

KINDS OF OBJECTIVITY

THINKING about the problems and processes of public education—adult education—indeed, most of all self-education—a MANAS reader wonders about the means of giving objectivity to ideas in need of recognition, while avoiding the short circuits of over-simplification and the reductive emptiness of materialization. Fulfilling this need, our reader suggests, might be the key to forming a better paradigm for the psychology of human development. Putting the matter in other words, he asks: "How can we arrive at valid knowledge about human conduct without losing that knowledge in the scientific process of arriving at it?"

He would like examples of both success and failure in reaching to such knowledge—an assignment which is both easy and difficult to fulfill. After all, to give an example of knowledge actually achieved is to take a position concerning what is real knowledge, and the persuasions of the ages have not yet established an unambiguous settlement of this question. That is the difficulty. The agreed-upon successes, in other words, are likely to be trivial in character. The failures are easy enough to demonstrate, since they cause us pain, and we suffer much pain these days.

Take the question: How does the world work? For the modern "traditional" answer we go to Galileo, who declared that the Book of Nature is written in mathematical language and that by isolating the physical phenomena that are subject to calculation—letting the rest go as unimportant—we shall find out how the world works. Well, we did it. Physics tells us a great deal about how the physical world works—more, perhaps, than we can handle or ought, right now, to know. The horror we feel at the destructive capacities of man as a result of this knowing now matches the confidence with which we went about collecting the knowledge that made the horrors

achievable. During the three hundred years of its accumulation, we evolved what is usually spoken of as the naturalist outlook—the philosophy which claims that knowledge of physical (and biological) processes is all we need, all there *is*. This assumption was wrong—it was over-simplification and materialization. The criticism of the mechanist assumption—which outlaws ideas of inherent intelligence and subjective reality—is by now virtually a cliché, by reason of its wide acceptance and frequent repetition. Perhaps the most authoritative rejection of the Galilean scheme in the present is that of Werner Heisenberg, a physicist of unquestioned eminence, who recently declared: "We will have to abandon the philosophy of Democritus and the concept of fundamental elementary particles. We should accept instead the concept of fundamental symmetries, which is a concept out of the philosophy of Plato."

How to relate Platonic harmonies with the external world as we know it may take some doing, but at least the project has been announced. To show that Werner Heisenberg is not alone in this return to subjective reality, we quote from Erwin Schrödinger's *What Is Life?* three briefly decisive paragraphs:

My body functions as a pure mechanism according to the Laws of Nature.

Yet I know, by incontrovertible direct experience, that I am directing its motions, of which I foresee the effects, that may be fateful and all-important, in which case I feel and take full responsibility for them.

The only possible inference from these two facts is I think that I—I in the widest meaning of the word that is to say, every conscious mind that has ever said or felt "I"—am the person, if any, who controls the "motion of the atoms" according to the Laws of Nature.

Arthur Eddington also restored the human subject to physical studies by a means both poetic and precise: "We have found a strange footprint on the shores of the unknown. We have devised profound theories, one after the other, to account for its origin. At last, we have succeeded in reconstructing the creature that made the footprint. And lo! it is our own."

Emerson, in his visionary way, anticipated all three modern physicists:

Nature is loved by what is best in us. It is loved as the city of God, although, or rather because there is no citizen. The sunset is unlike anything that is underneath it. It wants men. And the beauty of nature must always seem unreal and mocking, until the landscape has human figures, that are as good as itself. . . . Nature is the incarnation of a thought, and turns to a thought again, as ice becomes water or gas. The world is mind precipitated, and the volatile essence is forever escaping into the state of free thought. Hence the virtue and pungency of the influence on the mind, of natural objects.

To this, for another dimension, we add the view of a contemporary psychiatrist:

It is my conviction that there is within the human individual a sense, whether at a conscious or unconscious level of *relatedness to his nonhuman environment*, that this relatedness is one of the transcendently important facts of human living, that—as with other very important circumstances in human existence—it is a source of ambivalent feelings to him, and that, finally, if he tries to ignore its importance to himself, he does so at peril of his psychological well-being. (Harold Searles in *The Nonhuman Environment*.)

What are we attempting here? Two things. First, to gather from diverse sources material that, when there is enough of it, will exhibit the sort of "objectivity" that is possible for the subjective realities which underlie our impressions of the physical universe—and, most probably, underlie not only our impressions but that universe itself. Second, to show the requirements of objectivizing the subjective, which cannot be done with any faithfulness save in a metaphysical vocabulary—such as Leibniz' *Monadology* might imperfectly provide—with which we are hardly familiar. This

language is sure to be dubbed obscurantism until we have learned how to embody *felt meanings* in the terms used.

