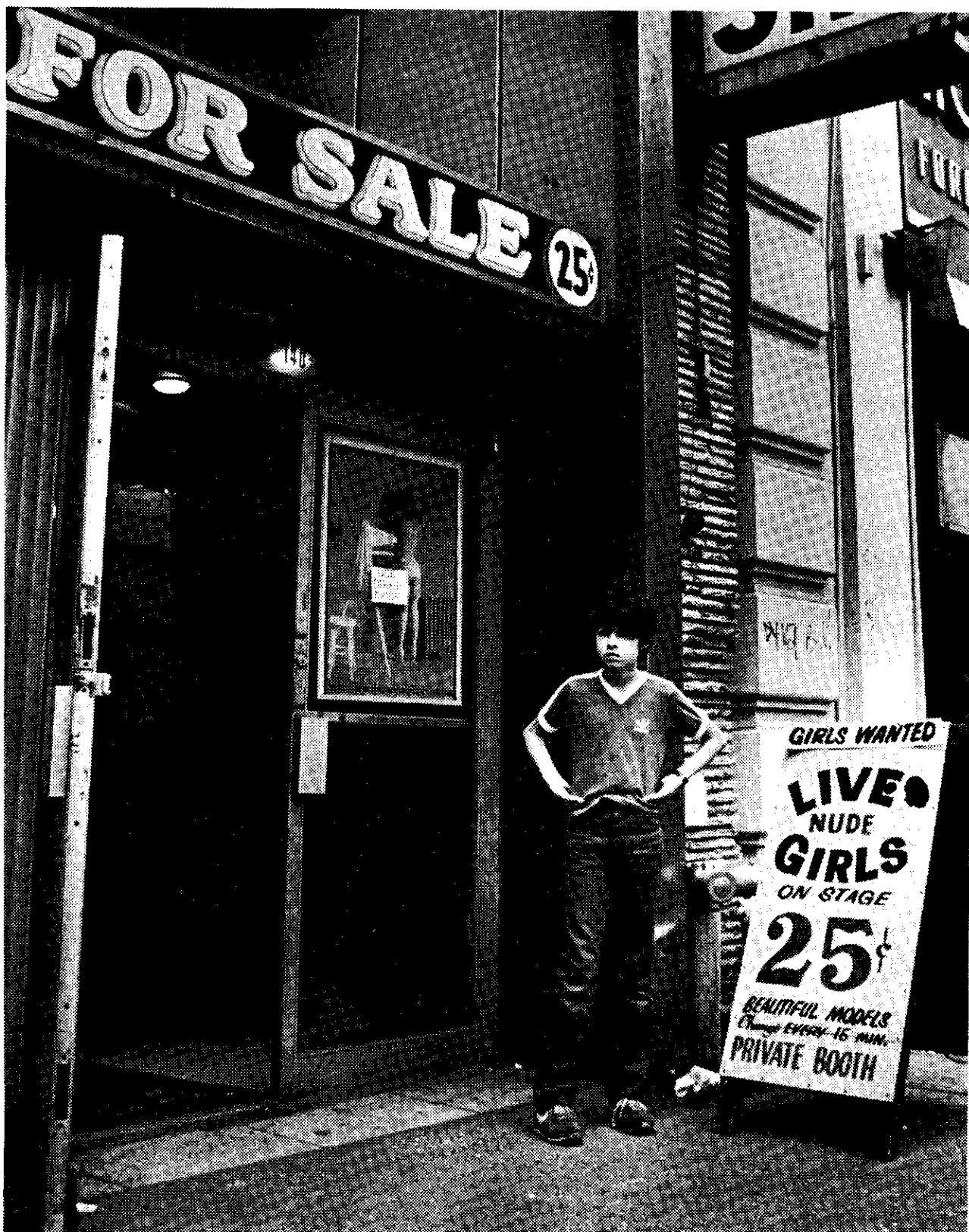
Two years ago, this writer intervened in the national effort involving Senators Arlen Specter of Pennsylvania and Paula Hawkins of Florida, the Florida-based Adam Walsh Center, and a growing faction of local and federal law enforcement, that was tackling the epidemic of child abuse in the U.S. and abroad. Congress had just passed the first of several Missing Children Laws, beginning to provide some muscle to deal with this epidemic: forcing a reluctant FBI to at least compile national statistics on missing children, as well as beginning to talk about cracking down on child-sex oriented pornography and satanic-violence oriented rock, which function as a “forcing environment” for proliferation of child abuse, as well as other forms of sexual violence.

In December 1983, I compiled an assessment for *Executive Intelligence Review* of the most virulent forms of child abuse, profiling the categories of crimes including “non-parental” child-kidnapping and sexual bondage, sexual exploitation of runaway children, child prostitution and child pornography. It was found that functionally, these crimes are linked through overlap with drugs and cults, activities which interface the pornography industry.

The above estimates of the magnitude of the problem come, in part, from a recently released report of the Child and Family Protection Institute, based in Washington, D.C. and headed by Patrick F. Fagan, which converges on the charges I made in 1983. Entitled *Pornography and Its Effects on Family,*

Community, and Culture, the massively documented study by David Alexander Scott, takes aim at both the child-abuse crisis, and the culturally aberrant “counterculture” which breeds it.

The study correctly locates the origin of the crises of pornography and related crimes, in the insane policies of the Presidential Commission on Obscenity and Pornography, established in 1970 under President Johnson, which laid the basis for the subsequent spread of sexual perversion and the rock-drug counterculture. The commission’s report claimed that pornography had no effect on promoting sexual crimes and related violence, arguing that such ma-



Contrary to the soft-porn gossip weekly People Magazine—which ran a recent cover story on “sex, violence, and devil-worship in lyrics and videos”—pornography, child abuse, and satanic cults are a well-organized, politically protected network run by the controllers of the international drug trade.

WAR ON DRUGS

terials are "ethically neutral" and "psychologically cathartic."

Among the findings of the Scott study, is the obvious role of rock music (particularly satanic-oriented rock), video rock cassettes, and related material in mass media, in promoting sexual-oriented violence against children and adults.

The study reports that in addition to the 10% of the country's 1.8 million runaways who are found drawn into pornography, child prostitution, drug and similar channels; and another 10% who return, reporting they had been exploited by the "underground economy" that trades children in these activities; there is a standing body of a half million of these "fadeaway" runaways, who are permanently drawn into this "economy" as prostitutes. This "free enterprise economy," the report states, operates through "a quiet but active white-slavery trade in youngsters across the United States, a trade confirmed by law enforcement officials nationwide."

Satanic cults

Alluding to the role of cults and pedophile organizations, the report continues, this "trade in children involves a loose network of compulsive sexual victimizers and sadists looking for dependency and cruelty relationships . . . who operate a shelter system that pays tragic homage to free enterprise."

The intimate links between child prostitution and pornography, drugs and cults, has been clearly established from investigations of the three most celebrated mass murders of the period of the Carter Presidency: the "Son of Sam" case, the Atlanta child murders, and the Jonestown People's Temple cases.

