

Retrospective

ARTHUR KOESTLER/ PART TWO

by John A. Miles, Jr.

"Retrospective: Arthur Koestler/Part One" (*Zygon* 9 [1974]: 339–51) reviewed the writings of that author's first cycle, 1939–54. The present issue concludes the retrospective with a review of his second and third cycles, 1949–67 and 1968 to the present, respectively.

During his first cycle, Koestler had seen the crisis of the West as ethical rather than as religious. Though characters in his novels spoke confusedly of "transcendental faith,"¹ he had confined the more direct analysis of his *The Yogi and the Commissar* (1945) to a discussion of ethical systems. In 1955, however, he published a new collection, a sequel to *The Yogi and the Commissar*, in which his call for a new religion became explicit. "The Trail of the Dinosaur," title essay in that collection, foresaw human extinction by genosucide unless the skyrocketing "power-curve" and the plummeting "spiritual curve" of the species could be brought under control. But whereas in 1945 this control had been a matter of balancing competing ethical ideals—that of technology (the commissar), on the one hand, and that of contemplation (the yogi), on the other—by 1955 it had become the search for a *tertium quid* transcending both that competition and East-West political conflict. Stabilization short of holocaust was conditional, Koestler thought, first, on a military stalemate between the Communist and capitalist superpowers and, second, on a shift in the ideological framework of their struggle like the shift which followed the Thirty Years' War, "a spontaneous mutation of interest," then, in which an "inevitable choice no longer appears inevitable, passion drains away and people simply become interested in something else."² Having fought on either side of the Communist-capitalist struggle, Koestler now looked toward their mutation into "something else" and in this connection began to speak explicitly of the interplay of science and religion.

The matter was fully as vague as the phrase "something else" sounds, for in cultural as in biological evolution the next step was "not only unpredictable but *beyond the power of imagination*" (emphasis added). But Koestler did go so

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far as to speak of the new mutant as a religion; he predicted nothing but unapologetically hoped:

Is it really too much to ask and hope for a religion whose content is perennial but not archaic, which provides ethical guidance, teaches the lost art of contemplation, and restores contact with the supernatural without requiring reason to abdicate?

Clearly, the devout will regard this question as presumptuous and betraying a lack of comprehension for the revealed, or symbolic, or mystic essence of faith, according to his notion of it. "After all," he will say, with indignation, or contempt, or pity, "you cannot expect a religion made to measure like a suit, to satisfy your specific requirements." The answer, I submit, in all humility, is that the indignation of one's Catholic, Protestant, Jewish, and Moslem friends mutually cancel out; and secondly, that the objection is historically untrue. For every culture and every age did have its faith "cut to measure," and did restate the perennial content of all religions on its own level, and in its own language and symbols. It is neither an irreverent nor an impossible hope that this will happen again in the future.³

Koestler's hope was not for a return to traditional religion: "History may move in a spiral," he wrote, "but it never moves in circles" and, in a later volume, added, "If a new synthesis is to emerge, it will emerge from inside the laboratories."⁴ Nonetheless, the emerging synthesis had to be such as might transform the laboratories themselves and so save them, even as a biological mutation might have transformed and saved the dinosaur. The spiral of human history, if it was not to end, would have to leave traditional science as far below as it left traditional religion. The "spontaneous emergence of a new type of faith which satisfied the 'great sober thirst' of man's spirit without asking him to split his brain into halves" was inconceivable without the simultaneous emergence of a corresponding new type of science.⁵

Koestler in "The Trail of the Dinosaur" was neither Mary Baker Eddy nor Pierre Teilhard de Chardin. He had, unlike the former, no personal solution to the science-religion impasse and, unlike the latter, no assurance that the flow of events would provide a solution in the short time available ("the next few decades or the next half-century at the utmost"). He defended only the right of the human dinosaur not to despair of survival: "Once we hoped for Utopia; now in a chastened mood, we can at best hope for a reprieve; pray for time and play for time; for had the dinosaur learnt the art of prayer, the only sensible petition for him would have been to go down on his scaly knees and beg 'Lord, give me another chance.'"⁶

In this essay Koestler negotiated a difficult transition. On the one hand, his awareness of the spiritual dilemma of modern man had undercut his motivation for further political activism. He had seen "rival ideologies draw the masses in wild stampedes across the ice" and medicine men threaten "to remedy the climate by turning the frozen waste into a blazing furnace," but he knew that it was science which had brought the "spiritual ice age" itself, and so science that had somehow to be spiritually addressed. "Cassandra has gone hoarse," he wrote in his preface, "and is due for a vocational change."⁷ But what, if the new mutation was "beyond the power of imagination," could the new vocation be?

We saw the first hint of an answer in a previously quoted anecdote from his refugee memoirs: "I thought I had made a discovery and wanted to try it out. . . . The remedy against hatred . . . is to teach them [German soldiers] to laugh and to smile."⁸ That hint grew into a fully developed theory of the comic in *Insight and Outlook: An Inquiry into the Common Foundations of Science,*

Art, and Social Ethics (1949), in the preface to which he reports, almost diffidently, that it only gradually “dawned on” him that his theory was capable of wider development, that “the puzzling phenomenon of laughter” might serve as a “backdoor approach to the creative mental functions.”⁹ In the same slightly bemused tone he reports that his theory of the comic requires three ad hoc hypotheses: “None of these is very startling; rather they appear as crystallizations of convergent trends in contemporary psychology and biology. Nevertheless, their combination leads to somewhat unexpected results.”¹⁰ The three are:

... *operative fields*, that is, plastic patterns of behaviour and thought, organized according to habit-grown selective rules, and adaptable to situations varying within certain limits. . . .

... *bisociation*, that is, the simultaneous correlation of an experience to two otherwise independent operative fields.

... *disequilibrium* in organic systems under conditions of stress lead[ing] to a conflict between *self-assertive* (aggressive-defensive) and *self-transcending* (integrative) tendencies of behaviour.¹¹

Koestler’s program calls for the employment of these hypotheses in a general exploration of mental creativity, but there is to be more: “When the three *ad hoc* hypotheses . . . seemed to lead to a fairly satisfactory account of the creative mental functions, their validity was checked against recent trends in neurology and biology.”¹² But even this check is to be more than simple verification. The hypotheses, particularly the third hypothesis, will, to the extent that they check out, “show the possibility of a system of ethics which is neither utilitarian nor dogmatic, but derived from the same integrative tendency in the evolutionary process to which the creative activities of art and discovery are traced.”¹³

Thus was Cassandra’s new vocation foreshadowed. Speaking of man’s helplessness in trying to predict his own next mutation, Koestler wrote in “The Trail of the Dinosaur”: “We can point to certain analogies, abstract certain patterns from the Persian carpet, isolate certain trends and chart their curves; the rest is guesswork, hope and prayer.”¹⁴ *Insight and Outlook* and most of Koestler’s later work are a network of such analogies, patterns, and trends. His quest for a new religion is only irregularly alluded to, and yet it seems to remain the Sinai that beckons him on. Cassandra becomes Moses in Midian.