Yet such obscure meanings float in our thought and feeling as intuitions of a higher wisdom and a better world. While we are unable to pin them down, the poetic consensus, the harmonious resonance, the unified direction of these splendid reflections bespeaks a truth we cannot deny even while we admit that we cannot touch it, handle it, and certainly cannot measure it at all.

What about the short circuits and materializations? Who needs an inventory of these? Vulgarizations of the subjective are a dime a dozen these days. An inventory of the successes might be made, but the compiler would need the same perceptive powers as seem evident in the pioneers of the scientific validation of subjectivity. The catalog could be only suggestive, not conclusive. Verification is and will remain a private affair. Yet the high and the private achieve a comparative public status through the combined expression of many thoughtful individuals, making a cultural plateau, even a continent of collaborative works of the imagination—a Blakean New Jerusalem of the mind. But you do not declare, "This is True." You catch the ring of truth, if you can, and give its sound waves a little more momentum. Assent to living truth is always a subjective affair. Objectivization of the living truth is known to us as art.

Well, exploration of another area might be attempted. How do human beings work?

The question may be considered unmanageable since everything that happens—everything that people say and do—shows how human beings work. But happily these riches of material justify starting anywhere at all. Nothing human is alien to our question.

Harper's for May has an article by Frances FitzGerald called "The Warrior Intellectuals."

This article is subtitled "A Philippic against Daniel Moynihan and the augurs on the Right." Miss FitzGerald is obviously knowledgeable; she writes with great confidence about the grimy proceedings in Washington, detailing the switches and dodges of which politicians are blandly capable. She seems a veritable Ralph Nader in her treatment of the skulduggery of statecraft. However, it may occur to the reader to ask: What indeed do we learn from these skillful exposés? How are we improved by all this parade of our interminable political degradation: it is there, and has been there for years—long enough to acquire high-toned moments and even a little of the patina and dignity of age. Throughout Miss FitzGerald names names and cites impaling quotations. She inspires confidence. No doubt her facts are supportable; and her spelling out of the psychological effect of these facts on us all—not merely on the body politic, but on the *polis*, the people in their everyday life—also seems accurate. She says in one place:

It is an American fear that economic justice must mean a redistribution of wealth. For some, this fear leads to panic a desire to insulate the United States, and, as that is not possible, to try to maintain complete dominance, total control—to refuse all accommodation lest the first concession be the thin end of the wedge.

Greed and terror being impossible to admit, hypocrisy is necessary. A theory of Western liberal democracy on the decline and under constant attack by the forces of totalitarianism and barbarism fills the bill. It does not matter that this theory has no bearing on the real world—that it cannot explain the Sino-Soviet split, much less why the United States supports the Shah of Iran, the royal family of Saudi Arabia, the dictatorships in Korea and Zaire, the Brazilian junta, the Indonesian junta, et cetera. For its function is not to explain the world but to justify a violent reaction. The whole psychology was well portrayed in a genre of films that proved so popular across the United States two or three years ago. The plot was always the same: the protagonist has sustained such an injury—usually the brutal killing of his family—that he is justified in abandoning all moral and legal constraints to take revenge. In *Death Wish* a New York architect decides to take revenge for the death of his wife by killing all the muggers he can find. As

the city seems to be populated by muggers, he kills large numbers of them and then is made a hero, rather than, as in the real world sent to jail for life.

Monotonous, isn't it? How many times do we need to be informed in this way? The plot never changes. Yet a good writer like Frances FitzGerald may stir up a little tired indignation, and then we say to ourselves—"Yes, we must use every means we have to reveal the unpleasant truth to the public so that, one way or another, people will be aroused and eventually accept responsibility for doing things right."

But it seldom works. It has never worked well. It can't, for reasons that we do not really understand. It is one of the facts of how people work that having chapter and verse on the sins of other people does not improve our lives one whit. The whole thing is too complicated. There are too many "other people"—ourselves, alas, among them. Once more we quote Douglass Cater's sage observation, which belongs to the class of truths that need ceaseless repetition:

Our journalists, both on TV and in print, pledge fealty to the proposition that society thrives by communication of great gobs of unvarnished truth. Our law courts make us swear to tell "the truth, the whole truth, and nothing but the truth." Yet we only dimly understand how, in an all-enveloping environment, man chisels his little statues of perceived reality. As we approach a time when communication threatens to fission like the atom, we need to delve more deeply into these mysteries.

This is not the first time this counsel has been offered.

