

## II. Development in Africa

February 1979

# A Theory for the Development of African Labor

by Lyndon H. LaRouche, Jr.

Excepting British-influenced groupings in Africa, every leading force on that continent either welcomes, or at least converges on agreement with the developmental perspectives associated with France's Giscard d'Estaing and Germany's Chancellor Helmut Schmidt. All among us who are working for economic development of the African continent broadly agree that our task is not merely transferring modern technology to

atically into good results without a theory of mental development. The word "might" carries with it the connotation of risk or failure; it also conveys the implication of shortfalls significantly below the level which would be attained by more thoughtful approaches.

As the use of British agent, Asharite Ayatollah Khomeini, for the destabilization of Iran warns us, the British agents and dupes in Africa, who are a significant



CGTN

*"Technology transfer cannot succeed without an accompanying development of the minds and longevity of the African people generally." Shown: A worker operates a forklift at a Chinese-financed cement factory in Zambia.*

the developing nations. Technology is indispensable, but it must be understood as the tools indispensable to realizing the development of predominantly long-oppressed peoples.

Technology transfer cannot succeed without an accompanying development of the minds and longevity of the African people generally. We may be confident, and justly so, that we might prove able to stumble prag-

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problem in total, will use the rhetoric of "cultural imperialism," and other refuse of British colonial office "cultural relativist" heritages against modernization efforts. Putting British influence in Africa to one side, how do we aid Africans in achieving the most rapid realization of the peoples' mental potentialities, for mastering the advanced technologies African industry and agriculture urgently require?

We dare not risk lacking a sound theory of cultural development. This must be a theory which properly correlates scientific and technological progress with

what we may term loosely “cultural progress.”

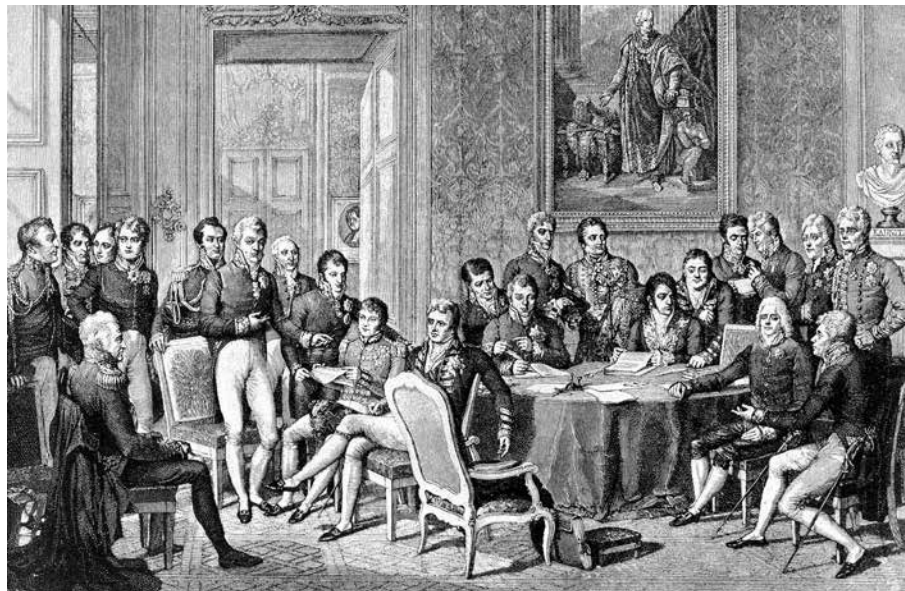
To reach the desired result, we must overcome two categories of obstacles. First, we must discredit and discard widely held delusions concerning science and culture, delusions widespread among both European and African circles. Second, in place of those delusions, we must supply an applicable set of policies, a set of policies made comprehensible for practice with aid of the appropriate theory.

The following pages are a summary of the wanted approaches to those two, interconnected problems.

Our procedure here is as follows.

Through British hegemony over “Holy Alliance” Europe, following the 1815 Treaty of Vienna, the viable currents of European continental scientific thought were either pushed into corners, such as Germany’s Göttingen and Russia’s Petrograd, or were pushed out of influence among leading universities and other channels of indoctrination of educated and other citizens. This was complemented by the effects of the City of London’s direct and indirect domination of most of the life of the colonial and semicolonial nations.

British colonialist domination imposed an artificial backwardness on many nations and their peoples. It caused both an abnormal stagnation of cultural development, and even cultural retrogressions. The effects of these combined, London-centered influences on industrialized and developing nations have been a “set of facts.” These “facts” are widely employed as evidence which purportedly proves certain delusions. In this way, misinterpretation of the actual causes for such “facts” provides both a rationalization for preexisting and prevailing conditions, and employs those rationalizations as a theoretical basis for current policy judg-

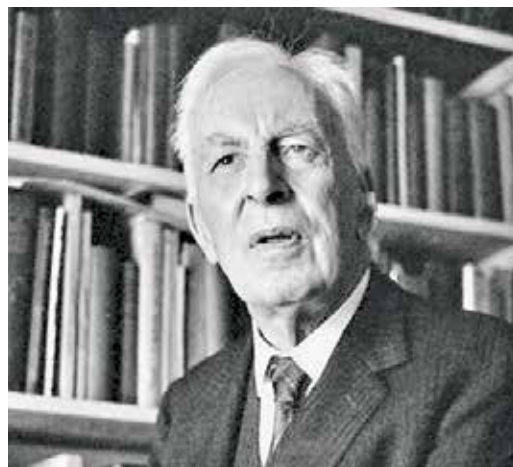


British hegemony over Europe following the 1815 Congress of Vienna (shown) pushed the viable currents of European scientific thought out of influence. clipart

ments. *Post hoc ergo propter hoc* has become the rationalization for perpetuating old miseries in new, sometimes more hideous forms. Hence, the appropriateness of the term “neocolonialism.”

Taking this and related problems of widely held delusions into account, as we proceed toward statement of

our theoretical points, we begin with a review of relevant historical matters. We outline a counter-historiography to that of Arnold Toynbee and like-minded British apologists.



Arnold Toynbee argued that catastrophes are inherent in the human condition, or in nature, or in both, based on his willful distortion of ancient Egyptian and Roman history. CC/Atyyahesir

### The Atlantis Issue

Since Francis Bacon’s *New Atlantis*, the British oligarchical faction and its allies have premised their defense of the faction’s policies not only on a willful distortion of ancient Egyptian and Roman history. There has been a significant, included element of a distorted version of an “Atlantis culture.” The characteristic feature of the British

hoax is the historiographers’ refusal to take adequately into account such matters as the millennial conflict between the priesthoods of Amon and Thebes. With aid of wild falsification of fact, the British homogenize selected historical facts together with outright hoaxes.

The effect and intended result of this fraud is to portray the course of human history as intrinsically one of yin-yang-like cycles: periods of rebirths of civilization separated by “dark ages.” A distorted account of an ancient “Atlantis culture” is frequently included in such indoctrination, and is almost invariably implied by given accounts.

Admittedly, the accounted rise of human civilization has known a number of dark ages.