It is ironic that Koestler—otherwise so self-aware—should seem in the preface to *Insight and Outlook* so nonchalant before the forest of cultural and scientific problems which, as it were en route, he proposes to level. To begin with, he is determined upon the “convergence and ultimate coalescence” of psychology and physiology. Beyond that, since his is a psychology in which artistic creativity is paradigmatic, his integration of psychology and physiology is *eo ipso* to be an integration of science and art.¹⁵ In other words, without once referring to the problem of the two cultures, he has begun to resolve it. And finally, in his expectation that isomorphism between human creativity and biological evolution will, once demonstrated, overcome the dichotomy between fact and value, Koestler aspires to a reconciliation of science and philosophy in a new natural philosophy or scientific cosmology. In his own words: “Once this second tendency, towards self-transcendence and integration, is recognized as being as real as its opponent, and recognized as the ultimate and irreducible driving power of the evolutionary flux, the ethical

neutrality of science will automatically come to an end, the split between reason and belief will heal and Natural Law resume its original meaning as both a guide to understanding and a guide to conduct."¹⁶ That is, value is not negated by subordination to fact if fact itself pursues a value.

What gives Koestler's program its ingenuous, somnambulant quality is that he does not mention Hume—or Kant or Arnold or Mill or Peirce—either in presenting or in pursuing his program. That program, despite its philosophical sophistication, seems to have grown as he describes it, that is, as unforeseen ramification upon his theory of the comic. Writers—chiefly Freud and Bergson—whose work was helpful in framing that theory do receive acknowledgment in *Insight and Outlook*. Otherwise, Koestler speaks not as a philosopher to philosophical issues but as a scientific journalist of artistic temperament to perceived personal and cultural urgencies.

The divisions of *Insight and Outlook* are four: "The Comic," "Self-Assertion and Self-Transcendence," "The Neutral Arts—Invention and Discovery," and "The Emotive Arts." The projected verification of hypotheses against trends in psychology and biology was to have appeared in a companion volume to *Insight and Outlook*, but that volume never appeared. Instead, *Insight and Outlook* was thoroughly revised and republished as "Book One: The Art of Discovery and the Discoveries of Art" in a 750-page volume entitled *The Act of Creation* (1964). The promised biological and psychological documentation appeared as "Book Two: Habit and Originality" in the same volume. In place of the ethical system that was to have concluded the second volume of *Insight and Outlook*, Koestler published *The Ghost in the Machine* (1967), a new work recapitulating and revising *The Act of Creation* and bringing the cycle to an extraordinary climax in an analysis of the evolutionary pathology of the human species.¹⁷ *The Ghost in the Machine* is Koestler's most important work, but before considering it we must consider two earlier studies which he describes as "excursions," namely, *The Sleepwalkers: A History of Man's Changing Vision of the Universe* (1959) and *The Lotus and the Robot* (1960).¹⁸

The probable *point de départ* for the first "excursion" appears in chapter 23 ("Metaphor, Poetic Imagery, and Archetypes") of *Insight and Outlook*. There Koestler joins "bisociative figures" such as Shakespeare's

Golden lads and girls all must,
As chimney-sweepers, come to dust,

to the scientist's discovery of natural law and the mystic's rapture at sacred harmony: ". . . reductions of the particular to the general are usually regarded as purely logical operations; but in fact they give rise to the most powerful emotional release. . . . Whether the supposed law to which the specific experience is reduced is based on faith, superstition, or an utterly false system, does not alter its comforting effect. The idea of 'blind chance' deciding our fate is unbearable; the mind abhors gaps in the lawful order as nature abhors the vacuum."¹⁹ In other words, the modern dichotomy between a science which merely explains and religions which merely comfort is mistaken: Science also comforts, and religions, in order to comfort, must try to explain. How then did the dichotomy arise? Koestler offers no answer in *Insight and Outlook* but carries over the example of Johannes Kepler, who regarded his mathematics as a religious activity and his satisfaction in discovery as "holy rapture": "To the western mind this may appear as a fusion of religious enthusiasm and the exact scientist's passion for numerical discovery.

But Kepler lived at the one moment in history when the religious and scientific passions could be identical. . . . At its root religion is an expression of man's search for unity; so also is science."²⁰ Kepler then is a clue.

Part 4 of Koestler's *Sleepwalkers* follows up the clue in a two-hundred-page biography of Kepler, copiously documented from Latin and Old German sources. In it, Koestler's affection for his subject is transparent. Kepler, like Koestler himself in his "hours at the window," underwent an early mathematico-mystical experience which remained with him, however theoretically qualified, as the major motivation for research. Like Koestler, Kepler fled from country to country, caught between the grinding stones of Catholicism and Lutheranism, as Koestler was caught between fascism and communism. Kepler took important data inadequately understood by the man who gathered them, Tycho Brahe, and found the laws hidden within them. Koestler aspires to perform the same service for Darwin. Kepler was chronically insecure, an "eternal adolescent." Koestler's inferiority complex was once described as "not a complex, a cathedral." In Kepler's writings as in Koestler's, autobiography and theory combine in a style which is intimate and Olympian, blunt and rhapsodic, by turns—in brief, as Koestler says of Kepler, "alive and kicking" on every page.²¹ Finally, Kepler's magnum opus, the *Harmonice mundi*, containing both religious meditations and the famous three laws of planetary motion, may be in some way the model for Koestler's synthesis, *The Ghost in the Machine*. Koestler describes the *Harmonice mundi* as "the climax of [Kepler's] lifelong obsession. What Kepler attempted here is, simply, to bare the ultimate secret of the universe in an all-embracing synthesis of geometry, music, astrology, astronomy and epistemology. It was the first attempt of this kind since Plato, and it is the last to our day. After Kepler, fragmentation of experience sets in again, science is divorced from religion, religion from art, substance from form, matter from mind."²²

If in *Sleepwalkers* Kepler appears as Koestler's model, Galileo is his antimodel. Indeed, remarkable as this may seem, Koestler blames the estrangement of science and religion itself almost entirely on the personal dynamics of the Galileo scandal. That is to say, there was, as he sees it, nothing in the logic of events or ideas which made that estrangement inevitable. He believes "the idea that Galileo's trial was a kind of Greek tragedy, a showdown between 'blind faith' and 'enlightened reason,' to be naively erroneous,"

. . . unless one believes in the dogma of historic inevitability—this form of fatalism in reverse gear—one must regard it as a scandal which could have been avoided; and it is not difficult to imagine the Catholic Church adopting, after a Tyconic transition, the Copernican cosmology some two hundred years earlier than she eventually did. The Galileo affair was an isolated, and in fact quite untypical episode in the history of the relations between science and theology, almost as untypical as the Dayton monkey-trial was. But its dramatic circumstances, magnified out of all proportion, created a popular belief that science stood for freedom, the Church for oppression of thought. That is only true in a limited sense for a limited period of transition. . . . Never since the Thirty Years War has the Church oppressed freedom of thought and expression to an extent comparable to the terror based on the "scientific ideologies" of Nazi Germany or Soviet Russia.²³

As historian of science, Koestler is no Carlyle *redivivus*. He recognizes that there are forces in history which defy personalization, and yet he insists that the force of personality has, for special reasons, been grossly underestimated in the history of science:

The indulgence with which historians of science treat the Founding Fathers is based on precisely that tradition which the Fathers introduced—the tradition of keeping intellect and character as strictly apart as Galileo taught us to separate the “primary” and “secondary” qualities of objects. Thus moral assessments are thought to be essential in the case of Cromwell or Danton, but irrelevant in the case of Galileo, Descartes or Newton. However, the scientific revolution produced not only discoveries, but a new attitude to life, a change in the philosophical climate. And on that new climate, the personalities and beliefs of those who initiated it had a lasting influence.²⁴