Plato, for example, some twenty-three hundred years ago, said in his seventh epistle:

I, who had at first been full of eagerness for a public career, as I gazed upon the whirlpool of public life and saw the incessant moving of shifting currents, at last felt dizzy and, while I did not cease to consider means of improving this particular situation and indeed of reforming the whole constitution, yet, in regard to action, I kept waiting for favorable moments, and finally saw clearly in regard to all states now existing that without exception their system of government is bad. Their constitutions are

almost beyond redemption except through some miraculous plan accompanied by good luck. Hence I was forced to say in praise of the correct philosophy that it affords a vantage point from which we can discern in all cases what is just for communities and individuals, and that accordingly the human race will not see better days until either the stock of those who rightly and genuinely follow philosophy acquire political authority, or else the class who have political control be led by some dispensation of providence to become real philosophers.

How do people work? The simple answer is that they pursue what they think is good, or what other people persuade them is good. Thinking is difficult, most of us feel incompetent at it, but submitting to the persuasion of others without thinking—even though it be poor—is the worst thing that can happen to human beings. This submission is at the root of what happens in Washington, what happens on Madison Avenue and in Hollywood, what happens in all those places where fraudulent images of the good are manufactured and purveyed. The high-level persuaders are more numerous than the muggers in Central Park, and it does no good to look for salvation to a crew of reformers who have believed for generations that being a good con man along with having a little larceny in your soul is a healthy state of being for an American—a true blue American.

A passage in an unpublished manuscript by A. H. Maslow, edited by Robert Kantor, goes directly to the point of how people work in the society we have made. Actually, they work in various ways, some better than others:

Longer life-spans, better fabrics, better shoes, etc., are purely technological problems that have nothing to do with ultimate values, morals, and ethics. The real problem is personal goodness, that is, of turning out good human beings. The point is that we should now consider ourselves self-observers. This is a new age, a new era in the history of mankind, because now we can decide what we are to become. It isn't nature or evolution or anything that will decide. We must decide, and we must evolve ourselves. Which means again, we'd better be conscious about our goals and values and ethics, and where we're heading, where we want to go.

This is Socratic counsel in our own language. Dr. Maslow is saying that we have to find out what our first principles are, and to see whether they are good enough. He is affirming that there is something in every human being which makes him able to do this—that we *can* "decide what we are to become."

The problem set at the beginning of this brief essay was to find a way to give objectivity to ideas in need of recognition. Here, in Maslow's terms, this becomes the need to think about ourselves as beings capable of doing what we know we need to do, even though we hardly know how to start. Thus a sense of reality for selves having this potentiality is what we seek.

How do you get a sense of reality about anything? That, after all, is what "objectivity" means, and while the self is subjective, it has qualities which may be inspected, fostered, and developed, while other qualities, more remote from the center of our being, may be made subordinate, neutralized, or used in some other way. Maslow's project in life was the rediscovery of human character; he was vitally interested in its best qualities. If you want a theory of development, he said, look at the Olympic champions in the race of life—look at the gold medalists—don't study "average" mankind. We know about average mankind—it's all around, heaped up, pressed down, and making us very uncomfortable.

He spent his life trying to give second-degree objectivity to ideal human character. He made studies of good people, rare people, inspiring people, and then he made generalizations about them—generalizations that stand up in a hurricane of trouble and confusion—what we have today as the condition of life.

You don't get any objectivity about the possibilities of human life from reading about politicians. It is somewhat as Ronald Reagan said about redwood trees—if you've seen one politician you've seen them all. There's Lincoln, of course. So study Lincoln. He illustrates well

some of Maslow's generalizations, as it happens. But study men, not because they have power, or have misused power and opportunity, but because of the excellence of their lives, because of the emergence in their lives of qualities which made the wrong done by people in power—not really powerful people—seem petty and irrelevant. It may be necessary to put down evil, now and then, but this is *never* the main thing to do. As a career, putting down evil unfits us for a good life.

What did Maslow talk about? Well, read his books. Only five or six of them—all good. He tells how self-actualizing humans behave. He tells about the core inspiration in the lives of exceptional people—the peak experience—which comes to many more than those who recognize and speak of it. He talked about the classical virtues, using a fresh and inviting language. He boxed the compass of human excellence, and he gave enough attention to evil to show that it has to be coped with, that it can't be ignored. But the *study* of evil is not a pedagogic undertaking. Muckrakers do not really teach. Their services are often useful, but *teaching* is stirring in others the longing and the will to know.