Independent investigations conducted with other journalists, proved that David Berkowitz and Wayne Williams, respectively, were involved in satanic cults with 20 to 40 members each, that had developed out of drug-running cliques. In the case of Berkowitz, his court-admissible testimony stated that the cult responsible for those serial murders committed the murders in connection with so-called "Black Mass," satanic-witchcraft human sacrifice rituals. These rituals, he admitted, had been based on writings of Aleister Crowley and satanic organizations established in this country by him.

In Atlanta, Roy Innis, national Chairman of the Congress of Racial Equality (CORE) produced as early as 1981 a credible witness to a cult that perpetrated the killings, a cult that developed out of a Miami-to-Atlanta drug ring.

In a related way, Jim Jones's People's Temple had routinely physically and sexually brutalized its children for years, long before Jones's flight to Guyana

and the murder there of over 300 children, in 1978. In Guayana, his cult ran a drug plantation. At that time, Jones was conniving with the Communist Party apparatus in California as well as with KGB officials in the Soviet embassy in Guyana, to relocate his cult-drug plantation to the Black Sea!

Murder factory

Another case in point is the most publicized recent serial-murder case in the U.S., involving two ex-Marine survivalists, Leonard Lake and Charles Chitat Ng, who ran a mountain cabin murder factory in Wilseyville, California, in Calaveras County, 125 miles northeast of San Francisco. Leonard was captured in June by Calaveras County sheriffs, only to commit suicide with a cyanide pill, while Ng escaped but was later recaptured in Calgary, Alberta in Canada.

The reason for Lake's suicide was soon discovered. To date, police searches near the mountain retreat have uncovered the bodies and charred remains of over 22 victims, along with porn video movies depicting both sex and murder of the victims (men and women) as well as other evidence. It was found that a number of Lake's and Ng's victims were teenage runaways cited as statistics above. Several had been lured to the cabin from a network inside the Haight-Ashbury Haven for Transients in San Francisco.

How widespread is this? Similar cases abound across the country. But even more startling, Lake was discovered to be the former employee of a man described in news accounts as a "magician," living south of San Francisco, Tim Zell. Zell is identified in news accounts as the man who recently foisted a Broadway musical on New York featuring a "live unicorn" and magic show. Zell is also the well known leader of the several-million member satanic-witchcraft movement in the U.S., which alternately goes by the names WICCA, and Neo-Pagan Movement. Zell's pictures and personal story can be found in the pages of a book entitled *Drawing Down the Moon* (Beacon Press) by self-avowed witchcraft leader, Margot Adler, a former member of the steering committee of WICCA, a Minneapolis-based coven called "Covenant of the Goddess."

—Ira Liebowitz



Tim Zell (wearing headdress) and wife Morning Glory perform a pagan marriage ceremony. Zell was the employer of California mass-murderer Leonard Lake.

Robert Moss's Alliance With the Red Army

Moscow Rules

by Robert Moss

Pocket Books, New York, 1985

A military coup d'etat shakes Moscow and the world. The Communist Party is dissolved, and so is the Soviet Union, replaced by the Union of People's Republics. The coup leaders are a group of young Soviet army generals, mostly drawn from the *spetsnaz*, the elite killers of the Red Army, whose wartime job includes, in particular, the extermination of enemy leaders, operating under the GRU, Soviet military intelligence. Having pulled off their coup, they immediately make peace with Western nations.

That, at any rate, is what happens in the latest novel by British "anti-Soviet" intelligence expert Robert Moss, whose previous book, *The Spike*, published in 1979, was co-authored by then *Newsweek* correspondent Arnaud de Borchgrave, who has since become the editor-in-chief of the Moon sect's newspaper, the *Washington Times*. *The Spike* had highlighted Soviet manipulation of Western media, and some workings of disinformation. Moss's other solo authoring job, *Death Beam*, had drawn some attention to Soviet development of beam weapons.

I was always a bit suspicious of Robert Moss. Now, my suspicions are confirmed.

For example, if one finds the "anti-Communism" pushed by the Moon sect's various front operations and their collaborators a bit strange, as evidenced in the August Geneva conference of the Professors World Peace Academy calling for support for a Red Army dictatorship in Moscow—as a "nationalist, anti-Communist" proposition—read Mr. Moss's book. This lays out a form of the scenario the Moon sect is pushing—and it is, of course, pure KGB disinformation.



Robert Moss: like the Moon sect, an avid supporter of the Russian military.

Spetsnaz hero

First, Mr. Moss spares no amount of gushing sentimentality to make the Western reader empathize with his hero, *spetsnaz* Major-General Sasha Preobrazhensky, a true son of Mother Russia, tempted by God, whose heroic officer of a father had been murdered in 1945 by a secret police thug while he was trying to save a German woman from being raped by other secret police thugs.

If that isn't enough to establish our hero's moral credibility, Sasha—lest the reader have gotten the notion that the Russian officer corps' leadership is violently anti-Semitic—falls in love with a Jewish girl, and her suicide in the Gulag only strengthens Sasha's resolve to smash Communism.

Just to make sure, Mr. Moss pushes

his hero into the arms of another Jewish lady, this time an American. Once Sasha Preobrazhensky's moral standing has thus been impeccably established, the author can credibly tell us how his poetry-loving, anti-Communist young man climbs like a meteor through the ranks of the Soviet military *nomenklatura*.

Helped by a KGB dissident (!), Sasha, who has married no less than the daughter of the Soviet Chief of General Staff Zotov—apparently a composite of Marshals Zhukov and Ogarkov—sets out to organize his anti-Communist coup. With childish fantasies, Mr. Moss orchestrates a *spetsnaz* raid on the Kremlin which captures the whole Politburo.

Sasha *et al.* are in power. Their first concern is to make peace with the United States, and let Eastern Europe secede from the Warsaw Pact, the Moslem Republics drift away, etc. (Why, what on earth else would a *spetsnaz* junta want to do?)

It's that simple. We in the West have only to support the brave new Russian generals, and their dictatorship will deliver us from the "Communist" threat.

Rooting for Sasha

Back in the rooms of the Disinformation Department at the GRU (and their neighbors at the KGB), the collaborators of Marshal Ogarkov are rubbing their hands. The celebrated "Western intelligence expert" known for his militant anti-Communism, regularly displayed in Moss's "The Intelligence War" column of the London *Daily Telegraph*, advocates Western cooperation with and support of the nationalist, Russian military, against the naughty Communist Party bureaucrats. The readers all root for Sasha, and are emotionally gripped by his tragic fate and his ultimate triumph. In this book, the Soviet threat has been done away with—and more, by the very people who now pose that threat, Ogarkov's Red Army command.

The reader will by now have noticed that what Moss presents as fiction, is exactly what Moonie conference organizer Alexander Shtromas presented as incisive political analysis of future Soviet developments. In the context of the Moon sect's Geneva conference, Mr. Moss's fictional account is more

revealing than reams of academic paper by Kremlinologists.