Koestler compares the debate over celestial motion in the seventeenth century with that over extrasensory perception in the twentieth and suggests, to use American cultural equivalents, that if the modest and scrupulous Professor J. B. Rhine of the University of Virginia were to communicate with his peers via talk shows (Galileo’s *Letter to the Grand Duchess Christina*) and denounce his critics as “malevolent enemies of honour and of the whole of mankind,” “venom-spitting basilisks,” or “greedy vultures swooping at the unborn young to tear its tender limbs to pieces” (pamphlet *Against the Calumnies and Impostures of Balthasar Capra*, who had discovered errors in Galileo’s mathematics), the strained lines of communication between parapsychology and more established forms of scientific investigation would snap as those between the new and the old astronomy snapped in the sixteenth century. Galileo’s most feared enemy, Koestler convincingly argues, was not the Church but the university. The vindictiveness of entrenched academic orthodoxy made him reluctant to risk his still immature theory in close Aristotelian disputation. He took refuge instead in his flair for satire and *ad hominem* sarcasm, particularly against the Jesuits, the leading mathematicians and astronomers of his day: “The clash with the Aristotelians was inevitable. The clash with the Jesuits was not. This is not meant as an apology for the vindictiveness with which Grassi and Scheiner reacted when provoked, nor of the deplorable manner in which the Order displayed its *esprit de corps*. The point to be established is that the attitude of the *Collegium Romanum* and of the Jesuits in general changed from friendliness to hostility, not because of the Copernican views held by Galileo, but because of his personal attacks on leading authorities of the Order.”²⁵

Koestler’s work in *Sleepwalkers* has much in common with recent study in the sociology of science, for example, Thomas Kuhn’s landmark *The Structure of Scientific Revolutions* (1962).²⁶ Herbert Butterfield, who coined the phrase “Scientific Revolution,” contributes an introduction to *Sleepwalkers*, and indeed Koestler’s work may be seen as a combination of Kuhn’s sociological sensitivity with Butterfield’s historical erudition. Koestler’s bias in the work is against the theory “put forward by Henry Sarton, and held to be self-evident by many scientists, which says, broadly speaking, that the history of science is the only history which displays a cumulative progress of knowledge.”²⁷ Against that optimism, Koestler sees in the “sour annals of science” steps backward as well as steps forward and insights that conceal fatal errors as well as errors that lead to fateful insights. He prepares his audience for this demythologization by preceding his account of the birth of the modern synthesis, and its disintegration, with a parallel account of the birth and disintegration of the ancient synthesis of Pythagoras and Aristarchus. That synthesis fell victim not to the fury of the Orphic religion, which had helped bring it to birth, but to the intellectual inflexibility of the Platonic and Aristotelian schools. The lesson for the modern scientific establishment is plain.

Sleepwalkers concludes with an epilogue in the tone of “The Trail of the

Dinosaur": Man may always have been suicidal, but now he is armed. The eleventh-hour challenge to science is to recognize that, with the advent of quantum physics, classical scientific method has collapsed of its own weight; the parallel challenge to religion lies in the area of what would now be called process theology. Koestler endorses the Whitehead of *Science and the Modern World*:

Consider this contrast: when Darwin or Einstein proclaim theories which modify our ideas, it is a triumph for science. We do not go about saying that there is another defeat for science, because its old ideas have been abandoned. We know that another step of scientific insight has been gained.

Religion will not regain its old power until it can face change in the same spirit as does science. Its principles may be eternal, but the expression of those principles requires continual development. . . .²⁸

From long years of work as a scientific journalist, Koestler was well acquainted with what his own epistemology calls the matrix of scientific thought: the board on which the chessmen of scientific argument move. When he proposed a move in science, he had the confidence to be specific. Less familiar with the matrix of religion, he was less specific in his proposals: Religion had to "face change in the same spirit as does science," but what change was indicated? It was with approximately this question in mind that Koestler set out on his second "excursion," in this case an actual two-year journey to the Orient. Having spoken in *The Yogi and the Commissar* and *Insight and Outlook*²⁹ of the Orient as the homeland of the integrative, self-transcending emotions, he was on a kind of secular pilgrimage. The report of that pilgrimage is *The Lotus and the Robot*.

The result of Koestler's confrontation with India may in the long run have been the dramatic reversal of *Insight and Outlook* in *Ghost in the Machine*. In the former, Koestler had made self-transcendence the key to a solution of the human ethical predicament. In the latter, he was to make it the pathological core of that predicament itself. But whatever India may, thus in spite of itself, have taught him, Koestler concluded that it possessed "with all its saintly longings for samadhi, . . . no spiritual cure . . . for the evils of Western civilization."³⁰ Koestler was plainly more bored than instructed by Vinoba Bhave and the three other "contemporary saints" he sought out. Moreover, his direct research into Hatha Yoga led him to hair-raising discoveries of key Yoga techniques not ordinarily taught in the West: splitting and swallowing the tongue, drawing fluids into the body through the anus, withholding the ejaculate and reabsorbing it through the lymphatics, and others. His judgment on these became his judgment of India:

Samadhi is a systematic conditioning of the body to conniving in its own destruction, at the command of the will, by a series of graduated stages—from the suspension of the vital breath, through the temporary suspension of consciousness, to the ultimate step.

. . . All bodily reflexes devoted to survival must be wrenched from the service of Eros, and pressed into the service of Tanatos[*sic*]. If the function of an organ can be reversed, this will be done, whatever the effort. Thus the lower openings of the body, designed for elimination, must be trained for intake. The openings designed for intake must be blocked, locked, sealed to the world. . . . The Christian ascetic mortifies his body to hasten its return to dust. He proceeds by a direct way; the Yogi's life is spent on a prodigious detour. He must build up his body into a super-efficient, super-sentient instrument of self-annihilation. That act of self-annihilation is samadhi.³¹

Though Koestler is mistaken in his belief that Hatha Yoga is “the only form of Yoga still practised on a large scale . . . and propagated in the Western world,”³² the rationale he saw behind its techniques was crucial to his own later thought. In *Ghost in the Machine*, Koestler was to offer a direct biological explanation for man’s fatal inclination to beat death by joining it, an explanation he might never have discovered without the shock of the Patanjali Yoga Sutras.

If Koestler’s India is a group photo with classic text, his Japan is a sunlit travel movie. He deals with the geology of the islands, their history, language, art forms, and amusements: “. . . if I were exiled from Europe,” he writes, “Japan would be the country where I would like to live. . . .”³³ And yet no more than India does Japan offer a solution to the spiritual malaise of the West. Koestler’s summary judgment is that the celebration of ethical relativism in Zen leaves Japan in a more advanced state of spiritual ossification, much more vulnerable to armed and mindless modernity than any Western nation. As in India, however, he begins a line of thought that will prove crucial to *Ghost in the Machine*. At a dozen points or more he cites examples of the total identification of the individual Japanese with Japan. He tells of an anthropological respondent and his memory of high school principals who “would hardly dare *not* to commit suicide” after fires in their schools had threatened the emperor’s portrait.³⁴ In young and old alike, “the urge to gain the approval of others is not considered as vanity, nor is anxiety to avoid disapproval considered a sign of weakness, as in the West, but as the very essence of ethical behavior. To gain approval, and avoid censure, is all there is to ethics, because a transcendental system of values does not exist.”³⁵ The insane in Japanese asylums are never locked up and never violate traditional decorum.³⁶ Samurai daughters were trained to sleep curved “into the modest, dignified character *kinoji*, which means ‘spirit of control.’”³⁷ And finally, most notoriously, “the Japanese soldier behaves as if his instinct of self-preservation had been switched off, and his nervous system brought under a kind of remote control.”³⁸ In *Ghost in the Machine*, Koestler would argue that the switch-off of the individual nervous system in the interests of the group was not only biologically demonstrable but was precisely the evolutionary flaw that had put *Homo sapiens* on the trail of the dinosaur.