Maslow's studies are behavioral studies of good, wise, and effective human beings. He tells how they shape their lives, what they stick to, what they let go. He tells what they do and how they work, but he doesn't tell what they *are*. How could he? He knew, as D. H. Lawrence knew, "If I say of myself, I am this, I am that!—then, if I stick to it, I turn into a stupid fixed thing like a lamp-post." Maslow was not about to make that mistake. Yet all those splendid "behaviors" he accumulated in his research of self-actualizers add up to something very substantial, something very real. Something—yet no "thing"—that is in all these people, and in all the rest of us, although less articulately and noticeably, which has the nobility, the promise, the wonder, and the dignity, and on occasion the substance and identity of what other people in other times spoke of as soul, sometimes as enlightened and self-illuminated

souls. Interestingly, Maslow in his later years was inclined to use the sublime Buddhist vocabulary. He spoke increasingly of the *Bodhisattva*—the sage who refuses to enter Nirvana so that he can remain in the world to work for others—as a human ideal.

The point is that objectivity in matters of this sort is no more than a sense of reality for those inner qualities which become manifest in a certain kind of life. That life has unity, it can't be taken apart, although it can be turned like a kaleidoscope, studied, in its numerous aspects, as Maslow studied it, without any distorting separation. The point is that the sense of reality to be gained for the inner or soul side of human beings has to be individually generated or forged, it can't be disclosed like a picture or projected like a film. Yet this reality of human distinction leaves a track in the world. The Athenians left a track. The Florentines left a track. The Elizabethans left a track. So did the Founding Fathers. The tracks of distinguished humans are countless. Study focused on tracks of this sort might be the best way to begin getting a sense of reality for the human soul.

REVIEW

THE TERRITORY AND THE MAP

IN his new book, *The Facts of Life* (Pantheon, \$7.95), Ronald Laing briefly sets down the central problem of human life, then explores the difference between his feelings on the question and what his parents, his education, and other influences have given him to understand. Since what biologists say is commonly regarded as authoritative, he makes a start there. The problem is self-knowledge:

This one cell is the cell all my cells are derived from, by a process of dividing into two, each of these two dividing into a further two, and so on, and on.

However, it's a moot point whether this precise knowledge of our microscopic origin and growth into the macroscopic domain changes or settles finally any of the basic philosophical problems attendant on the question "Who am I?"

For as early as I can remember I never took myself to be what people called me. That at least has remained crystal clear to me. Whatever, whoever I may be is not to be confused with the names people give *to* me, or how they *describe* me, or what they *call* me. I am not my name.

Who or what I am, as far as they are concerned, is not necessarily, or thereby, *me*, as far as I am concerned.

I am presumably *what* they are describing, but not their description. I am territory, what they say is their map of me.

And what I call myself to myself is, presumably, my map of me. What, o where, is the territory?

Very largely, this book is a rejection of the customary and familiar maps of human identity and life which are conventionally offered by the authorities of the time, and which, in Dr. Laing's view, have made our world such a cruel and often hideous place. He is, so to speak, an outraged, pained and hurting doctor of the mind. Too much of the book, perhaps, is given over to horrible examples, yet Dr. Laing is getting wide attention, and what he has to say deserves attention, for its shock value if for nothing else. Yet there is some understanding, too.

There are different ways of getting at this great question—the issue of who and what we are—but the better the writer, the more likely he is to begin his investigation as other original thinkers began it, although always with an individual stamp. In a forgotten essay by Tolstoy, *On Life*, issued years ago by the Oxford University Press, we found this passage:

We say, for instance, that there is life in a cell and that it is a living being. Yet the fundamental idea of human life and the idea of the life found in a cell are not merely quite different but incompatible. The one conception excludes the other. I learn that my body is entirely composed of cells. I am told that these cells have the same property of life that I have, and are living beings like myself. But I am conscious of myself as a living being only because I feel myself, with all the cells of which I am composed, to be a single undivided living being. I am entirely composed of living cells, they tell me. To what then do I ascribe the property of life: to the cells or myself? If I admit that the cells have life, I must eliminate from the concept of life the chief indication of my own life—the consciousness that I am a separate undivided living being. But if I admit that I have life as a separate individual, it is clear that I certainly cannot attribute the same properties to the cells of which my whole body is composed and of whose consciousness I know nothing.

Whom shall he believe? Which is the best testimony—that from his own sense of self, or what the biologists say?

Camus set the problem in another framework by addressing the physicists, but his bewilderment is the same:

. . . all the knowledge on earth will give me nothing to assure me that the world is mine. You describe it to me and you teach me to classify it. You enumerate its laws and in my thirst for knowledge I admit that they are true. You take apart its mechanism and my hope increases. At the final stage you teach me that this wondrous and multi-colored universe can be reduced to the atom and that the atom itself can be reduced to the electron. All this is good and I wait for you to continue. But you tell me of an invisible planetary system in which electrons gravitate around a nucleus. You explain this world with an image. I realize then that you have been reduced to poetry. I shall never know.