The most recent were the 13th–14th century Dark Age, from the defeat of the Hohenstaufen through the Black Death, plus what can be termed the semi-dark age of grave crisis from the closing decade of the 16th century into the 1648–1653 period. Leading British circles, most emphatically those associated with the evil Bertrand Russell, have adopted the perspective of a new, most monstrous “New Dark Age,” to be inaugurated during this present century.

The most famous of the dark ages, and perhaps the most calamitous occurred over approximately a four-century period, from the explosion of the Aegean island of Thera during the 13th century B.C., to the founding of Carthage and the rise of Etruscan and Ionian culture during the 850–800 B.C. period. It is clear that the rise of the Egyptian Fifth Dynasty (c. 2750 B.C.) reflects the occurrence of another major Dark Age.

Various civilizations have indeed been plunged back toward savagery through dark-age periods of savage depopulation.

The British view is that the occurrence of such a pattern of dark ages proves the Toynbeean sort of nonsense. The argument is that such catastrophes are inherent in the human condition, or in nature, or in both.

Although geological-meteorological trauma have performed a key part in the emergence of dark ages, there is nothing inherent in the human condition, or nature generally which requires a continuation of such a pattern. The common root of the dark ages is the emerging predominance of a political faction which absorbs scientific and technological progress. This faction is best known over the ages of literary history of mankind as the oligarchical faction, the same faction which the British oligarchy and its allies represent today.

Pending development and use of new bathyscaphe technologies for exploring sunken former littoral sites of chalcolithic cultures, the following summarizes broadly what is known with certainty concerning the actual existence of an Atlantis culture. Citing this

knowledge purges the intellectual atmosphere of superstitious mythologies, and aids us in appreciating the importance Plato attached to the Atlantis matter in writing the *Timaeus* and *Critias* dialogues. That approach to historiography aids us considerably in arriving at an adequate notion of the theory of culture.

Working backward, with aid of geological data, from the time of the *Iliad* and *Odyssey*, and from the explosion of Thera, we discover the long preceding period geologically as one of secular raising of the level of the world’s oceans. In Mediterranean-European history, this pattern is associated with important periodic seismic activity along the ridge running through the Mediterranean and up into the Iceland region. The trauma associated with geological catastrophes intersected the conflicts between chalcolithic maritime-littoral-riparian advanced cultures, and relatively bestialized, Neolithic-oriented hinterlands cultures. It includes conquests of trauma-weakened chalcolithic, city-builder cultures by the forces of backward cultures.

The evidence is essentially this. We must date the emergence of the chalcolithic to no later than some yet-to-be-determined point between the 20th and 10th millennia B.C. The evidentiary problem of archeologists is, that out of this chalcolithic culture emerged a global maritime-littoral-riparian culture whose key sites were, predominantly, successively inundated by the rising of the ocean levels into the second millennium B.C. Exemplary is the case of the sunken sites of a megalithic maritime-littoral culture of the Peoples of the Sea around the now-half-sunken island of Helgoland.

There is no sunken “lost continent of Atlantis.” None of the relevant ancient accounts assert that there was. The continent is the Western Hemisphere. What is asserted in Plato’s account, in particular, is that there is a sunken island in the vicinity of the Azores, an island which Solon’s Egyptian informant identified as a principal element of a vast, transatlantic maritime power. It is quite credible, archeologically and geologically, to posit the possible existence of such a sunken island in the order of 500 feet beneath the present surface of the Atlantic, and to date this as inhabited territory in the vicinity of the 10th millennium B.C.

Just as Schliemann demonstrated the *Iliad* to be a remarkably accurate historical document, through his excavations, so the *Odyssey* bears up. Using a longship, not much unlike the Viking longships, and probably copper-sheathed, Ulysses and his companions sailed



“Cultures which fail to accomplish a lawfully ordered development must pay the penalties of hideous depopulation and degradation of survivor populations in the direction of savagery.” Shown: a Roman mosaic of Plato’s Academy, first century AD.

out through the Strait of Gibraltar, reaching the Caribbean to encounter sites whose existence was known putatively to them by reputation. This coincides with the fact that the Mayan civilization which achieved so high a degree of competence in astronomy could not have been on the mere slash-and-burn level of agriculture.

These and other facts make a discredited wreckage of both sociology and anthropology as currently taught. What are accounted as “primitive cultures” are, at least very often, the degenerated shards of older, higher cultures. It discredits the so-called hydraulic model of early riparian civilizations, obliging us to search for the maritime-littoral cultures of which riparian developments were extensions.

Although the evidence discredits the “cultural evolution” faction of anthropology, as well as the nakedly fraudulent “cultural relativist” doctrines, it does not eliminate the fact of evolutionary principles in cultural development.

What survives is a *law of cultural development*. This law specifies that cultures which fail to accomplish a certain, lawfully ordered kind of development must pay the penalties of hideous depopulation and degradation of survivor populations in the direction of savagery.

What is discredited is the autochthonous, mechanistic, fatalistic doctrine of isolated evolutionary development of cultures, in favor of a voluntarist-dirigist principle of man’s obligation to willfully discover and master the lawful prerequisites of continued development.

From this standpoint, we ought to be aided to see more clearly Plato’s point of concern for Atlantis in the *Timaeus* and *Critias*. True, geological-meteorological catastrophes did *trigger* dark ages. The destruction of maritime-littoral centers of power of advanced culture *left the survivors vulnerable to conquest-domination by backward, hinterlands cultures*.

Was the Biblical Tower of Babel a structure on an island-empire base situated in the vicinity of the Azores during the 10th millennium B.C.? That idea may be classed as speculation in and of itself. The philological and other connections among various peoples, including the Berbers, the pre-Celtic Iberians, pre-Celtic populations of Brittany, the British Isles, plus the Helgoland-Baltic region, and Central America, are powerful circumstantial evidence that a great maritime-littoral chalcolithic culture, as ancient or more ancient than the 10th millennium B.C.,

did indeed represent a multilanguage culture. The outline of the past is clear; the details are still shrouded in dark waters and ancient mists.

The lesson to be adduced from the outline is that civilization cannot be secure unless the task of bringing modern technology and republican outlooks to the people of the “hinterlands” is accomplished. That is the central practical feature of Plato’s writings, and also of the *Commedia* of Dante Alighieri.

Today, were the British to succeed in keeping the nations of the developing sector in the oppressive conditions of technological backwardness, whole regions of the world would be engulfed in the genocidal effects of perpetual “Thirty Years’ Wars,” with accompanying famine and epidemics. A billion or more of the world’s population in the developing sector would be wiped out rather quickly, and the survivors degraded to an unimaginable degree of savagery. It is probable, under these circumstances, that biological and political holocaust would sweep over the industrialized sector, bringing thus upon the Earth the most monstrous of all the dark ages to date.

That, I propose, is the lesson to be adduced from Plato’s concern, a lesson most imperative for today’s circumstances.