In the introduction to *Lotus and the Robot*, Koestler speaks of the educational odyssey that had washed him ashore in the Orient:

As a student, my interests were about equally divided between engineering and social engineering on the one hand, and the expanding universe of Freud, Jung, Eddington and Jeans, with its irrational and mystic undercurrents on the other. This tug-of-war continued in later life and is reflected in the titles of earlier books, such as *The Yogi and the Commissar*—to which the present is, in some respects, a sequel. The respect for “hard, obstinate facts” which a scientific education imparts does not necessarily imply the denial of a different order of Reality; it does imply, however, the obligation to exhaust all possibilities of a natural explanation of phenomena before acknowledging that they belong to that different order. It could be said, then, that I went on my pilgrimage not so much with an open, as with an equally split, mind. What emerged is a mixture of pedantic detail and sweeping generalizations.³⁹

The passage is mildly apologetic in tone, but one recalls that Koestler’s admired Johannes Kepler had precisely this sort of mind, man and boy: “This co-existence of the mystical and the empirical, of wild flights of thought and dogged, painstaking research, remained, as we shall see, the main characteris-

tic of Kepler from his early youth to his old age."⁴⁰ The tensions of the mystical-empirical tug-of-war kept Kepler near the brink of insanity, and yet, Koestler argues, the price was not too high, for this creative tension is the sacred sacrifice of European religion:

In the first great synthesis of European thought, the Pythagorean school brought together into a unified vision yin and yang, mysticism and science, mathematics and music; the search for Law in Nature, the analysis of the harmony of the spheres, was proclaimed to be the highest form of divine worship. And this form of worship is a specifically European discovery. There were periods in which this discovery was forgotten and denied, like a recessive gene, but it always reasserted itself.

The impressive thing about European evolution, seen from the Asian perspective, is the organic integration of the various trends that went into it. The geometry of Euclid, Plato's *Timaeus* and Aristotle's *Categories* were not just stuck onto the Ten Commandments and the Sermon on the Mount; they were united by a process of cross-fertilization, a spiritual marriage, and as its outcome the Logos became flesh.⁴¹

It is not the West then which must learn contemplation from the East, but the East which must learn balance from the West. A single Indo-European root *matr-* yields *metron* in Greek and *maya* in Sanskrit. The West has kept both meanings in mind, the East only one. Koestler began his journey, he says, "in sackcloth and ashes" but returned with a new affection for and a new confidence in his European heritage.

"If a man finds a satisfying answer to the question what is the meaning of his life," Einstein once said, "this man I would call religious."⁴² If Einstein is right, then after 1960 Koestler may be more religious than he was earlier. An appendix to *Act of Creation* adds Franklin, Faraday, Maxwell, Darwin, and Pasteur to the company of the sleepwalkers. In each of them, Koestler discovers a cross-fertilization between mysticism and/or formal religion on the one hand and careful empirical investigation on the other. His thesis—that the "oceanic feeling of wonder is the common source of religious mysticism, of pure science and art for art's sake; it is their common denominator and emotional bond"⁴³—seems amply demonstrated. The synthesis of religion and science which he had sought in *Yogi and the Commissar* and *Trail of the Dinosaur* seems now to have been available to him as an artist-scientist all along; he needed only to permit it as a "recessive gene" to "reassert itself" in him, and his religious crisis was resolved. And yet the reassertion of a recessive gene is one thing and the quasi-genetic mutation spoken of in 1955 another. Koestler's personal peace could mean little to the masses drawn by desperate ideologies in "wild stampedes across the ice." The spiritual ice age was not over for them. The dinosaur's prayer for another chance had not yet been answered.

An answer of sorts came in *Ghost in the Machine* (1967) but not before the publication of *Act of Creation* (1964), a work which Koestler professes to regard as a companion piece to *Ghost in the Machine* but which may as easily be read as the longest of his "excursions." At 750 pages, with a bibliography of more than four hundred entries and a twenty-page index, it is in effect a source book for that integration of psychology with physiology and thereby of science with the humanities which was first sketched in the preface to *Insight and Outlook*. In the interests of brevity, we shall treat the themes of the longer work only as they are recapitulated in *Ghost in the Machine*.

The reconciliation of psychology and physiology attempted in *Ghost in the Machine* proceeds by and large at the expense of psychology, at least of be-

haviorist, experimental psychology. The first major division of the work, "Order," opens with a chapter entitled "The Poverty of Psychology" and is essentially a preliminary refutation of behaviorism on grounds of internal inconsistency. Koestler opens with a listing of the "four pillars of unwisdom" on which the citadel of life-science orthodoxy has rested; they are the doctrines:

- (a) that biological evolution is the result of random mutation preserved by natural selection;
- (b) that mental evolution is the result of random tries preserved by "reinforcements" (rewards);
- (c) that all organisms, including man, are essentially passive automata controlled by the environment, whose sole purpose in life is the reduction of tensions by adaptive responses;
- (d) that the only scientific method worth that name is quantitative measurement; and, consequently, that complex phenomena must be reduced to simple elements accessible to such treatment, without undue worry whether the specific characteristics of a complex phenomenon, for instance man, may be lost in the process.⁴⁴

The behaviorism of J. B. Watson, B. F. Skinner, and Clark Hull would seem to rest on at least the last three pillars. However, behaviorist terminology has its own unique unwisdom. "Bit" and "atom" of behavior are terms or phrases no less vague than the "consciousness" of German introspectionism which behaviorism rejected. "Reflex" became "response" when the earlier term came into disrepute among physiologists but remains a bizarre usage, inasmuch as, in "operant conditioning," it is "emitted" *before* the stimulus that provokes it. "Response" is that which can be "reinforced," and "reinforcement" is that which brings "response," in a circle-dance of "question-begging on a heroic scale, apparently driven by an almost fanatical urge to deny" the existence of *any* spontaneous, internally structured activity.⁴⁵ Behaviorism, for Koestler, is "flat-earth science," that is, a "programme for a methodology, which had its arguable points . . . transformed into a philosophy which [has] no point at all. One might as well tell a team of land surveyors that for the purpose of mapping a limited area they could treat the earth as if it were flat—and then subtly instil the dogma that the whole earth *is* flat."⁴⁶

It is language analysis which best illustrates the contrast between orthodox behaviorism and the emerging synthesis. The difference "can be summed up by two key words: the chain versus the tree."⁴⁷ Language has no atoms. Each of its components has two aspects: "It is a *whole* relative to its own constituent parts, and at the same time a *part* of the larger whole on the next level of the hierarchy."⁴⁸ The "active speech" of a lecturer cannot be described by any linear sequence of stimuli and responses but must be seen as the "arborization" of intent into sound in a process "governed by *fixed rules*, which, however, leave room for *flexible strategies*, guided by *feedbacks*."⁴⁹

As a prelude to his theory of "open hierarchical systems," Koestler now retells H. A. Simon's famous parable of the two watchmakers. One constructed his watches bit by bit and started from scratch whenever interrupted, the other constructed subassemblies. The first completed a watch a day, the second, one watch every eleven years. Simon interprets: "Complex systems will evolve from simple systems much more rapidly if there are stable intermediate forms than if there are not. The resulting complex forms will be hierarchic. We have only to turn the argument around to explain the observed predominance of hierarchies among the complex systems Nature pre-

sents to us. Among possible complex forms, hierarchies are the ones that have time to evolve."⁵⁰ Finding words like "sub-whole," "sub-assembly," and "sub-skill" clumsy, Koestler coins the word "holon," on the analogy of proton or neutron, from the Greek root *holos* = "whole," "to designate these nodes on the hierarchic tree which behave partly as wholes or wholly as parts, according to the way you look at them."⁵¹ Behaviorism has seen only the part, Gestalt psychology only the whole. Koestler means to avoid both the reductionism of the one and the holism of the other.