It grows somewhat exciting to find that Tolstoy pressed this debate further, calling to account those who based their assurances on physicists' abstractions of the "primary qualities" of nature:

I admit that to settle the laws of the universe by mere deductions of reason without experiment and observation, is a false and unscientific path that is, one that cannot yield true knowledge. But would it not be still worse to study the world's phenomenon by experiment and observation and at the same time be guided in those experiments and observations by conceptions which are neither fundamental nor general to everyone, but conventional, and to describe the results of these experiments by words to which different meanings can be attributed. . . .?

But I shall be told: Science does not set itself the task of studying the totality of life (including the will and the aspiration towards the good and towards a spiritual world), it abstracts from the conception of life only those phenomena which are suitable for its experimental investigations.

That would be excellent, if correct. But we know that this is not at all how scientists of our day understand it. If we first of all recognized a conception of life in the essential meaning which all men understand, and if it were then clearly shown that positive science, setting aside all aspects of that conception except the one subject to external observation, examined the phenomena from that side only for which it has suitable methods of investigation—that would be all right and an entirely different matter. In that case the place science would occupy and the conclusions we should reach on the basis of science would be quite different. But we must state facts as they are and not hide what we all know. Do we not know that the majority of the experimental-scientific investigators of life are fully convinced that they are studying not merely one side of life but the whole of it?

Tolstoy gave close attention to both sides of this question. His argument continues:

Astronomy, mechanics, physics, chemistry, and other sciences, singly and collectively, deal each with the particular side of life subject to it, without coming to any conclusions about life generally. Only in their crude days of obscurity and indefiniteness did some of those sciences try to embrace all the phenomena of life from their own point of view and blundered by devising concepts and words of their own. This

happened with astronomy while it was astrology, and with chemistry when it was alchemy. And the same thing happens now with this experimental evolutionary science, which while investigating one side or several sides of life, professes to study the whole of it.

Men with this false view of their science do not at all want to admit that only certain sides of life are subject to their investigation, and affirm that they will investigate the whole of life by means of external experiment.

Tolstoy was one of the few writers with the courage, capacity, and determination to go on to providing an answer—his answer—to the dilemma. It may be one of the best. That his answer has been widely neglected, or not often repeated, may be good evidence that it is one of the best. It is not really different from the conclusion reached by Dr. Laing, who says in his last chapter:

"The scientific and technical world of modern man," writes C. F. von Weisacker, "is the result of his daring enterprise, knowledge without love." Chilling. I cannot see how knowledge without love can yield knowledge of love; how a heartless method, yielding heartless results, can do anything else than explain away the heart.

We cannot resist recalling here other statements by modern writers reflecting what is essentially the Tolstoyan view. In *The Meaning of History* Erich Kahler distinguishes between reason and rationalization, the latter being a limiting application of reason in the development of technique. Rationality, Kahler says, is "capable of being detached from its human source, and generalized as an abstract logical method." This sort of rationality, he says, "grows at the expense of reason," since it has become independent of reason and indeed "radically opposed to human reason."

Jonas Salk is another who makes virtually the same distinction, although, again, in other language. What Kahler calls Reason, Salk calls BEING, which he contrasts with EGO, the instrumental or "rationalized" side of human life. Dr. Salk is convinced that the time has come for

BEING to undertake control of the EGO. BEING, in his view, is in harmony with Nature's holistic purposes. "Consciousness of one's own BEING, in this sense, is a prerequisite to full self-development as well as to full self-expression with self-restraint; the word 'self-discipline' means, at one and the same time, *expression with restraint*."

Interestingly, Dr. Salk says: "The characteristics of BEING are hidden until revealed in the course of the life's experiences." Tolstoy wrote in 1887:

In examining life in time, and observing its appearance in the human being, we see that true life is from the first inherent in man as it is in a grain of corn, and a time comes when it shows itself. . . . Reasonable consciousness, imperceptibly developing in his personality, reaches a stage at which personal life becomes impossible.

By this he means the man begins to realize that the higher law for him is the law of his Reason, although he will still use the laws of matter for meeting his material needs. The awakened man, says Tolstoy, recognizes his *life* in the higher law.

We have neglected somewhat Dr. Laing's book to show his concord with other awakened minds. He represents an outlook, sometimes a *wisdom*, that cannot be codified, nor can it be implemented in behavior except by the voluntary acts of perceptive human beings. Only the laws of matter can be codified in terms of externality, and, as Erich Fromm long ago declared, "Man is not a thing."

We plan further attention to Dr. Laing.

COMMENTARY THE EDUCATIVE VOICE

THE issue raised in this week's "Children" concerns the nature of human beings. The origin of man is held to govern his potentialities. Judging from Dorothy Nelkin's *Scientific American* analysis, both institutionalized science and codified religion demand the right to teach in the "authoritative voice." The "authoritative voice," as Robert McClintock defined it (see "Children," June 9), is the style of exposition appropriate for transmitting "the attained body of knowledge." In relation to other matters, he suggests, only the "educative voice" should be used.