While Marshal Ogarkov is preparing a Soviet first strike against the West, there is a current in Western intelligence and political circles that advocates collaboration with the enemy. To strengthen their proposition, they introduce false distinctions—between “Russian nationalism” and “Soviet communism,” and similar wild, infantile fantasies to be used to brainwash the Western public and government leaderships to the effect that the deadliest enemy our civilization has ever known, the “Third Rome” military junta behind the heirs of Andropov in Moscow, are actually our best friends.

If anyone had questions about who Mr. Moss really works for, this miserable pretense of a novel will tell them.

—Laurent Murawiec

The Nation-State Against The Empire

Richelieu and Olivares

by J.H. Elliott

Cambridge University Press, 1984
(Cambridge Studies in Early Modern History)

The 17th century saw a great struggle between the Hapsburg dynasty and the revived French state. The future of Europe was at stake: Either Europe would be based on the nation-state, or it would be dominated by imperial dynasties. This struggle pitted France, under the guidance of Cardinal Richelieu, against Spain, directed by the Count-Duke Olivares.

Richelieu was the great Cardinal and first minister of France under Louis XIII. The Count-Duke, the most gifted secular statesman that Spain had produced in the 17th century, occupied the same position under Philip IV.

This short study by the leading academic historian of Hapsburg Spain, is of great relevance to our contemporary

statesmen, because one can discover in it the critical features of statecraft which determined that Richelieu would win and Olivares would lose. This is not so much because Elliott has set out to teach us these principles. On the contrary, he has managed to obscure them through his academic devotion to detail. But it is clear enough that Richelieu defeated Olivares because the great Cardinal possessed a high degree of decisiveness, what the great Prussian commander Clausewitz termed *Entschlossenheit*.

The book contains another critical lesson for U.S. and Western European policy-makers. If Spain had broken with its Hapsburg connections, it could have easily defeated France. Spain had nearly 300,000 men under arms, twice that of its rival. But Olivares was convinced that he needed the Hapsburg empire. Elliott observes (p. 74): “France, in comparison with the Spanish monarchy, was by the 17th century a relatively compact and unified state . . . the problems of the Spanish Hapsburgs were more akin to those of their Austrian cousins, who were also rulers of disparate kingdoms and provinces, and who would likewise attempt to weld them together into some form of supranational community with the person of the Emperor as the focus of loyalty.”

The nation-state

As Friedrich Schiller has shown in his dramatic poem *Don Carlos* and in his *History of the Thirty Years War*, there is a fundamental conflict between the development of a nation-state and the priorities of empire. But Olivares refused to recognize the irreconcilable differences between his role as head of the Spanish government, and the imperial ambitions of the Hapsburgs: “The guiding principle of the Count-Duke’s foreign policy was that Madrid and Vienna, the two branches of the House of Austria, ‘must never, for any reason, be divided’” (p. 120).

Olivares therefore had to deflect that very sentiment of nascent nationalism that Richelieu harnessed for his victory. In France a rising optimism prevailed, whereas dark pessimism ruled in Spain. One ally of Richelieu wrote: “France has ceased to be the France of yesterday, so sick and decrepit . . . beneath the same faces I see different

men, and in the same kingdom another state. The outward appearance remains, but the interior has been renewed. There has been a moral revolution, a transformation of spirit. . . .” Compare this with the comment of one of Olivares’ ministerial colleagues: “It is true that we are approaching our end, but in other hands we would have perished sooner.”

France’s optimism was allied with Richelieu’s bold decisiveness. The war between France and Spain broke out in 1635, having been preceded by critical skirmishes in northern Italy in 1627-29, known as the War of the Mantuan Succession. Richelieu won the advantage because he acted more rapidly than his opponent. Elliott comments (p. 96): “. . . the French operation took him [Olivares] and everybody else by surprise. At the end of February 1629 Louis XIII and Richelieu led an army across the Alps, and defeated Charles Emmanuel of Savoy at Susa in the first week of March.” Olivares foresaw “total ruin.” Richelieu now pressed his advantage. “Great affairs,” he wrote the King, “were sometimes the matter of a fleeting moment which, if once allowed to pass, would never again return.”

Today, Henry Kissinger is the living advocate of Hapsburg politics. He argues that we must have an offensive-defensive alliance with the oligarchy world-wide. We must wait, biding our time, because Russia is a “crumbling empire”; we must not act boldly for fear of upsetting the delicate “balance of power”—the same imperial recipe that undid Olivares, a far nobler figure than his modern successor.

But from whence will come the policies of Richelieu? When Lyndon LaRouche advises the U.S. President to warn Libya that if it invades Tunisia, we will bomb them into the Stone Age, his proposal falls on deaf ears in official Washington. It is “impractical,” “exaggerated,” and dangerous besides—in a word, it is decisive. But only if the United States dumps the International Monetary Fund, and ceases to play the unworthy role of servant of empire, can its leaders discover precisely that quality of boldness that will ensure victory. That is why this book, despite its academic obfuscations, contains lessons for today.

—D. Stephen Pepper

The Liturgy of Ritual Murder

The Name of the Rose

by Umberto Eco

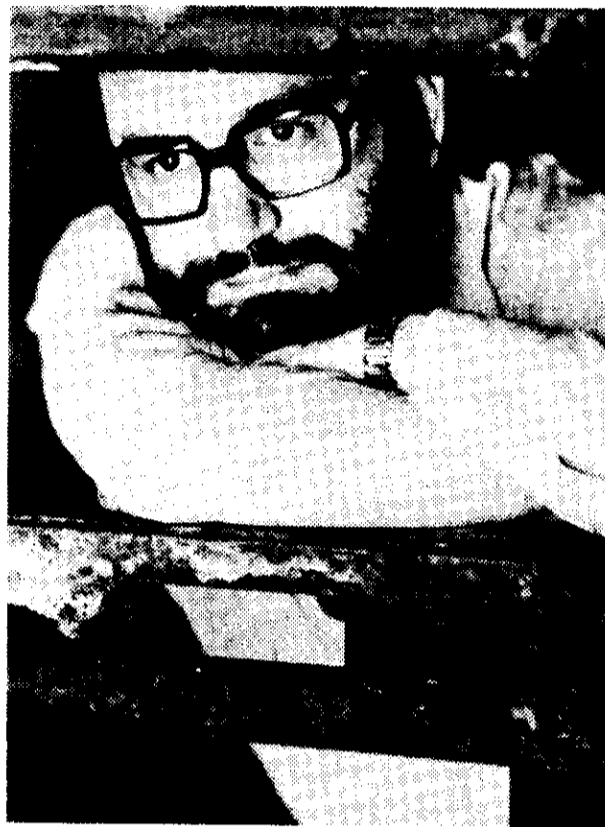
Warner Books, Inc., New York, 1983

During 1983 and 1984, *The Name of the Rose*, a detective novel about a murder in a 14th century Benedictine Abbey, topped fiction best-seller lists worldwide. Without a massive public relations hype, this turgid chronicle would have gone nowhere. However, it is the story behind the story which is truly interesting.