After a jump to social hierarchies and the preliminary assertion that "no man is an island—he is a holon. . . . His *self-assertive tendency* is the dynamic manifestations of his unique *wholeness*, his autonomy and independence as a holon. Its equally universal antagonist, the *integrative tendency* expresses his dependence on the larger whole to which he belongs: his '*part-ness*,'" ⁵² Koestler undertakes an overview of hierarchy in all nonhuman systems. In a chapter entitled "Dividuals and Individuals," he seems to resolve, almost in passing, the problem of quantum mechanics versus classic scientific methodology. To quote his own summary:

. . . stable inorganic systems, from atoms to galaxies, display hierarchic order; the atom itself, formerly thought of as an indivisible unit, is a holon, and the rules which govern the interactions of sub-nuclear particles are not the same rules that govern the interactions between atoms as wholes.

The living organism is not a mosaic aggregate of elementary physico-chemical processes, but a hierarchy of parts within parts, in which each holon, from the sub-cellular organelles upward, is a closely integrated structure, equipped with self-regulatory devices, and enjoys a degree of self-government. Transplant surgery and experimental embryology provide striking illustrations for autonomy of organismic holons.

The *integrative* powers of life are manifested in the phenomena of symbiosis between organelles, in the varied forms of partnership within the same species or between different species, of complete individuals from their fragments; in the re-formation of scrambled embryonic organs, etc. The *self-assertive* tendency is equally ubiquitous in the competitive struggle for life.⁵³

The remainder of part I discusses aspects of what may be called the cybernetics of the achieved organic hierarchy: triggers and filters, memory, feedback and homeostasis, and improvisation. "Triggers and filters" is Koestler's shorthand for the process by which "in motor hierarchies an implicit intention or generalised command is particularised, spelled out, step by step, in its descent to the periphery. In the perceptual hierarchy we have the opposite process: the input of receptor organs on the organism's periphery is more and more 'de-particularised,' stripped of irrelevancies during its ascent to the centre."⁵⁴ As perception is a process of stripping down, so recollection is a process of dressing up in which each level of the perceptual hierarchy "contributes those factors which it has deemed worth preserving,"⁵⁵ as in the superimposition of color-printing plates. And as motor behavior is a process of spelling out an implicit intention, so "there must be a constant flow of information concerning the progress of the operation back to the centre which controls it . . ." ⁵⁶ a flow which Koestler illustrates from recent research. Finally, if a system is to maintain itself in a changing environment, it must have resources of adaptation. Research indicates that these are not wanting in even those species whose input-output system at first seems most rigid, for example, wasps and moths.

The second major division of *Ghost in the Machine* is entitled "Becoming"

and opens with a comparison between the development of the embryo and the hierarchic processes of learning discussed in part I. Summarizing, Koestler writes: "J. Needham once coined a phrase about 'the striving of the blastula to grow into a chicken.' One might call the ensemble of devices which make it succeed the organism's 'pre-natal skills.' To quote James Bonner . . . : 'We know that nature, like man, accomplishes complex tasks by breaking them up into many simple sub-tasks.' Development, maturation, learning and acting are continuous processes and we must expect therefore that pre-natal and post-natal skills are governed by the same general principles."⁵⁷

Turning from ontogeny to phylogeny, Koestler finds that it, too, is continuous with the perceptual cybernetics of the individual organism. It, too, in other words, is "governed by *fixed rules*, which, however, leave room for *flexible strategies*, guided by *feedbacks*."⁵⁸ In reaching this conclusion, Koestler of course is attacking the first of his "pillars of unwisdom," namely, the doctrine that "biological evolution is the result of random mutation preserved by natural selection."⁵⁹ His most striking evidence against it is the phenomenon of *Doppelgaenger* species in placental and marsupial mammals: "Why, if evolution were a free-for-all restrained only by selection for fitness, why did Australia not produce some of the bug-eyed monsters of science fiction? The only moderately unorthodox creation of that isolated island in a hundred million years are the kangaroos and wallabies; the rest of its fauna consists of rather poor replicas of more efficient placental types."⁶⁰ Koestler's conclusion from this and other evidence is that

. . . there must be unitary laws underlying evolutionary variety, permitting unlimited variations on a limited number of themes. Translated into our terminology, this means that the evolutionary process, like all hierarchic operations, is governed by fixed canons, and guided by adaptable strategies. The latter are partly accounted for by the selective pressures of the environment—predators, competitors, etc.; but the laws which confine possible evolutionary advances to certain main avenues cannot be defined in terms of these external factors—which only enter into action *after* a change proposed by mutating genes has been approved and passed muster at the successive Kremlin gates of the organism's internal controls. These internal controls define the "evolutionary canon."⁶¹

There is as much room in phylogeny, thus understood, for purpose as there is in ontogeny: ". . . phylogeny is an abstraction, which only acquires a concrete meaning when we realise that 'phylogeny, evolutionary descent, is a sequence of ontogenies,' and that 'the course of evolution is through changes in ontogeny.'"⁶² The teleological lines, therefore, are not drawn between a divine purposer, and purposeless process. Rather, purpose, says Koestler, quoting Nobel Laureate H. J. Muller,

"is simply implicit in the fact of biological organisation, and it is to be studied rather than admired or 'explained.'" . . . *The Purposer is each and every individual organism, from the inception of life, which struggled and strove to make the best of its limited opportunities.*⁶³

That struggle, however, is not a matter of initiative alone—of doing—but also of correction—of undoing and redoing. In phylogeny, undoing and redoing is a matter of revoking the vulnerability of overspecialization and is achieved by paedomorphosis, in which a useful evolutionary novelty which has appeared only in the embryonic or larval stage of an ancestor reappears and is preserved in the adult stage of a descendent, and by neoteny, in which

an animal begins to breed while still larval or juvenile and, never reaching the fully adult stage, either retains a useful early feature or regains the flexibility of immaturity, backing out of a phylogenetic cul-de-sac by a transgenerational process of *reculer pour mieux sauter*.

Within the forward movement of *Ghost in the Machine*, there is a continual tacking back and forth between psychology and biology, between human creativity and evolutionary creation. "The Glory of Man," the penultimate chapter of part 2, tacks back toward psychology and human creativity in a recapitulation of part 1 of *Act of Creation*, with revisions directly inspired by paedomorphosis.