## The 13th–14th Century Crisis

One of the clearest, best illustrations of the dark-age problem is given by the great depopulation which occurred from the point of the defeat of the Hohenstaufen and their allies, into the resulting Black Death of the mid-14th century. Although reports usually isolate the Black Death itself as the depopulation of this period, and estimate that merely one-third of the population of central Europe was wiped out, the depopulation covers the entire, near-century period and adds up to more than half of the population of Western Europe. It was the destruction of the economy under Black Guelph faction policies which so ravaged the economy of Europe, drove so many into vagabondage, and so forth—which so created the preconditions of famine and epidemic in which the Black Death was merely the final phase.

The causes for this are not obscure. The defeat of the Hohenstaufen by the Black Guelphs, the overthrow of Alfonso the Wise, and the crushing of the Templars in favor of the Hospitallers was a shift of policy from a city-building, technological progress orientation, to a zero-growth plus fiscal-austerity policy.

The included precedent for this hideous policy was the Roman Empire itself. St. Augustine rightly defines the Roman Empire's culture as a process of decay. *The Roman Empire did not decay; it was decay.* St. Augustine adequately defines Rome as a form of hideous moral decay. The moral imbecility of Rome's culture had an economic-policy correlative. The Roman historical republic, ruled by the Delphic cult of Apollo, was already a form of moral decay. The Roman Empire, whose pantheon of cults was dominated by the



Domenico di Francesco

*“Civilization cannot be secure unless the task of bringing modern technology and republican outlooks to the people of the ‘hinterlands’ is accomplished.” Shown: Dante with his cultural intervention, the Commedia.*

Ptolemaic cult of Isis, compares only with the hideousness of Old China culture, as among the most monstrous forms of moral degeneracy which man has suffered in the historical record.

The period of semi-Dark Age ravaging Europe into the 1648–1653 period had the same causes as the earlier, 13th–14th century Dark Age.

Through the Augustinian-centered forces, the heirs of Dante Alighieri most significantly, the period following the Black Death into the middle of the 15th century was one of great revival, the Golden Renaissance. The influence of the Golden Renaissance reached a relative high-point in the Padua-Florence centered collaboration between Plethon and Cosimo de' Medici, and spread its influence for great good into the France of Louis XI and Tudor England. However, by the middle of the 15th century, evil was stoutly back in business. Evil, centered around



*“St. Augustine adequately defined Rome as a form of hideous moral decay.” Shown, St. Augustine in his Study, by Sandro Botticelli.*

the ancient “black nobility” families of Rome and their “black” Genoa allies, captured control of the monarchy of Aragon-Castile under Ferdinand and Isabella, and coordinated the fall of Paleologue Constantinople.

The rot of the oligarchical “black nobility” spread from Spain and Rome. The defeat of the forces of Cesare Borgia plunged Italy into a downfall from which it has not yet fully recovered. The vacillations of Queen Elizabeth in England aided the Genoa-controlled “black” factions around the Scottish lowland Stuarts and the Cecil family to grab control of England over the period into the Stuart accession of 1603. Oldenbarneveldt was defeated in the Netherlands. Henri IV of Navarre was isolated and ultimately assassinated. The Thirty Years’ War was the culmination of this process.

Through the parallel efforts of the city-builder politicians in England and France, through the work of Richelieu and his heirs Mazarin and Colbert, through the rise of the Commonwealth Party to power in England, humanity was rescued from a worse disaster. Fortunately, despite the Scottish-based overthrow of the Commonwealth in 1660, the Commonwealth Party had taken a leaf from the policies of the Tudor Dudleys and the pages of Plato. Commonwealth Party colonies were established in North America, built around the most-literate among the parishes of England. During the 18th century, the mean cultural level of the population of the United States was double that of England: in literacy, in standard of living, and in social productivity. The transatlantic conspiracy of Commonwealth Party, Colbertist and Leibniz factions, made the American Revolution and came near to succeeding in extending the influence of the American Revolution into Europe.

The issues which prompted the Marquis de Lafayette to break with Napoleon Bonaparte are inclusively

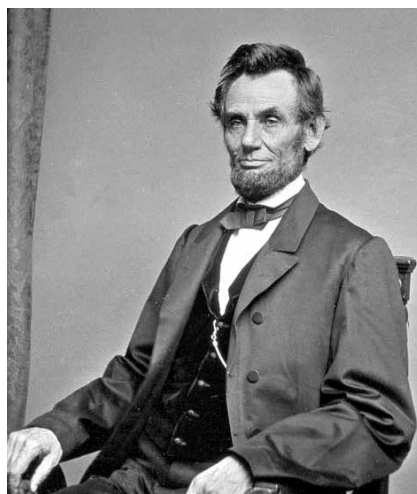


Philippe de Champaigne

*In England and France, the city-builder heirs of Mazarin and Colbert rescued humanity. Shown: Jean-Baptiste Colbert, France’s First Minister of State (1661-1683) under Louis XIV.*

key to successful British subjugation of the continent of Europe during most of the 19th century. The Marquis de Lafayette came close to succeeding in 1830. The British creation of Palmerston’s various “radical” movements, such as the “Young Italy” movement of Giuseppe Mazzini, poisoned and wrecked the republican movement of Europe in the course of development and aftermath of the 1848 revolutions.

The victory of President Abraham Lincoln over the British in the U.S. Civil War, plus the Lincoln alliance with Czar Alexander II created the circumstances for a great industrial development in principally three nations: the United States, Japan, and Germany. It was this industrial development which brought the British to the edge of total, global defeat during the 1890s—at the hands of the alliance of France’s Hanotaux, Germany, and Russia’s Count Witte with Meiji Restoration factions in Japan.



Matthew Brady

*The industrial development in the 1890s—made possible by the victory of Abraham Lincoln (left) over the British in the Civil War—in the alliance of France’s Hanotaux, Germany, Russia’s Count Witte (right), and Japan’s Meiji Restoration faction, brought the British to the edge of total global defeat.*



Although the city-builder republican movements of the late 19th and 20th centuries have been generally philosophically puerile by comparison with their predecessors of the Golden Renaissance and 16th and 17th centuries, the persistence of a dedication to scientific

and technological progress, even in a purblind, pragmatic form, has so far prevented civilization from plunging into another dark age ... despite two world wars of this century.

At this moment of writing, the world verges to the brink of thermonuclear holocaust under the combined impetus of London, Peking and their allies in various nations' leading circles. We dare not content ourselves at this juncture with a merely pragmatic, purblind approach to the furtherance of scientific and technological progress. We dare not do less than to quickly resurrect the most advanced philosophical knowledge and methods, and to apply that knowledge, those methods appropriately to the great world-building tasks before us.

Those tasks center around finally and forever bringing all humanity out of the hinterlands of oppressive barbarism. We must proceed from a conscious mastery of the universal law of progress, and with assurance that the hegemonic combination of leading powers of the world are unshakably dedicated to no other policy but that of fulfilling the requirements of a republican world order of generalized scientific and technological progress.

There must be no more Dark Ages for humanity. No factions dedicated to the oligarchical cause must be permitted to retain power in any nation. No people of any nation must be pushed into zero-growth practices and ideologies. Never again must there exist a combination of oligarchical factions and a recruitable mass of oppressed hinterlands population to threaten the human species with a new Dark Age.