While the fiction described its own series of brutal ritualistic murders, in real life another series of four bizarre murders took place among the students and faculty of the institute at the University of Bologna headed by the book's author, Umberto Eco. In each instance the corpse, invariably a homosexual weighing over 200 pounds, was found tattooed with 47 little knife wounds and a plastic rose left on the body. Given this symbolism, it is relevant that Eco is a prominent board member of a recently formed Italian "cultural" magazine, *FMR*, which, besides its overt promotion of sodomy, drugs, and other perversions, has as its chief symbol, a rose.

As to why he wrote this novel, Eco says, "I felt like murdering a monk."

Known internationally as a leading theoretician in the field of semiotics—the study of the structure of language and the use of signs, symbols, etc., to convey meaning—Eco's theoretical work has a very practical application. Like semiotics specialist and linguist Noam Chomsky of MIT, his main focus has been in the field of artificial intelligence. Whereas actual creative thought cannot be replicated by any "dead" machine, the artificial intelligence people have been attempting to do just that since the late 1940s. But as they themselves are well aware, they have only succeeded in recreating, usually by computer, the rigid, formal-



Umberto Eco: terrorist controller, he flaunts the oligarchy's tradition of cultural warfare.

logical worldview of a paranoid schizophrenic. The most immediate application of this field has therefore been, and still is, brainwashing.

Eco first became famous around 1963 as one of the founders of *Gruppo 63*, a circle of intellectuals specializing in the "culture of revolution," one of whom, Nanni Balestrini, is currently wanted for terrorism. During several years of preparatory work for the student upsurges of 1968, Eco played a major role in forming the leftist Situationist gang whose slogan was, "God is dead—now we must free ourselves of the pieces of his stinking body." Backed by powerful oligarchical patrons, reportedly including the Princess Pallavicini, a major benefactress of the University of Bologna, Eco was given an entire faculty, the Department of Art, Music, and Spectacle (DAMS). DAMS reportedly produced the entire "creative wing of the [leftist] movement" which led in 1977 to days of bloody battles with the police and the death of one student.

Library labyrinth

The Name of the Rose is situated in a wealthy Benedictine Abbey in northern Italy in the third decade of the 14th century. The abbey contains the most extensive library in Christendom, and its use is strictly circumscribed by the rule of the abbot and the labyrinthine design of the tower housing the library. The library guards a great secret, and one after another, many monks die in the attempt to discover it. Following the first death, the Abbot entrusts, within limits, the visiting English Franciscan, William of Baskerville, with the necessary investigations. The latter sets to work with the aid of his assistant, a young German Benedictine named Adso, who on his death-bed decades later, records the story for posterity.

William engages in a fierce battle with his antagonist who, unknown to him, is the old blind monk who is the moral and intellectual authority of the abbey. Against the "faith" of the old monk, Eco arms William with Sherlock Holmes-style inductive "reason." However, where the British intelligence specialist and devout spiritualist Conan Doyle had his character solve cases by dint of drug usage and a supernatural, computer-style memory, Eco has William discover the murderer entirely by chance, in spite of his Holmes-like reasoning powers. The discovery itself comes as a bitter failure since the abbey, library and all, is going up in flames.

The message here is by no means subtle: Since the actual universe (i.e., the mystery of the library) is unknowable to man, the formal procedures of thought which man may employ to attempt to discover its lawfulness, are impotent. The book itself becomes like the library—a labyrinthian nightmare in which the further the reader proceeds, the more disoriented and demoralized he becomes—a fact which

Eco gleefully notes in his sequel, "How I Wrote *The Name of the Rose*."

Into this abyss, all situated in theological terms for maximum psychological effect, Eco introduces his trump card: the ontological paradox. God cannot possibly be both omniscient and omnipotent, since one excludes the other. If God is all-seeing and sees his acts until the end of time, he can not act differently than what he sees and is therefore impotent. But if he is free to act at any point in any way he chooses, how could that have been foreseen ahead of time? The apparent paradox is a result of formal-logical reasoning in a static universe, but on it, Eco bases his and his Situationists' triumphant conclusion: God is dead, i.e., there is no lawful ordering principle of ongoing Creation. Any apparent ordering, such as William's logical attempts to solve the murder, are in vain. Chaos, like the terrorists Eco spawned, will reign.

Liturgical terrorism

The book's propaganda for a New Dark Age and an irrationalist outlook is clear enough. But the deeper evil of both the novel and Eco's own personal deployments can not be understood without appreciating his choice of a Benedictine abbey as the novel's setting. The Benedictines, with roots in the sixth century and before, are the self-appointed cultural masters of the Church, and indirectly, of its Protestant church split-offs. While other orders, such as the Dominicans and Jesuits, were spun off by the Benedictines for specific purposes and carry out a rather high-profile activity in the world, the more sedentary Benedictines attempt to steer the long-wave cultural processes determining the outlook and beliefs of the Church as a whole.

Eco is, meanwhile, a semiotics specialist, one who is expert in the manipulation of symbols, emotion-laden signs, slogans, etc. His consciousness of his own place in the 1,500-year history of Benedictine liturgical manipulation is signaled in several unmistakable ways.

First, the book's title, *The Name of the Rose*, is taken from a 12th-century Benedictine poem, "Contempt of the World," a fitting expression of Eco's own attitude. Second, all activity in the book takes place within the context

of the hours of the Divine Office, the liturgical division of the day into the hours of terce, sext, nonce, etc., at each of which there is a celebration of the liturgy in common. Third, and most important, in the foreword to the book, in a Latin passage aimed at awing the average reader, Eco refers to two of the crucial figures in Benedictine liturgical studies, Dom Mabillon of the 17th-century Maurist Benedictine order which sponsored the Jansenist heresy, and Cardinal Giovanni Bona, the

initiator of post-Renaissance liturgical studies. As Eco undoubtedly knows, smiling a sly, evil smile to himself, Bona was sponsored by Cardinal Sforza Pallavicini, ancestor of the Princess Pallavicini who reportedly sponsors Eco himself. He knows his roots only too well, and knows that he stands, with his fellow monks, committed to lighting the fires he hopes will consume the beauty and heritage of Judeo-Christian civilization.