It seems obvious that when people cannot agree about what belongs to "the attained body of knowledge," the only solution is for both sides to adopt the "educative voice." What is the educative voice? It is the posing of questions which, when thoughtfully considered, might point the way to knowledge. But when using the educative voice, you do not undermine the entire educational process with a premature declaration of conclusions.

Interestingly, this week's Review shows that Ronald Laing, Tolstoy, and Camus are champions of the educative voice. They are more comfortable with unsettled questions than with "certainties" which seem to close out human possibility. One could say that their preference for uncertainty is really a preference for growth.

They demonstrate that individuals are capable of this outlook. But how are *societies* persuaded to adopt it? No one really knows, unless the example of Tolstoy and a few others amounts to a working answer: The persistent, undismayed, and uncompromised use of the educative voice.

With this issue we begin our summer interlude—July and August—when MANAS is not published. Our next issue will be dated Sept. 1.

Those who would like to use summer reading time for browsing in back issues of MANAS are invited to purchase the *MANAS Reader*, a book providing articles chosen from issues as far back as 1948. Orders for the *Reader* should be sent to the Cunningham Press, 3036 West Main Street, Alhambra, Calif. 91801. The paperback (483 pages) is \$4.95; the hardback, \$8.00 (add postage, and sales tax when applicable).

Anyone who sends in five subscriptions to MANAS will receive a free (hard back) copy of the *MANAS Reader*.

CHILDREN

. . . and Ourselves

SIDES OF THE EVOLUTION ISSUE

WHILE "The Science-Textbook Controversies," an article by Dorothy Nelkin in the April *Scientific American*, seems a fair-minded and informative discussion of the popular "anti-evolution" and "anti-science" sentiment which is growing in the United States, there are underlying considerations this writer does not examine.

First of all, are the differences of opinion she describes resolvable at an institutional level? (By argument among school board members, etc.?)

Second, would a more broadly based conception of evolution—a theory, that is, not based and entirely dependent upon biological processes—prove less objectionable and more educationally valuable, supposing such a theory (or theories) could be developed or found?

An attempt to answer the first question requires at least a few facts about the textbook controversy. Dorothy Nelkin begins:

In 1969 the California Board of Education issued new guidelines for the biology curriculum of the state's public schools. The guidelines included a statement that the Book of Genesis presents a reasonable explanation of the origin of life and that the concept of special creation should be taught as an alternative to the concept of organic evolution. It was only fair, it was asserted, that "equal time" should be given to the two concepts and that students should be allowed to choose between them. . . .

The activists at the core of the anti-evolutionist movement are the "scientific creationists," people with degrees in science who work out of "creation research centers." They maintain that they are scientists who are engaged not in a controversy between religion and science but in a debate about the validity of two scientific theories. Their organizations and activities are patterned on those of organized science. . . . They believe "all basic types of living things, including man, were made by direct creative acts of God during the creation week" and they seek to interpret the evolution of organisms according to biblical authority. . . .

The California creationists eventually failed, however, to implement the teaching of the creation concept in the public schools, and even in Tennessee the law requiring equal time for the creation concept was declared unconstitutional and was repealed in 1975. The creationist movement has nonetheless retained a strong base of support among people who think that their traditional values are in some way threatened by the rational explanation of natural phenomena.

Except for the Scopes trial in 1925, objections to science teaching are of rather recent origin, according to this writer. In the late 1960s, she says—

The change became evident in the growing criticism of scientific rationality and in the proliferation of cults and sects based on Eastern mysticism. Less visible, but perhaps more important in the light of subsequent events, was a remarkable growth in the membership of fundamentalist churches, particularly in Texas and southern California—the very centers of industry based on high technology.

There is, however, a mood of criticism of science which does not originate with literal interpreters of the Bible:

It is easy to label those who question the validity and limits of modern science as ignorant, irrational or crackpot. Those labels throw no light on the social and political tensions that sustain objections to the teaching of science in the public schools. Three themes pervade the science-textbook controversies. First, the protests reflect the fact that a non-negligible fraction of the population is disillusioned with science and is concerned that it threatens traditional religious and moral values. Second, the protests reflect the fact that many people clearly resent the authority represented by scientific dogmatism, particularly when that authority is expressed in an increased professionalism of the school science curriculum. Third, the protests reflect the fact that many people are afraid that the structured, meritocratic processes operating within science threaten more egalitarian, pluralistic values.