Briefly, man's glory is his capacity for self-repair: "There is no sharp dividing line between self-repair and self-realisation. All creative activity is a kind of do-it-yourself therapy, an attempt to come to terms with traumatising challenges."⁶⁴ Man's capacity for physical regeneration—as in the amphibian's regeneration of an amputated member—has shrunk to a minimum in the course of evolution, but his capacity to remold his behavior compensates. This capacity is analogous to paedomorphosis. It is what psychoanalyst Ernst Kriss has called "regression in the service of the ego," a reversion to "those more fluid, less committed and specialised forms of thinking which normally operate in the twilight zones of awareness"⁶⁵ in order to escape from an old habit of thought and begin anew; again, *reculer pour mieux sauter*. As all thought is association, this sort of regression is a disassociation, and the return from it a fresh association, or what Koestler calls a bisociation, of frames of reference, which before the mythic descent into the underworld⁶⁶ were kept separate: "The Latin *cogito* comes from *coagitare*, to shake together. *Bisociation* means combining two hitherto unrelated cognitive matrices in such a way that a new level is added to the hierarchy, which contains the previously separate structures as its members."⁶⁷ Gestalt psychology refers to such discovery as the AHA experience. Koestler adds to that the HAHA experience of humor and the AH experience of art. The three members of this "creative trinity" are cognitively indistinguishable: "The HAHA reaction signals the collision of bisociated contexts, the AHA reaction signals their fusion, the AH reaction their juxtaposition."⁶⁸ As the words "collision," "fusion," and "juxtaposition" may suggest, they differ only by their placement on an emotional spectrum running from self-assertion and aggression to self-transcendence and participation: "At one end of the spectrum the coarse practical joker is motivated by self-assertive malice; the artist at the opposite extreme, by the craving for self-transcendence. The motivation of the scientist operating in the middle region of the continuum is a well-balanced combination of the two: ambition and competitiveness neutralised by self-transcending devotion to his task. Science is the neutral art."⁶⁹

The final chapter in part 2 is the title chapter of the book and remains the theoretical culmination of Koestler's life work. Its formal restatement in Appendix I, "General Properties of Open Hierarchical Systems (O.H.S.)," he later describes as "a sort of *Tractatus Logico Hierarchicus*" [*sic*]. Most summarily stated, it is

an attempt to bring together and shape into a unified framework three existing schools of thought—none of them new. They can be represented by three symbols: the tree, the candle, and the helmsman. The tree symbolises hierarchic order. The flame of a candle, which constantly exchanges its materials, and yet preserves its stable pattern, is the simplest example of an "open system." The helmsman represents cybernetic con-

trol. Add to these the two faces of Janus, representing the dichotomy of partness and wholeness, and the mathematical sign of the infinite . . . , and you have a picture-strip version of O.H.S. theory.⁷⁰

The tree, the helmsman, and the faces of Janus have already been discussed. As for the candle, we should note that it need never go out: “. . . the Second Law applies only in the special case of so-called ‘closed systems’ (such as a gas enclosed in a perfectly isolated container). But no such closed systems exist even in inanimate nature, and whether or not the universe as a whole is a closed system in this sense is anybody’s guess.”⁷¹ The sign of infinity stands for Koestler’s belief in “infinite regress” or the inaccessibility of either the inner or the outer limit of reality to research. The ultimate subatomic particle will never be found, nor the furthest star: “We cannot get away from the infinite. It stares us in the face whether we look at atoms or stars, or at the becauses behind the becauses, stretching back through eternity. Flat-earth science has no more use for it than the flat-earth theologians had in the Dark Ages; but a true science of life must let infinity in, and never lose sight of it.”⁷² There remains only consciousness, the ghost in the hierarchical machine, invisible and unrepresented in the picture strip. Consciousness partakes of “infinite regress” at either end. It is not mind as opposed to body in any two-tiered Cartesian dualism but “an emergent quality, which evolves into more complex and structured states in phylogeny, as the ultimate manifestation of the Integrative Tendency toward the creation of order out of disorder, of ‘information’ out of ‘noise.’”⁷³

“Disorder,” part 3 of *Ghost in the Machine*, makes no further theoretical advance but is rather the application of the theory to the psychological and biological predicament of man, psychology and biology now understood in a single cognitive matrix. Koestler’s summary of the predicament is as follows:

Under normal conditions [self-assertive and self-transcending] are in dynamic equilibrium. Under conditions of stress the self-assertive tendency may get out of control and manifest itself in aggressive behaviour. However, on the historical scale, the damages wrought by individual violence for selfish motives are insignificant compared to the holocausts resulting from self-transcending devotion to collectively shared belief-systems. It is derived from primitive identification instead of mature social integration; it entails the partial surrender of personal responsibility and produces the quasi-hypnotic phenomena of group-psychology [the Japanese lesson]. The egotism of the social holon feeds on the altruism of its members. The ubiquitous rituals of human sacrifice at the dawn of civilisation are early symptoms of the split between reason and emotion-based beliefs, which produces the delusional streak running through history.⁷⁴

In view of this delusional streak, Koestler argues, it is highly probable that man has suffered some accident in his evolutionary development. It is to this that the many variations on the myth of original sin must half-consciously refer. The first step in undoing the accident is recognizing that such accidents do happen. Toward that end, Koestler discusses the consequences of the gullet passing through the center of the arthropod brain and of the absence of the *corpus callosum* joining the hemispheres of the marsupial brain. The brain pathology of *Homo sapiens*, according to the Papez-MacLean theory, is poor integration of the phylogenetically old “reptile” and “mammal” brains with the phylogenetically new “thinking cap” or human neocortex. The result of this “schizophysiology” is phylogenetic schizophrenia, an inescapable di-

voice of thought from feeling. Aware that he must die but physically unable to accept the fact (the Indian lesson), the *normal* human being is insane.

What is to be done? Koestler at length despairs of the spontaneous mental mutation he had hoped for in "The Trail of the Dinosaur": "It is highly improbable that such a mental mutation will occur spontaneously in the foreseeable future: whereas it is highly probable that the spark which initiates the chain-reaction will be ignited sooner or later, deliberately or by accident. As the devices of atomic and biological warfare become more potent and simpler to produce, their spreading to young and immature, as well as old and over-ripe nations is inevitable."⁷⁵ Persuasion—and therewith, apparently, religion—is pointless, for it relies on "the implicit assumption that *Homo sapiens*, though occasionally blinded by emotion, is a basically rational animal,"⁷⁶ an assumption which is false *ex hypothesi Papez-MacLean*. Man can survive only by synthetically producing a true biological mutation in the form of a hormone which may "within limits, normalise us; [the psychopharmacist] cannot put additional circuits into the brain, but he can, again within limits, improve the coordination between existing ones, attenuate conflicts, prevent the blowing of fuses, and ensure a steady power supply."⁷⁷ No tyrannical administration of the hormone is envisioned as necessary. Aldous Huxley and Arthur Koestler were personal friends. The hormone would catch on, instead, like vaccination, the sleeping pill, and the contraceptive simply "because people like feeling healthy rather than unhealthy in body or mind":⁷⁸ "I do not think this is science fiction; and I am confident that the type of reader to whom this book is addressed will not think so either. . . . Nature has let us down, God seems to have left the receiver off the hook, and time is running out. To hope for salvation to be synthesised in the laboratory may seem materialistic, crankish, or naive, but When man decides to take his fate into his own hands, that possibility will be within reach."⁷⁹

This, then, is Koestler's last best answer to the dinosaur's prayer, "Lord, give me another chance." No new religion can change the spiritual climate, for it must be preached to a congregation of lunatics. There remains only the shivering small company of scientists in whom, as in Kepler, mysticism and measurement still join hands. It is up to them now to find the *elixir vitae* before the blind hand of Terror closes around the nuclear trigger.

A year after publishing *Ghost in the Machine*, Koestler convoked a symposium of scientists in Alpbach, Austria, possibly with this elixir in mind. Notable at any rate among the participants were Paul D. MacLean of the three-brain theory; Holger Hyden, whose biochemical research had led Koestler to hope for a hormonal cure for paranoia; and Seymour Kety, a Harvard expert in psychopharmacology. The proceedings of the symposium, as edited by Koestler and J. R. Smythies, have appeared as *Beyond Reductionism: New Perspectives in the Life Sciences* and may perhaps be read as supplementary documentation for Koestler's "Tractatus Logico Hierarchicus" (his own contribution to the symposium). However, the consensus among MacLean, Hyden, and Kety was that no biochemical cure for "schizophysiology" was feasible. Koestler had come to a dead end.