—G. Allen Douglas and Pietro Cicconi

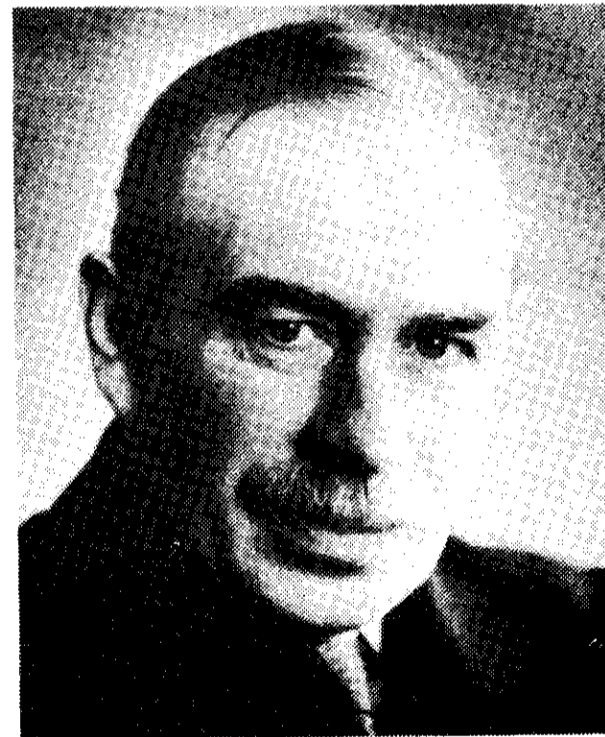
The Cult of J. M. Keynes

John Maynard Keynes

by Charles H. Hession
Macmillan, New York, 1984

Nineteen eighty-four was the fortieth anniversary of the founding of the International Monetary Fund, perhaps the most destructive institution in human history. The application of the rules set forth by J. M. Keynes, who first proposed the IMF's creation after hearing of the Nazi Economics Minister's 1942 radio appeal for the creation of a postwar monetary order, have already ruined the economies of the most important and populous nations in the developing sector. The application of IMF "conditionalities" in the economies of these nations has brought the world to the brink of a general monetary crisis worse than the one which, according to legend, prompted Keynes to promote a solution to depression through more government spending.

Through an ugly coincidence, Mr. Hession has offered the first full-scale biography of the British economist since Roy Harrod's *Lord Keynes* appeared a generation ago. It attracted attention upon its release earlier this year in the prurient popular media. Unlike Harrod, an Oxford economist closely associated with Keynes, Hession dragged out every available detail of Keynes's homosexual life, including mawkish love letters to various men



J. M. Keynes: devoted to the "higher sodomy."

and philosophical invocation of the "higher sodomy." Most of this is unsuitable for reproduction in a family magazine. Not for nothing did Treasury official Harry Dexter White refer to Keynes as "her Majesty" during the 1944 negotiations which led to the founding of the International Monetary Fund at Bretton Woods. Harrod gave us a hagiographic image of Keynes the intellectual; Hession gives us an unretouched portrait of Keynes the bitch.

In an unexpected way, Mr. Hession's research tells us some important things about the monsters which

Keynes created and still do evil on earth. Despite himself, Hession also indicates an approach to the outstanding biographical problems regarding Keynes, especially his relationship to the Soviet intelligence cell at Cambridge University, although he avoids direct mention of the topic. The popular press accounts of his book, which reduced everything to gross sexual morbidity, ignored the more startling story Mr. Hession tells: Keynes was not a homosexual by early inclination, but by philosophical choice, and by recruitment to a movement for the overthrow of Judeo-Christian civilization. This movement has come within an edge of succeeding. This context makes understandable not merely Keynes's homosexuality, the biographer argues, but his economics as well.

Plagiarism, Marxism

Hession claims that Keynes's and his friends' sexual deviance was essential to their creativity in a variety of fields. How creative Keynes was, the reader may adduce from the following summary of evidence suggesting that the core of Keynes's work, that which made him celebrated, was plagiarized from various Soviet-connected Marxist sources. Read another way, Hession's narrative offers a startling look into the minds that made a mess of the twentieth century.

It would be amusing, but superficial to draw the comparison between Keynes's declared Malthusianism and his stated contempt for ordinary heterosexual relations. Keynes's sexual preferences did not derive from his dislike of population growth. The material Hession assembles permits a more radical conclusion: that the British elite of Keynes's generation was drawn into a gnostic rebellion against civilization which coincided, and intertwined with other such rebellions, most emphatically the two Russian revolutions of 1917. These can be accurately characterized as the great rising of "Old Believers" against yet another false St. Petersburg Czar in the Russia of 1917. The similarities between the cult features of fundamentalist Russian orthodoxy, Marxism, and the Keynesian Bloomsbury aesthetes are marked.

This conclusion suggests an answer to the questions raised by the Philby-Burgess-Maclean scandals of the 1960s

and the more recent exposure of such Cambridge insiders as Sir Anthony Blunt, Queen Elizabeth II's curator of paintings, as Soviet agents: what was the relationship between Keynes's sodomic circle, the Apostles club at Trinity College, and Soviet intelligence during the 1930s and onward? What did this relationship have to do with the supposed parallel development of Keynes's entire theory by Marxist economist Michel Kalecki, later an official of the Polish Communist government? Where do such figures as Joan Robinson, Keynes's close associate at the writing of his major work, fit into the betrayal of Great Britain by members of its elite? And, perhaps most important, what is the relationship between Keynes's Malthusian economics and the strategic policy adopted by the Western powers through the intermediation of his fellow Apostle, Bertrand Russell? (As Lyndon H. LaRouche, Jr., has documented in his *Imperialism: The Final Stage of Bolshevism*, Russell struck a deal with the Krushchov leadership in 1956 to divide the world into an Eastern and Western Empire, in which the Western Empire would suppress its internal rate of technological development through the control of new weapons technologies.)

To what extent did the modern apostle of Malthusian pessimism understand, that his call for an end to the accumulation of productive capital would suit the requirements of Russell's two-empire program? Did such considerations figure in the discussions between Keynes and his Communist party friends at Cambridge?

Soviet religion

In the light of Keynes's marriage to the Russian ballerina Lydia Lopokova, who maintained contacts inside the Soviet Union despite her exile status, it is all the more astonishing that Hession is virtually silent about Keynes's relationship to the Soviet Union. He does, in any case, cite Keynes's *A Short View of Russia* (1925), written after a visit with Lydia, noting:

"Leninism fascinated him because, as he said, it combined two things which Europeans for some centuries had kept in different compartments of the soul—religion and business. He was curious about a new religion and willing to sympathize with those who

sought for something good in the new Soviet regime. . . . He thought that as a religion it might have a significance because religion provides a social bond among people, whereas—and here he invoked [the founder of the Apostles—DG] Coleridge again—'modern capitalism is absolutely irreligious, without internal union, without much public spirit, often, though not always, a mere congeries of possessors and pursuers.' . . . He philosophized in a broad manner on the decay of religion and upon the advisability of keeping business and religion in separate compartments of the soul. These thoughts led him to conclude that perhaps Russian communism did represent 'the first confused stirrings of a great religion.' "

It might be added that Keynes's unabashed sympathy for the Hitler regime could stand scrutiny in light of his sympathy for the 'first confused stirrings of a great religion' in Soviet Russia. In his introduction to the first German edition of *The General Theory of Money, Employment, and Interest* (1936), Keynes stated that the Hitler regime represented precisely the kind of social order which could put his theories to work. His political sympathies lay with Prime Minister Neville Chamberlain's "appeasement" of Hitler until well after the disastrous 1938 Munich pact.

Those are the questions whose answer any biographer of Keynes owes to his readers. Hession does not raise them, much less answer them. As noted, he makes it his job to discover what formative circumstances explain Keynes's alleged creative discovery, as presented to the world in *The General Theory of Money, Employment, and Interest* (1936). This turns out to be as thankless a task as Keynes's attempts to make Lytton Strachey pregnant.