The reaction to these objections is summarized:

The suggestion that questions of scientific fact and scientific education should be settled by public debate has left most scientists amazed. Would the lay

community really want to give quack doctors equal time with licensed doctors? To include astrological lore in books on astronomy? For that matter, would the community entertain putting a paragraph in the Book of Genesis to indicate that the scientific method rejects supernatural explanations of the universe?

Also to be considered is the difference between the scientific spirit and typical lay attitudes:

Where scientists themselves understand that their work is approximate, conditional, and open to critical examination, many nonscientists believe science is authoritative, exact and definitive. . . . Perhaps the most difficult concept for science to convey to those who are not scientists is the delicate balance between certainty and doubt that is so essential to the scientific spirit. Textbooks in particular tend to convey a message of certainty to the nonspecialist. In the process of simplifying concepts, findings may become explanations, explanations may become axioms and tentative judgments may become definitive conclusions. Few textbooks are careful to distinguish between fact and interpretation or to suggest that intuition and speculation actually guide the development of scientific concepts.

Authoritarian public representations of science are reinforced by scientists who deeply desire to avoid challenge and criticism from people outside their own profession. They tend to respond to criticism with a kind of scientific fundamentalism: by citing the value-free character of their work or the weight of the factual evidence that supports their conclusions. To those whose religious faith is challenged, however, the scientific merits of a concept that defines man's universe may be less to the point than the concept's social and moral implications.

Why is Darwinian evolution objected to?

Dorothy Nelkin gives this account of the claims of religious critics:

They argue that emphasizing the genetic similarities between human beings and other animals may encourage "animal-like," socially dangerous behavior. One creationist stated: "If man is an evolved animal, then the morals of the barnyard or jungle is more natural. . . . Self-preservation is the first law of nature; only the fittest will survive. Be cock-of-the-walk and the king-of-the-mountain. Eat, drink and be merry, for life is short and that's the end. So says evolution." One woman even blamed the

"streaking" fad of 1974 on the concept of evolution. "If young people are taught they are animals long enough, they'll soon begin to act like them."

It is important to note that some of these criticisms are heard not only from fundamentalists, but are also voiced on occasion by scholarly individuals who have little confidence in the usefulness of attempts to alter science teaching in the schools by lobbying and legislative means. Such reformers address the intellectual community, subjecting scientific conceptions to careful analysis. See for example Henry Anderson's "The Denaturalization of Human Nature in MANAS for May 6, 1970, a critical review of the implications of the "naked ape" books of recent years; or read Hans Jonas' *The Phenomenon of Life* (Harper & Row, 1966) which shows that the attack on the moral autonomy of human beings began with the ideas of Galileo and Descartes, reaching a climax with the Darwinian theory. Darwin, in effect, abolished any differentiation between humans and animals—while animals, as Descartes had claimed, were thought to be mere physical machines.

Dorothy Nelkin's *Scientific American* article shows the wide spread of opinion on such questions, and also the very different grounds of criticism and judgment. Since there is really no way to get all these people together and persuade them to think in the same way, the only feasible and intelligent solution is to *decentralize* education, letting people assume more responsibility for the education of their own young, according to their convictions. Codification and compromise to achieve "legal" uniformity inevitably introduces all the weaknesses and flaws which result from a mixture of attenuated scientific expertise with the democratic right of individual opinion and parental authority.

Finally, there are philosophic conceptions of evolution which *do* include mental and moral growth as the central activity and responsibility of human beings. This is the subject of Theodore Roszak's latest book, *Unfinished Animal*.

FRONTIERS

Eden in Space?

SMITHSONIAN for February presents an article on "Colonies in Space," elaborately illustrated in process color—an art director's dream—with description as extravagantly inviting as a Southern California real estate promotion. "Realism" is achieved by confident details of the supporting magical technology. Editors, quite obviously, can't resist such material. This story is about the proposal and apparently well developed plans of Gerard O'Neill, a Princeton physicist, for building enormous habitable satellites that will float in space at a point in gravitational balance with Earth and the moon. There daring colonists from earth will raise corn and potatoes, live serene, trouble-free lives, busying themselves with constructing other satellites until—as the imaginative *Smithsonian* writer puts it—"Tens of thousands of glowing cylinders will be spinning around the Earth, billions of people will be living in space," and "our small and overburdened planet will have a chance to recover."

A very American question would be, How much will all this cost? And the very American answer is, *Only* a hundred billion dollars—at the start.

There is no suggestion anywhere that Mr. O'Neill's idea is a feat of science-fiction. An account of his proposal was first published in *Physics Today* for September, 1974. Then NASA gave him \$25,000 research money. During the months since articles celebrating or examining the proposal have appeared in *The New Scientist*, *Science*, *The New York Times Magazine*, *Saturday Review*, *Harper's*, *CoEvolution Quarterly*, and doubtless other places.