What does a man do when nothing can be done? In 1972 Koestler published a biography of the neo-Lamarckian zoologist Paul Kammerer entitled *The Case of the Midwife Toad*,⁸⁰ in some ways a further installment in *Sleepwalkers*, in others a polemic against the "four pillars of unwisdom." Also in 1972 he published *The Call Girls: A Tragi-Comedy*, his first novel in more than twenty years.⁸¹ The girls of the title are scientists and intellectuals who at a call and

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for a fee will confer. As the bus pulls away after the conference which forms the structure of the novel, two delegates glimpse the chairman:

"He looks ill," said Wyndham.

"He looks like the captain of a sinking ship," said Harriet, "determined to go down with it."⁸²

But Koestler's story may not yet be over. In *Ghost in the Machine* he wrote that his understanding of consciousness as an emergent quality in a hierarchy regressing to macroscopic and microscopic infinity "... leaves a host of problems unanswered, but at least it poses a few new questions. It could, for instance, provide a new approach to the phenomena of extra-sensory perception as an emergent level of supra-individual consciousness—or alternatively, as an earlier version of 'psycho-symbiotic' awareness, preceding self-awareness, which evolution has abandoned in favour of the latter."⁸³ Those new questions have led him to *The Roots of Coincidence: An Excursion into Parapsychology* (1972).⁸⁴ Whether he will return from that excursion to a new synthesis as bold as *Ghost in the Machine* is anyone's guess. He would seem to be, on his own terms, a failure, and yet if, against the odds, the human species does survive, he may be remembered with love as one of those "eternal adolescents through whom the race matures."

POSTSCRIPT

One sees again why Koestler likes to think of scientists as sleepwalkers. "Supra-individual consciousness," the issue he brushes against and moves past in the passage quoted in the last paragraph above, is the outstanding theoretical difficulty both of his encounter with the "reality of the third order" during "the hours at the window" and of the encounter of classical scientific method with the anomalies of subatomic physics. In *Yogi and the Commissar* Koestler had maintained that the resort to "levels" in physics was not an explanatory hypothesis but only a name for the breakdown of explanation. That physics had had to recognize a distinct "level" where its classical definitions did not hold meant that the discipline itself was in an interregnum, casting about for a way to put its pieces back together. Theology, he said, had faced the same crisis when its definition of God by simultaneous omnipotence and omnibenevolence consciously came up against unmerited suffering. Job, we may note (Koestler does not), in the theophany which ends that book of the Bible, acknowledges the existence of a "level" at which his definition of God and God's ways does not apply. Theology has been in pieces ever since.

Koestler intends through his theory of "open hierarchical systems" to do something more, intellectually, about the incomprehensibility of these "levels" than mutely indicate them. A dead end has at least three walls and after a long enough time can come to seem like home. Western religion is at home with its dead-end problem of evil, more accurately with its conundrum definition of God, and has forgotten that, although Jonah, Jesus, Rabbi Aqiba, and Mohammed may have been successful in making the conundrum bearable, they have not succeeded in making it comprehensible. They have not fit it into anything larger than itself. Koestler is trying to do so.

No problem can be resolved as long as it remains the only instance of itself. There has to be a second instance so that perceiving the identity of the two may create a larger category to which both can be assigned. This process of departicularization is understanding, and nothing else will do. Anything less is not understanding but only intellectual resignation.

The problem of evil—that is, the problem of God—had to remain unresolved, then, until a second problem of the same structure and magnitude could reach maturity. Once that problem arose and reached crisis intensity, it would be only a matter of time before someone made the connection.

The problem of subatomic anomaly, stretching across all physical reality at the line where it ceases to be physical, would seem to be that second problem. To what could subatomic anomaly be compared? Where was there another problem like it? In retrospect, one sees a somnambulant groping for that second problem in Einstein's immortal, "I shall never believe that God plays dice with the world," but also and perhaps more in the hypnotic frequency with which that line is quoted. Dice stand for chance, of course; the scientifically trained think immediately of statistics. But dice stand also for *games* of chance, for gambling, and perhaps the most famous gamble in Western literature is God's gamble with the Devil over the mind and body of Job.

If statistics hindered science from joining the two, existentialism hindered liberal religious thought just as much. The gambling God was, of course, when (rarely) adverted to, an embarrassment to orthodoxy, but the more important block was the eagerness of liberal religion to use the clueless biblical sufferer as its own, homegrown version of Sartre's "no exit" existentialism or Becket's absurdist art. Habit stymied originality in either case.

To claim that Koestler has, even in principle, cleaned up the major unfinished business of theology and physics at a stroke is surely to claim too much, much more than he would claim himself. And yet I think, speaking for the moment only of theology, that the danger is rather the opposite, namely, that the enormous implications of his theory of "open hierarchical systems" will be completely overlooked. His latter-day interest in parapsychology is not faddism but a very serious sort of theology. If he is mistaken, it will be his self-administered reduction ad absurdum. But, even then, it will not be faddism.

Koestler asks more of religion than, I suspect, Whitehead did. Whitehead called for change, for a God who would be a good sport and roll with the punches. I caricature, of course, but it is undeniable that liberal religious leaders are almost pathetically willing to change, even if they understand change in a context of broad stability, like action on a stage. Far more elusive than adjustment to such change is adjustment to a boundless, truly infinite universe. The adjusted cosmology of many traditional believers is a bounded universe with God at the top and Bertrand Russell's "hard little lumps"—the smallest subatomic particles, wherever they may be hiding—at the bottom, even as the secular cosmology is bounded by man at the top and the same comforting lumps downstairs. Koestler blows this cosmology open at both ends. The universe we can know is an intricately plaited rope indeed, but it rises endlessly into the mist above us and drops endlessly to the blackness below. There may be a meaning left for the word "God," but that meaning must not be pictured as the end of the rope or the ring it is tied to. The rope has no end.

In turning his attention away from the doomed race who were to have been recruited to his new religion and turning again to the central notion, the

memory, of "the hours at the window," Koestler could be described as abandoning religious studies for theology. Theology and religious studies defy definition, of course; but we may say, *grosso modo*, that the former is more preoccupied with belief and the latter with the believer. "Believers talk of God, unbelievers of religion," as Cantwell Smith has it. Koestler's concern in all his works from *Yogi and the Commissar* through *Ghost in the Machine* was plainly the believer. Wiser than Gibbon (and Voltaire and Robert Heilbroner and Philip Rieff), he never expected that a religion false for the philosophers could be true for the people and useful for the magistrates. But his consistent starting point was usefulness and magistrates rather than "useless" gratuitous truth. Only after exhausting himself in such reflections does he seem, "with nothing left to lose," to have shifted his focus to "supra-individual consciousness." One wonders whether even now he quite knows what it is "up to."

In prison in Spain a sixteen-year-old boy confided to Koestler his secret dream of someday learning to read—and was shot the next day. Koestler grieved. Could any man do less? But would any scientist dream that his grief for the dead boy was not time taken away from science but time put in on it? Insight, as Bernard Lonergan has so memorably shown, is always concealed in the empirical residue. It is always a matter of hearing music in what had been only noise. The private sorrows of the human condition have been noise to laboratory science, and the music of scientific discovery (other than medical applications) noise to private grief. In Koestler the two become a new descant, become music to each other.