Wittgenstein, Kalecki

As a sympathetic biographer, Hession cannot be blamed for assuming that Keynes's work was good rather than bad. However, the evidence widely available—including evidence the author cites in passing—raises a more interesting question, i.e., was Keynes's entire "revolution in economics" a plagiarism, and a Soviet-inspired plagiarism at that? Mrs. Robinson spent her subsequent career explaining the fundamental identity of Marx and Keynes,

not without justification. Keynes's own publication is unimaginable without the studies on Malthus produced by the Marxist Piero Sraffa, a homosexual with whom Keynes formed a liaison after Sraffa had been attached to another of Keynes's homosexual friends, the Viennese positivist Ludwig Wittgenstein.

The charge of plagiarism is brought most effectively, by the ghost of Polish economist Michael Kalecki. Kalecki spent the post-war years as Deputy Director of the United Nations' Division of Economic Stability and Development. He then became chief economic advisor to the Soviet-controlled Polish government 1954-1960; he died out of favor in 1970.

Hession writes:

"When Keynes achieved his scientific breakthrough by developing the theory of effective demand in the *General Theory*, it was generally thought that he was the pioneer, the originator of this revolutionary point of view. It is now recognized that his theoretical innovation was an instance of multiple discovery in science because two other economists were independently arriving at similar insights and conceptualizations. In fact, one of them, Michael Kalecki, an unknown Polish economist, definitely seems to have anticipated Keynes in developing a general theory of output as a whole. In 1933-35 [before the publication of the *General Theory*—DG], he published three papers in Polish which contain the essential ideas of the *General Theory*. His Polish readers, however, were too uninformed or too orthodox to recognize their originality. He presented his theory to a more sophisticated audience of the International Econometric Association in October 1933 and in articles in *Econometrica* and *Revue d'Economique Politique* in 1935. But his exposition of his ideas in these media 'did not even ripple the placid waters of existing theory. In a word, Kalecki lacked status, authority, and influence.'"

Keynes and his friends at Cambridge diligently read the cited journals in which Kalecki's articles appeared, and it would require an extraordinarily convincing presentation to dispel the obvious conclusion that Keynes read Kalecki well before Kalecki read Keynes, i.e., that Keynes was a pla-

giarist, and a plagiarist of a declared Marxist and future East Bloc functionary. That is not to say that Keynes and his colleagues, particularly Robinson and R. H. Kahn, did nothing but translate from the Polish; on the contrary, they apparently found means to repackage Kalecki's thesis in the arcane language of the economics profession, and thus bring it to the West. Otherwise, how could the entire corps of Harvard University graduate students in economics have spent every evening between 1937 and 1940 debating the "Keynesian revolution," as J. K. Galbraith described its impact?

According to Joan Robinson, "Kalecki's version of the General Theory, rather than Keynes', has been incorporated into the post-Keynesian tradition," a remarkable acknowledgement of the Polish economist's primacy in theory as well as sequence, by Keynes's closest associate from the Cambridge of the 1930s. Robinson's statement, not cited by Hession, appeared in a 1960 *Festschrift* assembled in Kalecki's honor—when he was still a Polish government official—by the world Keynesian collective, including Wharton School econometrician Lawrence Klein. According to Kalecki's biographer, he enjoyed "a lifelong friendship with Joan Robinson and Piero Sraffa."

Sraffa, Malthus

Sraffa appears to have been the intermediary between the central European Marxists and the Cambridge Apostles. Sraffa is still alive, but senile; on his last journeys to academic conferences in the late 1970s, friends brought him to the airport with his airline ticket pinned to his lapel, should he become confused about his destination. A close friend of Italian Communist leader Antonio Gramsci, Sraffa had studied with the Vienna positivist philosopher Ludwig Wittgenstein, also a close friend of Apostle Bertrand Russell. Wittgenstein dedicated his *Philosophical Investigations* to the youthful Italian economist. As one friend of Sraffa described the events, "the European homosexual network" brought Sraffa into contact with Keynes during the 1919 Versailles peace conference, and Keynes brought him back to Cambridge.

Sraffa's major work, *Production of Commodities by Means of Commodities*, did not appear until 1960—the Italian

had a horror of publication—but his influence on Keynes was decisive in the preceding four decades. Keynes's best-selling 1919 work, *The Economic Consequences of the Peace*, shows that he was already a convinced Malthusian before his close working relationship with Sraffa began. But it was Sraffa who revived Malthus as the explicit point of departure for modern economics, editing Malthus's and Ricardo's complete works for publication at Cambridge, including their correspondence, and Ricardo's revealing marginal notations in Malthus's 1817 *Political Economy*.

The gist of the 1817 volume is Malthus's argument that, if population growth doesn't get you, then over-investment and over-production will. He wrote:

"The millions in capital which have been expended in drainings, and in the roads and canals for the conveyance of agricultural products, have tended to raise rather than lower profits; and millions and millions more may yet be invested with the same advantageous effect. . . . [But] our present body of manufacturers . . . seem quite to forget the prodigious increase of supply which must be occasioned by the competition of so many more workmen and capitals in the same line of business."

In all the economese about "production functions" and "supply of capital functions," there is nothing more than Malthus's crude assertion that, at a given technology, marginal cost rises with increased consumption of inputs. This is also argued by Ricardo, and retreaded by Karl Marx, as the "falling rate of profit" thesis.

The spurious solution to the spurious problem raised by both Keynes and Malthus is, of course, to increase non-productive spending and to decrease population, in order to destroy the annoying impetus toward economic growth. Malthus wanted bigger stipends for parsons like himself, Keynes shovels to dig holes in the ground and fill them up again. He summarized the case in the often-quoted aphorism: "Two pyramids, two masses for the dead, are twice as good as one; but not so two railway lines from London to Manchester."

Marx's Capital

Sraffa attempted to prove Malthus's assertion through a twist of method so



Keynes (right), with Harry Dexter White at the Bretton Woods founding of the International Monetary Fund and World Bank. To White, Keynes was "her Majesty."

blindingly stupid that it is painful to think that all of post-Keynesian economics depends upon it. Sraffa wrote a system of linear equations to describe the circulation of commodities in the productive system, following closely the diagrams of Karl Marx's second volume of *Capital*. The exercise is simple: the production inputs to each commodity may be described as a "basket" of other commodities. For example, an auto may be described as a given amount of steel, aluminum, copper, glass, and other raw materials; as a depreciation cost for machine tools and other capital goods; and as a consumption basket for the labor force that

produces the auto. All that is familiar from the input-output matrices that have become popular in econometrics.

The commodities that make up each commodity may be described by a simple linear equation, and the totality of economic product may be written as a system of linear equations. As the mathematician John von Neumann argued in a 1931 paper, much prized at Cambridge (and first published in its economics journal in 1946), such a system of linear equations may only be solved for the case of economic growth if all the elements of the system grow in identical proportions, i.e., that the ratio of capital to labor and raw mate-

rials remains constant. If technology changes such that the ratio of capital to labor changes, the system of equations is insoluble, a mathematically trivial conclusion. The Marxist economist Rosa Luxemburg drew precisely this conclusion from her criticism of the tables of capital accumulation in the second volume of Marx's *Capital*.