## A Concept of Culture

I now refer to, without repeating here, the contents of my [publication](#), *The Theory of the European Monetary Fund*. Two essential points are adequately demonstrated in that and other published locations. First, in the cited publication, I accomplish two things. I demonstrate, in outline, the economic theory for a general law of development. I also demonstrate that the conception of *negentropy* which arises in that connection is the proper conceptual foundation of all scientific knowledge. In other locations, my immediate collaborators and I have demonstrated the coherence of these same conceptions for the comprehension and ordering of what is broadly termed "culture"—poetry-music, drama, painting, sculpture. I now employ the conclusions demonstrated in those locations to attack

the problem of the development of African culture.

To aid in making that indicated connection, I now summarize a few points of most direct relevance to the specific problems under consideration here.

It is appropriate to emphasize that my own fundamental contributions to economic theory are most conveniently characterized as applying the implications of Riemannian physics to the problem of deterministic economic models for the condition of constant technological advancement.

This involved a more profound epistemological grasp of Riemannian physics than has, heretofore, been generally encountered among physicists.

Usually, Riemannian physics is understood to signify the more specific accomplishments of Riemann, rather than the "axiomatic" conceptions and methods by which his accomplishments were effected. My own point of departure was Riemann's notion of "fundamental hypothesis." Riemann's "fundamental hypothesis" and the "higher hypothesis" of Plato are equivalent notions. Riemann's accomplishments may be successfully employed without accepting or comprehending the notion of "fundamental hypothesis;" the derivation of Riemann's physics cannot.

It was the notion of "fundamental hypothesis," aided by coherent understanding of Georg Cantor's derivation of the notion of the "transfinite," which aided me in solving the most important of the remaining problems of economic theory.

The most obvious equivalent to the Platonic conception of "higher hypothesis" and Riemann's notion of "fundamental hypothesis" occurs within the framework of the well-tempered system of contrapuntal composition in music. This immediate connection between Riemannian physics and poetry-music is perhaps the most convenient bridge for bringing into light the equivalence between certain artistic and scientific thinking. With aid of the comprehension of the three levels of knowledge of Plato, Neoplatonic Christianity, the *Koran*, and Dante Alighieri's *Commedia*, we are aided to elaborate the needed theory of culture as a lawful conception for practical use.

However, before plunging into the elaboration of that point, we must clear away a certain amount of commonplace misassumptions concerning culture.

The African weighing the problems of introducing European technology into his continent often accompanies his thoughts on this process with a cautious or even resentful attitude toward the notion of superim-

posing European culture generally upon African peoples. We are not thinking at this moment of those African voices which are merely echoing the cultural-relativist doctrines of British mintage. We are expressing sympathy for the African who refuses to swallow credulously the *post hoc ergo propter hoc* argument that European technological superiority requires Africa to import, kit and caboodle, each jot and tittle of existing habits of thought and daily practice of the industrialized nations.

African culture must be transformed, without doubt. A culture which reflects the effects of imposed technological stagnation, in which the African mind's potentialities are deemphasized, for emphasis upon the sensual appetites and impulses of the body, must be transformed. This transformation must occur along the principled lines best exemplified by Dante's *Commedia*. The instant we pose the problem in those terms of reference, we have adopted a standard which impels us to cast aside many of the prevailing standards of artistic and other taste in European cultures themselves.

One cannot leap directly into the last, empyreal canto of Dante's *Commedia*. The Dante of the inside of the *Commedia*—as distinct from the Dante writing the *Commedia*—lifted himself out of the Inferno of irrationalist sensuality. That Dante walked with Virgil through the Purgatory, and through fire into Paradise. The great future art of Africa will embody and celebrate Africa's own transformation of its cultures from the colonialist heritage of brutalization of peoples into irrationalist sensuality.

No doubt, existing African stories and legends, including those which embody an outlook of irrationalist sensuality and superstition, will be transformed ironically by African artists. Such Neoplatonic methods of guiding artistic audiences through the upward steps of progress outlined by Dante's *Commedia* will become the corpus of an emerging African art. It is not adequate to preach finished virtues to a people; artists are required. The artist must get inside the mind of the audience, in the manner Dante illustrates the method, and guide the steps of African minds upward in that way from that point of intersection.

I do not propose that the greatest European art—that which is truly great, rather than that which merely enjoys a favorable reputation at the moment—will not be assimilated in Africa. I propose to emphasize that it is the *method* of the Platonic dialogue, as the principle of art standing above any specifics of national culture,

which is the only essential thing Africa *must* adopt from Europe. That European art which fulfills the standards of the *Platonic dialogue as method* should be valued in Africa, and will undoubtedly be honored as Africa develops. The rubbish of European culture, which presently constitutes the numerically greater content of that culture, Africa will have the advantage to avoid more easily than Europe rids itself of the same such refuse.

Once culture is defined from the vantage-point I have indicated here, a spectrum of indispensable conclusions follows. First, the culture reflected in poetry-music, painting, sculpture, architecture, drama, and so forth is as much a matter of scientific principles as a proper mastery of modern physics. Moreover, the underlying principles of great art are the same principles which ought to inform a valid physics—the principles associated with Plato's notion of the "higher hypothesis." Not only is there an agreement of this epistemological quality between great science and great art, but *the fostering of the kind of great art which fulfills those principles is indispensable for fostering scientific creativity within a population*. This means not only the fostering of great African scientific discoverers, but fostering most efficiently in the mind of the African citizen generally an enhanced capability for assimilating more advanced technological conceptions for generalized social practice.

Conversely, to the extent that Europe exports its own or an "Africanized" version of the rock counter-culture to Africa, Europe will thus be impairing the capability of Africa to assimilate modern technology. Or, to the extent that Africa fails to liberate itself from primitive cultural traditions, a similar deterrence to progress will occur.

To restate the same point in the terms of reference of a preceding section, Plato's emphasis on the principles for development of the mental powers corresponds to the lessons of the dark ages. It is the lack of emphasis on technological progress among backward forms of rural-based and pastoral cultures, and the tendency for mental and moral savagery among the oppressed and backward strata of otherwise advanced civilizations, which makes societies vulnerable to the dark ages. All the achievements and beauties of great urbanized cultures are in imminent jeopardy until we have developed and effectively apply the conceptions needed to transform the peoples of the "hinterlands." We must eliminate that ignorance and backwardness which have en-



abled the oligarchists repeatedly to transform masses of afflicted populations into social battering-rams against the institutions of civilization’s generalized scientific and technological progress. Thus, although the Platonic method is the proper foundation for the development of scientific knowledge, it is equally, essentially, a concentration on the methods for elevating the mind of the masses of people—including the oppressed peoples suffering the ignorance and backwardness of the “hinterlands.”

### The Example of Music

The great sources for the development of European polyphonic contrapuntal music are chiefly the Platonic Academy and the writings of the medieval Ismaili scientists, al-Farabi and Ibn Sina. These sources insist that the well-tempered methods of music-poetry composition—in distinction to opposed methods—are a necessary experience for the fostering of the creative powers of the mind.