While there is no way to briefly convey the scope and pretensions of this enterprise, the first paragraphs of Ron Chernow's article in *Smithsonian* establish the mood often adopted in describing it:

At the start, a bulldozer will mine the plains of the moon scooping out the dust, the raw material of Chaos, from which will be fashioned another world. Operated by Earthlings in a nearby control booth, the machine will dig an open pit the size of several football fields. This primeval moondust will be sintered [turned into solid mass without melting] by the sun into 20-pound blocks that will form the building blocks of colonies in space.

The lunar payloads will be put into buckets that will be sent racing down a track. Taking advantage of the moon's gravity and lack of atmosphere, this cosmic slingshot will catapult half a million tons of lunar blocks to the Earth's first space community—about a quarter of a million miles away. When the bucket attains a velocity of a mile-and-a-half per second, the bucket will suddenly slow enough to release the load and send it soaring into space. Every second another payload will shoot off into space in a steady stream of bricks.

The "artist's conception" of the satellite landscape is a pastoral paradise of fields, streams, trees, and gardens, with here and there a shy boutique for people who like to shop for nice things.

What do you say about such a proposal? The spring *CoEvolution Quarterly* asked about forty people this question, and their replies range from intoxicated approval to long critiques and Lewis Mumford's abrupt response:

If you were familiar with my analysis in the *Pentagon of Power* you would know that I regard Space Colonies as another pathological manifestation of the culture that has spent all its resources on expanding the nuclear means for exterminating the human race. Such proposals are only technological disguises for infantile fantasies.

Apart from the enthusiastic endorsements, which are sometimes learned and tightly argued, there seem to be two sorts of negative reactions. There are those, like Mr. Mumford's, born from the feeling of deep violation of the fitness of things in this apparently serious hippodrome space-drama. These critics are aghast that natural feelings about man's relations with earth and the universe should be so completely ignored. Quite apart from issues of practicality, hazard, and cost,

the very meaning of life seems defined, as a project in elegant consumption and physical survival. For these critics of Mr. O'Neill's proposal, it is no casual, speculative notion that humans are here on earth to learn how to get along with one another, and to do this in harmony with what the earth provides. Our task and calling is to solve the puzzles and mysteries of our lives, using with economy, wisdom, and fellowship the truly generous supply of materials at hand. The other sort of criticism—searching technical analysis—is at its best, interestingly enough, from a teacher of small children, John Holt, who reveals a surprising knowledge of both physics and technology, and who, in eight good-sized pages of small type, presents a precise examination of O'Neill's plans and calculations that seems wholly devastating to the space colony proposal.

The biologist, John Todd, wonders how plants will grow in the satellite's nitrogen-poor atmosphere. In conclusion, he says:

I think that when people talk of colonizing space they really don't have any genuine perception of what it will involve. All the present support for space comes from earth and until we learn much, much more about contained ecosystems it will continue to do so. It won't be the kind of knowledge that a crash program of space biology will generate. . . . The idea of moving nature into the cosmos is staggering. . . . I do not believe that we as a species have in any way earned the Right of Passage.

Of all the comments, Wendell Berry's seems the most universally appealing, although this will be so only for those who try to orient their lives by the sense of fitness we spoke of earlier. In one place Mr. Berry says:

Perhaps most important of all is Mr. O'Neill's failure to see that the so-called energy crisis is a moral crisis. He assumes that it is simply a matter of scarcity, which can be remedied by the time-honored method of getting more from somewhere else. But it has been obvious for some time that the energy crisis has at least as much to do with the *uses* of energy as with its availability. The world will tolerate the use of even less energy than it can supply. The question is not of how much energy we can get, but of how much we can use without destroying, at a minimum,

our ability to enjoy the use of it. The question of restraint is much more pertinent to the problem than the question of supply. And Mr. O'Neill has apparently never thought to ask what good might be accomplished by the proliferation in space of a mentality that cannot forebear to do anything at all that is possible.

In conclusion, Mr. Berry wonders why *CoEvolution Quarterly* gives so much space to the O'Neill proposal. It does not seem to him that any *appropriate* technology is involved. Not wasting space on such matters is an *educational* principle—not an issue of censorship. Filling readers' minds with such impressive but mischievous nonsense cannot help but distract them from the real business of life. Dr. Schumacher, also a critic of space colonization, concludes his laconic comment with a quotation from Lao tse:

"As for those who would take the whole world to tinker with as they see fit, I observe that they never succeed."

This seems reason enough for ignoring the tinkerers, although, as John Holt points out, when their escapist fantasies begin to gain wide acceptance it becomes necessary to introduce, as forcefully as possible, the elements of common sense.