Cambridge economics noted the mathematical insolubility of the linear equations, and jumped from this trivial observation to an astounding conclusion concerning the real world: that accumulation of capital leads inevitably to economic breakdown. Keynes called it an equilibrium condition at less than full employment. Joan Robinson went as far as to postulate the existence of a "Golden Age," in which the capital-intensity of production would not change, so as to "make possible a rise in output per head of consumption costs, while requiring an unchanged cost of equipment per worker."

That is how the trick is done. There is nothing more to it: economics has decreed that the human species may do nothing that cannot be described by second-year college algebra. Millions of famine victims in Africa would doubtless die happy in the knowledge that their misery contributed to the greater glory of the theory of linear equations.

Keynes himself wrote of Malthus' view in the *General Theory*,

"I sympathize, therefore, with the pre-classical doctrine that everything is produced by labor, aided by what used to be called art and is now called technique, by natural resources which are free or cost a rent according to their scarcity or abundance, and by the results of past labor, embodied in assets, which also command a price according to their scarcity or abundance. . . .

"With a given labor force, there is a definite limit to the quantity of labor embodied in roundabout [Keynes means capital-intensive—DG] processes which can be employed to advantage. . . . [T]here must be a due proportion between the amount of labor employed in making machines and the amount which will be employed in using them. The ultimate quantity of value will not increase indefinitely, relative to the quantity of labor employed, as the processes adopted become more and more roundabout."

BOOKS

That merely says that improvements in technology have an absolute limit; it is stated as a philosophical afterthought in the *General Theory*, whereas it represents the hard underpinning of the entire thesis. If it were not true, not a sentence in the entire work would be true. Keynes goes on to make his debt to Malthus explicit, favorably citing Malthus' argument that:

"... an attempt to accumulate very rapidly, which necessarily implies a considerable diminution of unproductive consumption, by greatly impairing the usual motives to production, must prematurely check the progress of wealth. . . . But if it be true that an attempt to accumulate very rapidly will occasion such a division between labor and profits as almost to destroy both the motive and power of future accumulation and consequently the power of maintaining and employing such an increasing population, must it not be acknowledged that such an attempt to accumulate, or that saving too much, may really be prejudicial to a country?"

In short, Keynes's Malthusianism coincided in all important areas with Marx's argument that technological progress was impossible under capitalism, both in Keynes's own words, and according to the testimony of his closest associates.

Finally, it is not insignificant that Keynes was an early and enthusiastic population controller. In an address to the Liberal Summer School at Cambridge in 1925, he said:

"Birth control and the use of contraceptives, marriage laws, the treatment of sexual offenses and abnormalities [i.e., homosexuality—DG], the economic position of women, the economic position of the family—in all these matters the existing state of the law and of orthodoxy is still medieval—altogether out of touch with civilized opinion and civilized practice and with what individuals, educated and uneducated, say to one another in private."

Keynes's "creativity"

Keynes's life work, as we have just seen, was dedicated to the thesis that man will inevitably frustrate his own efforts to transform nature by the introduction of improved technology, and must therefore reconcile himself to self-imposed limits to growth. Do

newer, more clever, or more agile arguments against the creative powers of mankind in general testify to creativity in the individual who invents them? For the past several millenia, the Judeo-Christian current in civilization has defined creativity in terms of the individual's capacity to master those principles according to which the Creator of the universe devised it, and the discovery and celebration of such principles has constituted the sole activity which brings man closer to God. The "divine spark" in man is that which permits man's Reason to comprehend the laws of creation, and by his efforts further the continuing process of creation of the world.

The standards according to which such incorrigible deniers as Keynes might be deemed to be "creative" must, therefore, be opposed to those of Judeo-Christian civilization; and in this light, Mr. Hession's chapter entitled "Bloomsbury and Its Influence on Keynes's Creativity" reaches far into the sphere of dream. He writes,

"These intellectual aristocrats felt that they had discovered new conceptions of morality, justifying them in rejecting Victorian earnestness and sexual respectability. As a consequence, Bloomsbury tended to be gay and 'remorselessly frivolous.' For example, according to one account, in the twenties some of its members, like the

recent 'counterculture' of this generation, showed their contempt for bourgeois culture and morals by joining what [Oxford scholar and British intelligence official—DG] Isaiah Berlin called the 'Homintern.' In other words, they made a cult of homosexuality."

Hession is speaking of the Cambridge circle of Apostles, including the (mainly) group of homosexual Soviet spies including Philby, Burgess, Maclean, and Blunt. A group of Apostles migrated to London's Bloomsbury square and took up with a set of modernist painters and writers. The author proceeds to praise this "cult of homosexuality" with a mumbo-jumbo of arguments concerning mental duality and androgyny:

"In 1908, Freud stated that some homosexuals often possessed unusual intelligence, spiritual insight, or artistic gifts. . . .

"Encouraged emotionally and morally by these new theories of homosexuality, its defenders in Bloomsbury and elsewhere searched the records of the past to find evidence of sexual variance among the great. . . . In modern analyses of creativity there is a pronounced tendency to conceive it as a rhythmic process involving an interplay between opposite aspects of the mind. Silvano Aireti, for example, in his lucid exposition of the subject, describes 'the dichotomy of the creative process' and



Bertrand Russell, Keynes, Lytton Strachey. The aristocratic elite indoctrinated their initiates through homosexuality and Russellian positivism. Keynes plagiarized his economic "discoveries," which were as sterile as his attempts to make Strachey pregnant. The evil of Russell and Keynes stalks us today in the genocidal IMF.

conceives the creative mind as integrating primitive or primary process thinking with secondary (logical) processes. . . .

"In the light of this relatively recent research and writing on the creative process, it is a striking fact that various members of Bloomsbury sensed and expressed the idea years before that creativity depended upon the "double nature" of the intellectual process. [Bisexual novelist—DG] Virginia Woolf speculated upon the double nature (masculine and feminine combined) of the creative person. . . .

"Whatever may be the intellectual capacity of androgynes in general, it does seem significant that both Lytton Strachey and Keynes have been described by close students of their lives and personalities as being androgynous. Professor Leon Edel writes of the former as a 'busy, ardent, oversexed homosexual with an androgynous mind,' and he recalls that Leonard Woolf told him privately that Keynes was 'a mental hermaphrodite.'"

There is a name for all of this, and it is *gnosticism*, the opponent current to the Judeo-Christian concept of creation, atonement, and the godliness of the individual. The gnostic world is a manichean battlefield of permanent forces of good and evil, in which evil is a palpable, living force, not the mere absence of good, as in St. Augustine's description. Evil, in gnostic doctrine, is the feminine force, personified by the irrational female death-goddess, Isis, or Shiva, or Astarte. To become one with the secrets of this universe, the initiate must subject himself to the evils of the flesh, and absorb the awful duality of the universe into his own soul through such a process of initiation, usually alternating sexual excess with extreme ascetic self-denial.

Gnosticism, Newton

Keynes's "cult of homosexuality" is no different from the sodomic practices of the castration cults of ancient Rome, or the gnostic Cathars of the twelfth-century Albigensian heresy, or the fun times in Ernst Roehm's Nazi *Sturmabteilung*, for that matter. The full horror must be appreciated: what sort of mind could will the destruction of huge portions of the world's population? What sort of indoctrination must such a mind undergo?