To make clear what we mean by opponents of this kind of music, we cite the British doctrine deployed against the great Johann Sebastian Bach, and later deployed against Ludwig van Beethoven. The British insisted that music was nothing more than a pleasing melody with agreeable accompaniment, and that music was chiefly a matter of exciting or otherwise pleasing sensual effects. That, British, view has no compatibility with what is properly regarded as music or poetry.

From the point of al-Farabi’s proof for octave-species well-tempered scales, and the definition of 24 major and minor scales for European well-tempered polyphony, music has been essentially defined as follows. This definition underlies the agreement between such music and scientific thinking.

If I sing within one of the 24 scales, but then augment or diminish an appropriate note of that scale, I am singing in another of those scales. If I take the third, fourth, fifth or sixth note of a scale and treat that as if it were the first note of a scale, I am singing in a different scale than the one from which I began, in which I sing

notes which are variously augmented or diminished with respect to the pitches of the original scale. By such and related means, I can move through all 24 of the major and minor scales in a lawful way.

If I choose a theme which is in one scale, and I repeat this theme in parallel vocal or instrumental voices accompanying the first, but starting at different beginning-points in time, and I follow the principles of the simple canon in so doing, wonderful possibilities unfold for me as a prospective composer of music.

These are but the most elementary features of well-tempered contrapuntal musical composition. We have chosen to emphasize such elementary features to make the relevant point to the widest audience. We



Elias Gottlob Haussmann



August von Klöber

*The great sources for the development of European polyphonic contrapuntal music are chiefly the Platonic Academy and the writings of medieval Ismaili scientists al-Farabi and Ibn Sina. Shown: Johann Sebastian Bach (left), and Ludwig van Beethoven (right).*

now continue, showing first why the well-tempered system is so important, and what is potentially wonderful in a composition treated according to well-tempered principles.

It is probably well-known to all that there is a school of argument which attempts to define a “natural” physical scale of pitches according to the principles of vibrating wires, strings, tubes, and so forth. According to that misguided school, these mathematical progressions of vibrating rods are presumed to be “natural pitches” of an octave-species scale. The deviations from such “natural pitches” are then explained as permissible changes in pitch-values for the purposes of convenience. One illustration of such a convenience is the problem of tuning keyboard instruments in such a way as to permit

performing in any of major and minor keys.

That school of argument is nonsensical.

If I am to sing within a domain of 24 major and minor keys, then each note I sing is simultaneously a tone, or an augmented or diminished tone, in every other among the 23 remaining keys. Therefore, we cannot sing—except monotonously—unless the value of the tone is determined simultaneously for all 24 keys, rather than merely as a note of an octave for one key. In other words, the 24 keys are not derived from a “natural” octave-species scale; the value of the tones of any one octave-species scale is determined by 24 keys taken as an indivisible, primary whole.

The importance of this is that the well-tempered system defines the 24 keys as a unified domain of tonal development. It is the lawful movement from one key to another within a single musical composition which is the indispensable definition of music. The requirement of such tonal development is the primary fact of the tonal side of music; it is *the principle of development* which determines what the pitches of the tones must be. There are no “natural pitches” in the sense one school assumes to be the case.

We shall not review here, for reasons of convenience, the other formal aspect of musical development, metrical development. We merely make the observation that the metrical and tonal development of an actually well-tempered composition properly interrelate.

Now let us, speaking hypothetically, proceed to compose some music. We shall employ the simplest rules of composition, those canonical principles for singing poetry in the time of Plato, or of Dante, Petrarch or Leonardo da Vinci. For this purpose, no theory of harmony is needed—for reasons of proof we shall promptly identify.

In judging how to sing a line of poetry (which can be done invariably if it is genuinely poetry), we are governed by elementary musical rules.

We must observe the principles of the musical scale. The vowel-consonant connections in spoken language are musical; pitch-values are implied. (It is not necessary to go into details here on that point.) Except in languages in which specific pitches are conventional, we are merely restricted. In modern European languages, for example, there is no exact pitch associated with a syllable, but rather a tendency to prefer certain relative values of pitch with respect to other syllables in the same vicinity of speech. Our first choice in singing a line of poetry would be to decide upon one of the 24

major or minor keys. We might make a more complicated choice, but it would be a choice of some lawful significance within the elaboration of a composition in the 24-key system. It would not be an arbitrary sequence of pitches. (You can do almost anything, provided you demonstrate it to have a lawful “resolution” within the course of the completed composition.)

There is a second level of refinement to be considered. If one were a frequenter of the Academy at Athens, or an associate of Dante, Petrarch, or da Vinci, one would probably sing the poem to the accompaniment of a stringed instrument. This accompaniment would have no resemblance to a modern popular singer producing annoying monotony with a guitar. One would add the one or two voices performed on the instrument to the singing voice; the voice or voices of the instrument would sing a canon in concert with the singing voice. This polyphony would prompt a musician to consider further refinements of choice in selecting the sequence of notes for the original design of the sung line.

We noted above that no consideration of the theory of harmony is involved in this. It is not a matter of vertical chords. It were better for music, and for understanding the performance and composition of music, to throw out the doctrine of vertical harmonies altogether.

Let us focus for a moment on the point at which the second voice of a canon comes in. Let us consider, now, the note in the first voice sung immediately preceding the first note of the second voice. That note in the first voice goes into two directions. It goes to the succeeding note in its own voice; it also goes to the first note in the second voice. That latter connection is a “cross-voice” relationship. It is not vertical harmonies which actually determine consonance and dissonance in polyphonic music; it is the complexity of cross-voice relationships.

The composition of a simple canon requires that the cross-voice relationships of the polyphony be lawfully meaningful throughout. You see, no doctrine of harmony is needed; indeed, the doctrine of harmony tends to distract the student from the real issue of the matter.

By constructing the thematic statement of a canon cleverly, one causes cross-voice relationships to emerge which one brings forth as developed voices. It is in this way that well-tempered polyphonic counterpoint introduces exciting development within musical composition.

That is only the first doorway to musical composition, but it is adequate for defining our second point.

Once the composer has found an appropriate cross-voice-linked idea of musical development, the shading of the thematic statement for the canon is determined accordingly. In other words, musical development does not begin with themes as arbitrary givens. One searches, with aid of canonical method, for a kind of development which is suitable to one's purpose, and then defines the theme accordingly.

Thus, the canonical way in which thematic material is determined for a good musical composition is analogous to the way in which the well-tempered system determines the proper pitches of the tones. One proceeds from *the concept of a whole development taken as an indivisible primary*. One then determines the particular values—such as pitches, thematic material—which that development demands. It is the whole which is primary, and the particular which is relatively determined, relatively ephemeral.

Music has reached its highest degree of scientific development to date in the transformed notion of double-fugal counterpoint achieved in the later work of Ludwig van Beethoven. What is truly “double” in this is not the combining of two elements as in the ordinary notion of the double-fugal form. What is double is that in the development there is a development of a process of development, a development of the second order. This brings Beethoven's greatest later works into agreement with Plato's notion of the “higher hypothesis.”