I have characterized Koestler's moral stance as conservative, meaning, perhaps above all, his persuasion that nothing consoles but truth. Modernity has been pleased to engage in a delicate, postreligious dalliance with illusion—novels (there are so many) like John Fowles's *The Magus*, poetry like W. H. Auden's "The truth is knowing we know we lie." The intent is compassion for the weakness of man—"We are such stuff as dreams are made of"—but the effect is ignoble and even sinister. Illusions, however grand, do not save us; they victimize us. By conservatism, I understand in Koestler a faith that, in religion as elsewhere, the truth can be known and men can be truthful. I take it, then, that he would have less in common with Auden's piteous line than with Flannery O'Connor's, "I say if it's all symbolic, the hell with it."

Basta. Koestler is that rarity, a good man whose goodness is relevant to his being a good writer. Read him, and forget the excess of this unscientific postscript.

NOTES

1. Arthur Koestler, *The Age of Longing* (New York: Macmillan Co., 1951), p. 137.
2. Arthur Koestler, *The Trail of the Dinosaur, and Other Essays* (New York: Macmillan Co., 1955), pp. 242-43.
3. *Ibid.*, pp. 250-51.
4. Arthur Koestler, *Beyond Reductionism: New Perspectives in the Life Sciences*, ed. with J. R. Smythies (Boston: Beacon Press, 1969).
5. *Trail of the Dinosaur*, p. 250.
6. *Ibid.*, pp. 252-53.
7. *Ibid.*, pp. 252, viii.
8. Arthur Koestler, *Scum of the Earth* (New York: Macmillan Co., 1949), pp. 222-23.
9. Arthur Koestler, *Insight and Outlook: An Inquiry into the Common Foundations of Science, Art, and Social Ethics* (New York: Macmillan Co., 1949), p. viii.
10. *Ibid.*

11. Ibid.
12. Ibid.
13. Ibid., p. vii.
14. *Trail of the Dinosaur*, p. 250.
15. *Insight and Outlook*, p. ix. The phrase "convergence and ultimate coalescence" is quoted from K. S. Lashley. Koestler is a master "quotesman." In Koestler's *The Ghost in the Machine* (New York: Macmillan Co. 1967), p. 267, Lashley gives way to Freud: "I have no inclination to keep the domain of the psychological floating as it were in the air, without any organic foundation. . . . Let the biologists go as far as they can and let us go as far as we can. Some day the two will meet." Koestler's continuation of Freud's program may make him a disciple to some extent, but the importance of his integration of creativity into human psychology cannot be overemphasized. Philip Rieff and others have singled out *aspiration* as perhaps the single greatest descriptive omission in Freudian psychology (cf. Philip Rieff, *Freud: The Mind of the Moralizer* [New York: Doubleday & Co., 1961]). The psychology of play (cf. Don S. Browning, *Generative Man* [Philadelphia: Westminster Press, 1973]) has made good the omission to some extent but more often with a bias toward child psychology. Koestler's own favorite example of play is erotic foreplay, a gratuitous action which does not tend toward equilibrium.
16. *Insight and Outlook*, p. 234.
17. Arthur Koestler, *The Act of Creation* (New York: Macmillan Co., 1964).
18. Arthur Koestler, *The Sleepwalkers: A History of Man's Changing Vision of the Universe* (New York: Macmillan Co., 1959); *The Lotus and the Robot* (New York: Harper & Row, Colophon Edition, 1960).
19. *Insight and Outlook*, p. 234.
20. Ibid., p. 330. The passage is a quotation from L. L. Whyte's *The Next Development in Man* (New York: Henry Holt & Co., 1948).
21. *Sleepwalkers*, p. 245.
22. Ibid., p. 389.
23. Ibid., pp. 426, 522-23.
24. Ibid., pp. 352-53.
25. Ibid., p. 470. The epithets used against Capra are quoted (in the singular, of course) on p. 362 of *Sleepwalkers*.
26. Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962).
27. *Act of Creation*, p. 224.
28. *Sleepwalkers*, pp. 527-28.
29. Arthur Koestler, *The Yogi and the Commissar* (New York: Macmillan Co., 1946), passim; *Insight and Outlook*, pp. 216-20.
30. *Lotus and the Robot*, p. 162.
31. Ibid., pp. 130-31.
32. Ibid., p. 85.
33. Ibid., p. 275.
34. Ibid., p. 214.
35. Ibid., p. 207.
36. Ibid., pp. 201-3.
37. Ibid., p. 201.
38. Ibid., p. 200.
39. Ibid., p. 12.
40. *Sleepwalkers*, p. 262.
41. *Lotus and the Robot*, pp. 283-84. Koestler's appropriation of the Judaeo-Christian religious tradition, in which previously he had taken so cursory an interest, seems to match in its peremptory quality his rejection of the spirituality of the East. Despite the brilliance of his remarks, particularly on Japan, one suspects an a priori decision to limit the arena of his reflection to Europe. Given the immensity of what he already proposed to undertake, such a decision would have been eminently reasonable. And yet he seems to have felt the need to clothe it in gratuitous a posteriori clothing, as if to present the East as an option fully tried and found definitively wanting. Arguing against the view, however, is a letter from C. G. Jung to Koestler in which the psychologist, better versed

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in oriental religions than Koestler, praises and endorses the conclusions of *Lotus and the Robot*. The letter appears in a German edition of *Lotus and the Robot*, unavailable as this retrospective goes to press.

42. As quoted in *Beyond Reductionism*, p. 419.
43. *Act of Creation*, p. 258.
44. *Ghost in the Machine*, p. 3.
45. *Ibid.*, p. 15.
46. *Ibid.*, p. 17.
47. *Ibid.*
48. *Ibid.*, p. 41.
49. *Ibid.*, p. 42.
50. *Ibid.*, p. 47.
51. *Ibid.*, p. 48.
52. *Ibid.*, p. 56.
53. *Ibid.*, p. 70.
54. *Ibid.*, p. 83.
55. *Ibid.*, p. 94.
56. *Ibid.*, p. 97.
57. *Ibid.*, p. 126.
58. Cf. n. 49 above.
59. Cf. n. 44 above.
60. *Ghost in the Machine*, p. 145.
61. *Ibid.*, p. 147.
62. *Ibid.*, p. 152. The phrases in single quotation marks are from G. G. Simpson.
63. *Ibid.*
64. *Ibid.*, p. 177.
65. *Ibid.*, pp. 177, 179.
66. Cf. *Act of Creation*, bk. 1, chap. 20 and bk. 2, chap. 4.
67. *Ghost in the Machine*, p. 183.
68. *Ibid.*, p. 193.
69. *Ibid.*, pp. 195–96.
70. *Ibid.*, pp. 220–21. The phrase *Tractatus Logico Hierarchicus* is used in *Beyond Reductionism*, p. 192.
71. *Ghost in the Machine*, p. 198.
72. *Ibid.*, p. 220.
73. *Ibid.*, p. 211.
74. *Ibid.*, p. 266.
75. *Ibid.*, p. 324.
76. *Ibid.*
77. *Ibid.*, p. 336.
78. *Ibid.*, p. 337.
79. *Ibid.*, p. 338.
80. Arthur Koestler, *The Case of the Midwife Toad* (New York: Random House, 1972).
81. Arthur Koestler, *The Call Girls: A Tragi-Comedy* (New York: Random House, 1972).
82. *Ibid.*, p. 167.
83. *Ghost in the Machine*, p. 219. See also the postscript below.
84. Arthur Koestler, *The Roots of Coincidence: An Excursion into Parapsychology* (New York: Random House, 1972).

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