One of Keynes's last essays, his biographical sketch, "Newton, the Man," opens this mind to the right sort of examination. Newton's papers had just been examined after centuries of suppression, exposing the allegedly great scientist as a self-professed sorcerer. Keynes, far from apologizing for Newton, reveled in the madness of whom he called "the last of the Babylonian Magi." Newton, for Keynes, was ". . . the last of the magicians and indeed, in vulgar modern terms . . . profoundly neurotic of a not unfamiliar type, but—I should say from the record—a most extreme example. His deepest instincts were occult, esoteric, semantic [Keynes means cabbalistic—DG]—with a profound shrinking from the world, a paralyzing fear of exposing his thoughts, his beliefs, his discoveries in all nakedness to the inspection or criticism of the world. . . . Like all his type, he was wholly aloof from women . . . he liked to have clever young men about him to edit new editions of the *Principia*."

Hession favorably cites this essay, noting that Keynes (in the last sentence quoted) attributed homosexual inclinations to Newton. It has been demonstrated exhaustively that Newton's supposed contributions to physics were based on plagiarism of Leibniz's earlier work; whether Keynes suspected this or not, it suggests a further identity between the two men.

"Writing under the joint influence of Moore's *Principia Ethica* and Russell's *Principia Mathematica*" (Hession), Keynes had published as his first major work *A Treatise on Probability*. Although unremarkable in the positivist literature of the period, Keynes's work nonetheless shows a "Newtonian" mind at work. The positivist attempts to describe the world through a lattice-work of logical relationships, building a "scaffolding" of established facts and established relationships between facts. Keynes's peculiar contribution was to argue for the construction of such a latticework not on the basis of proven relationships between propositions of the form "if A, then B," but on the basis of *probable* relationships. If A probably is, then B might well be, and so forth. Keynes said simply, "Probability is concerned not with objective relations between propositions but (in some sense) with degrees of belief."

It is difficult to convey to the reader who has not ploughed through Keynes's *General Theory* how much the whole body of his published work depends on this kind of fudge. What he accomplished—as opposed to Kalecki or Myrdal—was to package the old Malthusian dogma as a theory based on "degrees of belief." Depending upon the whim of the population, an additional dollar of income will be divided into savings (investment) or expenditure, through a psychological "marginal propensity to consume," or a "marginal propensity to save." If the marginal propensity to save is too high, the marginal efficiency of capital will decline, i.e., Ricardo's old canard about a "falling rate of profit" will pertain, and capital will flow into government bonds or similar unproductive investments, rather than into new plant capacity. The desire to invest is attributed to what Keynes called "animal spirits."

The behavior of the economy is thus determined by these whims, or propensities, the monsters that peer out from the gaps in the scaffolding. No wonder Keynes was fascinated with Soviet Russia, "which changed pecuniary motivation, social status, and power based on money. . . . A Society of which this is even partially true is a tremendous innovation," or, as noted above, "the first stirrings of a great new [gnostic—DG] religion."

Keynes built himself a world where nothing need be true or real, in which the elite indulged in the narcissism they called the "higher sodomy," and conspired to frustrate the annoying efforts of the remainder of humanity to subdue the earth and multiply. The elite indoctrinated their initiates through homosexuality and Russellian positivism, until nothing remained but the Bloomsbury variety of self-infatuation. What else but deranged Babylonian mysticism, cabbalistic numerology, and witchcraft of the sort Keynes praised in the case of Isaac Newton, could attract minds so jaded? But what has possessed the rest of us to permit Keynes and his disciples to command leading positions in our governments and universities, to create supranational agencies which dictate terms to ourselves and our friends abroad, in order to take vengeance upon us for the sin of having multiplied?

—David Goldman

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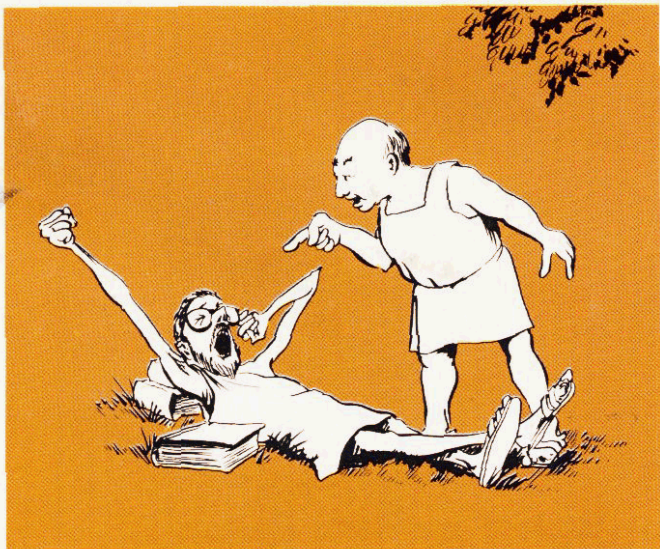
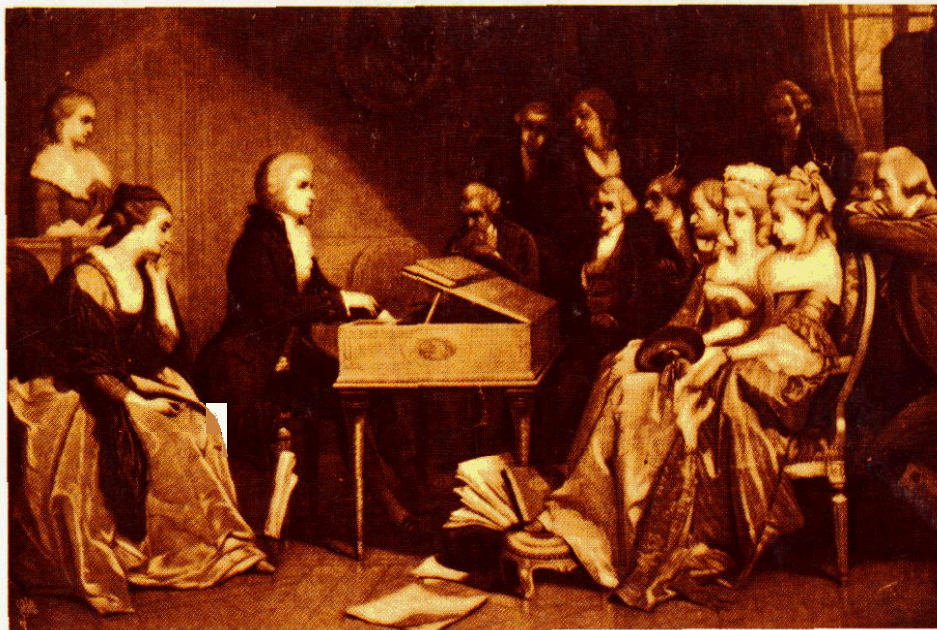
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Mozart and the Circles of Benjamin Franklin

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