The point, as Plato, al-Farabi, Ibn Sina, and others emphasized, is that the well-tempered system of musical composition and performance locates music primarily in the creative processes of development embodied in the music. Music is not located in sensual effects, but in



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*The split in physics between Newton's and Leibniz's views divided European physical science into two bodies of thought and practice. Shown: detail of a statue of Gottfried Leibniz at the Oxford University Museum of Natural History.*

the process of lawful, creative development mediated through the domain of what might appear to some to be musical-sensual effects. It is not the sensual effects which define the intensity of “feeling” of a great musical composition; the intensity of feeling is the experience of lawful forms of creative development.

### A Physics Analogy

The split in physics between Newtonian and Leibniz's views divided European physical science into two bodies of thought and practice. The school associated with Leibniz was dubbed the hated school of “continental science” by the British. From the time of Francis Bacon, and from the establishment of the British Royal Society under John Locke's guidance, the British have devoted the subsequent centuries to the effort to discredit and suppress “continental science.” On this point, the British have been explicit.

The exemplification of the essential differences between the two schools is the opposite way in which the two opposing methods regard the phenomenon of the wave. We shall thus illustrate how the school of Leibniz, sometimes termed the “hydrodynamicist” school, provides a view of the universe in epistemological agreement with the well-tempered system of musical composition. It is not therefore so astonishing that Bach was in the factional orbit of Leibniz, or that the British efforts to isolate, defame and destroy Bach were coordinate with British efforts against the influence of

Leibniz in science.

In the Newtonian, or reductionist (“elementary particle”-centered) view of physics, the wave is a mental construct invented by the mind, as a convenient way of thinking about the resultant of a complex interaction among numerous particles in motion. In the



*The Leibnizian Bernard Riemann developed proofs of the primacy of waves (over particles) for which experimental proof was given by the fact that H-bombs work.*

Leibnizian school, any wave meriting that name (for purposes of physics) is a real, primary phenomenon, which directly interreacts with other waves as wave-interaction. In the Leibniz view, the behavior of the particles participating in the wave is determined by the wave, not the other way around.

The most advanced understanding of this theoretical problem to date is provided through the pioneering discoveries of Riemann. Although Riemann is qualitatively more advanced than other hydrodynamicist schools of physics, Riemann's work is an advancement within the "continental physics" of Leibniz, Euler, the Bernoullis et al. Riemann developed, even before 1860, remarkable proofs of the primacy of the wave as such—for which conclusive experimental proof was given by the fact that H-bombs work.

The same Leibniz-Riemann approach is crucial to the main lines of progress for scientific research today.

In plasma physics, accelerators and related devices do not accelerate *individual* electrons, protons and so forth. They accelerate plasmas. The effort to interpret scattering and other plasma reactions as particle-reaction reactions is specious. The most anomalous sorts of reactions—those which defy an elementary particle sort of physics—have the characteristic feature that the collectivities of the plasmas behave as Riemannian waves.

Most dramatic among anomalies of this sort are those which involve the negentropic generation of plasma entities, such as solitons. These and related crucial evidence point in the direction of solving the problem of defining the distinctions and causal connections between the domains of inorganic and organic physics.

The interesting sort of anomalous behavior is that in which the notion of energy as a scalar breaks down, together with the notion of electrons, protons and so forth as "elementary particles." These conventional notions of scalarized energy-measure and "elementary particles" define atoms, plasmas and so forth in terms of an ostensible energy of the system. Hence, the provocative anomalies are those which confront us with manifestations of organized reactions which depend upon causal influences in excess of what can be accounted for by the ostensible energy of the system. It appears that we have tapped something additional within the internal physics of the particles, a kind of physics which displays rather different laws than Maxwell-pivoted physics conceptions. We are obliged to think not of scalar magnitudes of energy, but of a higher

form, "organized energy," an ostensible source of *negentropy* in certain higher organizations of atoms, plasmas and so forth.

Biology is the most provocative vantage-point for viewing this.

Take two "organic" molecules. One is suited to be part of a living process; another of the same nominal composition is not. The difference between the two is organization, not atomic constituents.

This notion of organization, as key to the distinction of living tissue's constituents, is most provocative. Appropriate "soups" of such constituents reflect their characteristic organization in a manner heuristically analogous to the characteristic crystallization of inorganic substances. The term, "aperiodic crystal," has been employed for biological processes on this account.

It has been noted that in the development of antennae, legs, and wings on flies metamorphizing from the larval form through pupation, it is the shape of the plate from which the limb grows which determines whether it will be a leg, or wing, and so forth. It is the "wave form" generated which governs the process's constituents.

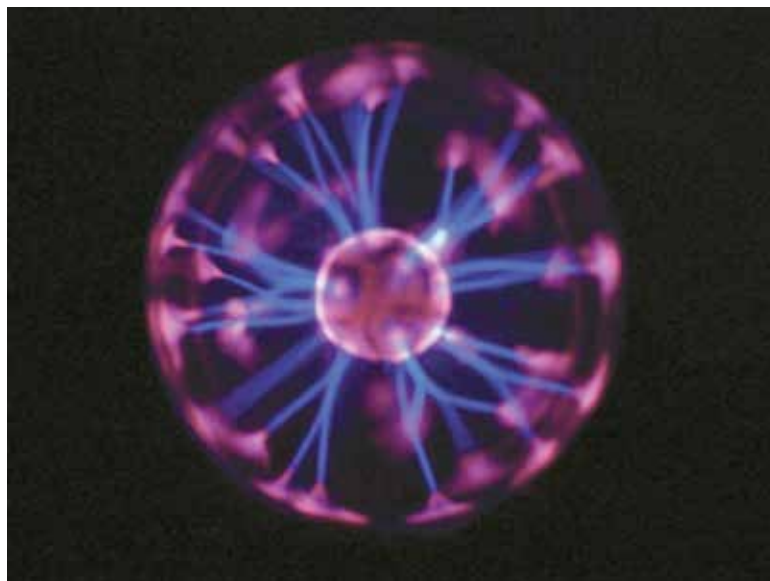
Looking backward toward the root of this business, we come to the atom. We are looking for the font of negentropy in the living tissue. Whence does the tissue secure this negentropy? Certain molecular configurations tap the negentropy of the atom; others, of the same putative building blocks, do not. Anomalous plasma behavior shows that the atom and its ostensible constituents contain such potentialities. Presently, we lack definite answers; but we know which track will ultimately be the fruitful one.

Nature is ordered in a manner directly opposite to the assumptions of reductionist empiricism. Fruitful scientific investigation also proceeds directly opposite to the guidance of reductionist-empiricist assumptions. Science proceeds by conceptualizing the characteristics of a whole process of coherent development; this conception enables the scientist to generate fruitful—if not always correct—hypotheses. Through a barrage of successive, fruitful hypotheses—in which we learn important knowledge even from mistaken hypotheses so projected—we determine a specific knowledge, much as the well-tempered notion of the tonal aspect of musical development determines the pitches of tones, and as canonical method applied to a conception of musical development guides the composer in determining the proper exact values of thematic material.

## The ‘Higher Hypothesis’

The key to progress is typified by those methods of development of the individual which will yield the highest incidence of leading scientific discoverers. This method, applied to the population as a whole, may not transform all of the population into leading scientists. It will be optimal in yielding the highest incidence of good engineers, technicians, and optimal results in fostering the technological aptitudes of the general population.

Therefore, if we now concentrate on the matter of optimal incidence of scientific discoverers, it should be understood that we are treating that incidence as a key parameter for all the correlated other benefits.



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*The matter of culture: a conscious notion of a process of development, by which progress in knowledge and method of developing knowledge has been effected up to each point of that process of development. Shown: A plasma ball.*

The epitome of the advanced scientific discoverer is the mind which has comprehended the higher hypothesis. Therefore, a directed effort to effect comprehension of Plato’s notion of the higher hypothesis in the largest possible number of citizens, is the method of approach which must tend to correlate with the best overall results among the population as a whole.

Even mere existing professional anthropologists have, in some instances, attempted to measure the degree of technological progress of various cultures in terms of the modal per-capita throughput of energy in basic modes of production. As I demonstrate, that measure is an unavoidable step of first approximation; however, as a parameter of the process of development it is

fallacious, totally misleading.

As each level of technology defines a range of man-altered conditions as primary resources, those primary resources are also defined as relatively finite. This relative finiteness may be ostensibly a matter of absolute quantities of suitable primary-resources reserves available for exploitation; the relative finiteness may emphasize a limitation of steeply rising marginal cost of exploitation. This boundary-condition cannot be overcome without an increase in the per-capita “reducing-power” of the society. This per-capita reducing-power depends upon inventions, upon scientific discoveries or the equivalent. Yet, those discoveries cannot be adequately realized unless the potential rate of growth of the economy is adequate—there must be a reasonably high ratio of surplus energy to total energy throughput per capita.

The result is that the per-capita throughput must rise, but under the condition that the ratio of surplus also rises. (The reasons are given more fully in my *The Theory of the European Monetary Fund*.) This combined exponential growth in both the per-capita throughput and the rate of surplus correlates with negentropy.

This is the reference-background for presenting an adequate view of Plato’s notion of the higher hypothesis.

The realization of negentropy, on which the sustaining and advancement of the human condition at any level depends, is mediated by that quality which distinguishes man from the beasts: the development of the creative-mental potentials of the human mind. Every beast is delimited to a range of alternative behavioral potentialities, whose thermodynamic potentialities are relatively fixed by the beast’s heredity. Only man can develop himself without biological transformation of his hereditary nature; only man can develop his mind.

Not only is technological progress indispensable for successful human existence. Without technological progress man is degraded in implications of general social practice to a kind of talking cattle. Man in zero-technological-growth or devolving cultures is degraded in self-image and morality to likeness to a mere talking beast. His sensual appetites and impulses dominate his sense of what his identity is. He becomes sensualist-irrationalist—Hobbesian, beast-like man.

The beast-likeness of mankind is expressed as simple consciousness, as a set of fixed habits of conscious thought. In this mode of bestialized mental existence, the individual is enslaved to whatever impulses, prejudices, judgments erupt into his consciousness. He knows not whence they come, nor can he prove whether they should or should not exist at all. They are simply there at the time they occur to him; he is the slave of their occurrence.

Creative development signifies changing the way one thinks. This is accomplished through what is formally represented as the method of the Platonic dialogue. One sets one aspect of one's mental processes to watch the other in the conduct of a dialogue with other persons. By watching the interplay of simple consciousness, the watching part of one's mind is able to correct the systematic errors in the process by which simple consciousness is determined.

These changes correspond to *ordinary hypothesis*. By changing the criteria of simple consciousness's generation, one becomes rational (in the ordinary usage of the term "rational.") This higher faculty of mind, the "watcher," the conscience, is the source of hypothesis.

There is a second level to this process. In the history of scientific knowledge, each level of such knowledge is qualitatively superseded by new general advances in knowledge. Therefore, it is demonstrated that any science, in the conventional notion of an accredited body of scientific knowledge, is intrinsically inadequate. As a level of scientific knowledge corresponds to a level of development of the power to generate scientific hypotheses, so the progress of scientific knowledge describes a succession of levels of quality of formulation of hypotheses.

For this condition we must assign to our mind the function of developing a "watcher" who watches the "watcher." The hypothesis which coherently and efficiently governs qualitative advancements, successively, in the quality of scientific hypothesis, is the *hypothesis of the hypothesis*, or Plato's *higher hypothesis*. This is coordinate, for physics as such, with Riemann's "Fundamental hypothesis."

Perhaps the most efficient example is Dante Alighieri's *Commedia*. The *Commedia* is apportioned into three sections: Inferno, Purgatory, Paradise. In the first section, Inferno, Dante's consciousness is simple consciousness. He is only reacting to an ordering of successively-ordered experiences, governed by the principle

of sensuality. In the second, Purgatory, he hypothesizes. He questions, he is rational in the ordinary usage of "rational" today. In the third, Paradise, he is developing the hypothesis of the hypothesis.

The principle which orders the successive cantos in the Inferno is the principle of irrational sensual appetites and impulses. This leads to its outcome, the Pit. The Pit negates the validity of irrational sensuality. In Purgatory, Dante becomes Kantian man. He still adheres to the service of his sensual appetites, but he takes into account the chains of cause-and-effect which an action detonates in the world around him. Those actions which have undesirable consequences he suppresses (negates). He uses this negating knowledge to curb or modify his appetites and impulses. This leads him to the futility of the Earthly Paradise. Dante must give up altogether the notion that his sensual appetites and impulses are his identity. It is not adequate merely to employ rationality in seeking successful gratification. He must give up the association of his identity with such sensuality. That change is like passing through fire. Paradise is the method of developing the higher hypothesis.

Each division is composed of 33 successive cantos, ordered by a developmental principle. In the first, the Inferno, the developmental principle is sensuality, irrationality—existentialism. In the second, Purgatory, the developmental principle is Kantian: *the rational negation of counterproductive sensual impulses in order to save those which understanding hopes to satisfy from among the noncounterproductive*. In the third, Paradise, reason-for-itself is the developmental principle.

Yet, the succession of the three developmental principles also implies a development principle governing the entire succession of the cantos, from the first of the Inferno, to the last of the Paradise. In the last canto of the Paradise, this higher, overall developmental principle is finally comprehended. The journey to the empyreal, knowledge of the content of the higher hypothesis, is now completed. That canto is the perfected knowledge of the implications of the higher hypothesis.

The significance of the higher hypothesis is that it correlates uniquely with the fundamental aspect of human progress in willful mastery of the lawful ordering of the universe. Scientific knowledge, in the ordinary sense, cannot be in correlation with the lawful ordering of the universe, except inadequately. Man could

not imagine a mastery of the laws of the universe in any final, all-at-once moment of glory, with nothing more to learn. Man knows he is mastering the ordering of the universe only by abstracting that aspect of his creative behavior which correlates with successive advances in mastery of the universe. The epistemology of scientific knowledge's evolutionary progress, viewed from the vantage-point of the notion of the higher hypothesis, is the highest form of knowledge man can attain concerning universal law.

It is on this account that Riemann's notion of fundamental hypothesis is fundamental for physical scientific knowledge.

Conversely, to produce the highest incidence of scientific discoverers, we must have a general culture which fosters progress of developing new citizens toward comprehension of the higher hypothesis. This must be a culture in which the principles of the Platonic dialogue, as a method for reaching the higher hypothesis, dominate in all aspects of cultural development: the arts, science, law.

### Self-Critical Cultures

Clearly, the most widespread obstacle to development in Africa is the attachment sections of the population have to "our ancient ways," "our special customs," or, simply "tradition." The "traditional culture" of sections of populations long enslaved to technological stagnation, especially in rural and pastoral life, is intrinsically a culture belonging somewhere in Dante's Inferno, a culture tending to the same degree of moral degeneration as the world-outlook and prejudices of Europe's fanatical "environmentalists."

However, fortunately or unfortunately, that is the culture which seizes many. It cannot be simply leapt out of. The African burdened with such a culture cannot step into a European-type rationalist culture by an effort comparable to moving abruptly into another room. Like the character Dante, this African must struggle within the culture imposed upon him from the past, making his way out of the Inferno, into Purgatory, toward Paradise. It is that struggle to make his way upward which is the heart of the new African cultures to be developed.

The practical questions which confront us most prominently are therefore two. Most broadly, we must set cultural progress of the sort we have outlined into motion. Concomitantly, Africa must use the lessons of the Platonic-Neoplatonic method to organize the movement.

We set progress into motion by providing a climate of the benefits of technological progress. We must afford the most backward peasant a credible experience of the benefits of progress. The benefits which are important to him will make the kind of thought necessary to comprehend the new practices a desirable quality of mental activity. "I have learned a new thing which increases my power over my circumstances of life." As that interest in changing his simple consciousness is established circumstantially, it is the work of the educator and the artist to employ the method of the Platonic dialogue to transform the existing cultural ingredients from a simple-conscious, traditional form, into the subject-matter of a new culture, a consciousness of the changing of, going-away-from simple-conscious traditional culture.

The moral shift which must be fostered is not one of repudiating one's ancestors pure and simple. In superseding old ways, one fulfills the existence of one's ancestors by making something better on the foundations they have provided. "Thank you for having given birth to my parents, dear ancestor. Now, through progress—through progress in change—I shall prove that your having lived made possible something worthwhile." The developing African says, "Because of the progress I bequeath to my posterity to build upon, I ensure that my ancestors have not lived for nothing."

Let us now distinguish the essence of the matter of culture.

From the standpoint of ignorant opinion on this matter, culture is a set of beliefs and so forth, as a kind of collection of objective-like artifacts. In reality, *culture is the notion of a process of development*, by which progress in knowledge and method of developing knowledge has been effected up to each point of that process of development. Cultural knowledge becomes more profound as the process is understood as a process of progress in the quality of developing new knowledge, as the process represented by that qualitative progress is abstracted from the whole experience to become the subject of reflection.

Culture in Africa will become Platonic dialogues which embody the Platonic method of superseding of present-day traditional beliefs. This will be generalized, to make emerging African culture an integral part of world culture by comparing the experience of transcending traditional beliefs in Africa with equivalents

in the progress-phases of European and other cultures. This critical comparison will provide the basis for the generalization of the notion of culture, as human culture, rather than as European, African or any other narrow definitions in this domain.

The incapacitating problem for the European generally, in dealing with the more stubborn social aspects of African development, will be that most Europeans today accept in their own cultures a mixture of good and rubbish. The acceptance of a rubbish-laden European culture (e.g., toleration of existentialism, empiricism, etc.) as a collection of “givens,” a collection of “personal preferences,” simple-conscious “given” prejudices and beliefs, means that the European so afflicted is necessarily blinded to the important features of African cultural development, to the effective comprehension of the important problems which tend to impede that development. If the European does not subject his own beliefs and habits of judgment to the rigors of the Platonic dialogue as a method, that European is a crippled person in the domain of dealing with the realities of Africa.

### **An Elite of Platonic Thinkers**

For this purpose, Europe and Africa must produce an elite. This should not be an elite in the sense of a privileged stratum squatting on the shoulders of the less-favored. It must be an elite of servants, an elite of the dedicated modern agents of the Platonic Academy at Athens. Each of this elite must master one or more of the relevant fields of science, engineering, medicine, poetry, music, drama, sculpture, architecture, agronomy. That person must be developed in the Platonic method, and must master his or her own field from that vantage-point. Such persons, distributed among the political, industrial research, artistic and other aspects of government and work in the mediating of technology transfer, serve as the radiating-points for mediating the point of view, the approach we have reviewed in outline in this presentation.

This elite must be developed with aid of new special institutions of advanced education governed by Platonic-Neoplatonic principles. These institutions catalyze the development of the needed elite, and also serve as catalysts for introducing needed reforms into educational institutions in both the presently industrialized and developing nations.

The process in which we are engaged is no mere economic-development program, not merely a remedy

for the hazards otherwise threatening mankind in this time. We are engaged, if we see the matter rightly, in a battle to finally solve the problem of the “hinterlands.” We are working to place the present and future order of this entire globe under the rule of the Great Design.

True, we are working to uproot the preconditions of chaos, famine and epidemic in the developing sector, and to ensure the prosperity of all nations in a half-century effort to end forever underdevelopment in any significant corner of the world. This aspect of our endeavor is necessary, but not the essence of the undertaking.

We are transforming the minds of ordinary people in both the industrialized and developing nations. The process of global economic development and technological progress provides the indispensable environment in which to foster consciousness of scientific and technological progress, especially consciousness of the development of the creative potentials of the individual mind. We are engaged in affording mankind generally a new, higher valuation of itself with aid of this new technological environment.

Yet, to consolidate those beneficial circumstances’ effects upon the mind, the methods and implications of the Platonic dialogue must be consciously applied to science and art, to catalyze within the individual mind a rounded development. We cannot sustain progress in an environment permeated with cultural barbarism; we cannot sustain a viable artistic life among a people in technological barbarism. The principles of great art and the principles of great science are epistemologically the same principles.

“How-to” education in practical technology is perhaps unavoidable. Our universities being in the lamentable condition they presently represent, much of the education afforded will be poor in methodology, as stultifying of the development of creative powers as it is informative for technological practical tasks on a fixed level. We must ensure this to a certain extent, while working to supersede it, bypass it as rapidly as possible. We must infuse the process of development with something better, something to develop and grow to replace all the left-over refuse we carry into the initial phases of the present great undertaking.

It is seeing what we term Art as properly ruled by the higher hypothesis, that is key to fostering the most rapid advancement of the scientific and technological powers of labor in Africa and other zones of economic development.