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THE TWO KINDS OF KNOWLEDGE

AN unsettling apprehension is beginning to afflict the modern world. After a long cycle of what have seemed to most chroniclers two or three centuries of unparalleled progress, leading to emancipation of both body and mind, the most thoughtful among us are asking: Have we exchanged the confinements of ignorance for a subtler imprisonment by *knowledge?* Are we now doing the same futile things all over again, only this time with a deluding self-confidence that is deaf to the protests of nature and indifferent to a pervasive moral uneasiness that warns but does not explain?

The tightly organized syllogism which gains clarity by abstraction and focus by exclusion has all the fascination of a child's new toy, but for us it becomes a tool for establishing artificial conformity. With a dozen or so such syllogisms, you can make a system, and then, to keep the system working in defiance of natural process, you need administrators, lawyers, and possibly priests. Eventually armies, secret police, and grand inquisitors are required. This alienating rule forces people to split into contending groups, to develop rival systems animated by snarling hostility, and in time there arise advocates of blood and soil, of bombings and burnings, and of nihilist solutions inspired by a hatred of all ordered energy and complex understanding. Vulgarity and obscenity are the sacraments of these regimes. Orgy masks heartbreak, intoxication is advertised as the symptom of cultural rebirth.

But these dark events are always followed by a reassertion of the inward necessities of the mind. The intellectual skepticism which initiates the challenge of an existing system is an irrepressible energy. And the questions which come after, challenging the intellect, contending with its wholesale denials, are also asked by the mind.

In moments of self-perception, when we see these things, the demand to understand what has happened becomes a major compulsion. We are capable of what seem magnificent acts of creation, yet they turn out to be tasteless, polluting monstrosities to succeeding generations. We are forever misled and betrayed by the Tradition of the New. It was only two hundred years ago that Alexander Pope grandiloquently declared, "God said, Let Newton be! and all was light," but today a modern critic casually remarks that "most scientists, alas, are still trudging along with Newton under one arm and John Locke under the other." Locke, that oracle of justice and reason for the Founding Fathers of the United States, is identified as the author of views now held accountable for much of man's inhumanity to man.

Who or what is responsible for this impossible mix of creative capacity with a genius for self-defeat? Have we to say, simply, that this paradoxical combination is an aspect of what we are, and that no abdication is possible from the human condition?

On the theory that the gods are archetypal men, it might help to examine their makeup. One class of deities in the Greek pantheon was the Titans, of whom Hesiod said that it was their nature to over-reach themselves. This comes very close to identifying mankind. Prometheus was a Titan who united in himself two qualities present in all human beings—the capacity for love of others and a tendency to act in disregard of the consequences. In *Prometheus Bound,* the Chorus asks the chained god if he realized what he was doing when he informed human beings with creative power. Were they *ready* for this immeasurable responsibility? Did he know what might happen to all these half-awakened souls if he raised them from their dazed, instinctive condition to the perils of self-consciousness?

Objectifying the ruthless might of Zeus's rule would inspire disobedience, and had humans the wisdom and discipline to manage their own lives? No wonder Zeus was angry!

"Yes," Prometheus replied, "I knew." He added:

> I do acknowledge it.
> Man's cure invented misery for myself.
> But penalties not these did I expect:
> To see myself rotting beneath the sky.
> The lonely tenant of this lifeless peak.

So it may be consistent with our divine Progenitor that we should now learn and admit what is the matter with us, even if we must wait upon the remedy. For this is kept a Promethean secret never to be told to anyone who remains a servitor of Zeus, who cannot manage his life without external controls.

The issue is now formulated in other terms. How can we grow in knowledge without making an imprisoning system out of what we learn? Is there a knowledge—a knowledge on which action can be based—which does not depend for its coherence on the blinders of bias, whose rules do not eventually produce a backlash from neglected portions of the natural whole?

Is there, in short, a kind of knowledge which cannot be spoiled by the resulting *technique?*

Or: Can a man live in the world without upsetting it, disturbing it? Can humans live with other humans without distorting each other's lives?

These questions probably cannot be answered—not one two three. Being human is in itself upsetting, if we take seriously the Promethean legend. There is some death in every innovation, and some pain from even a little elevation above a former point of view. What is it to "help" "someone? Did Prometheus help the human species? Wouldn't it have been better to leave them the way they were—

> . . . like children . . . seeing they saw not, and hearing they understood not, but like as shapes in a dream they wrought all the days of their life in confusion . . . like the little ants they dwelt underground in the sunless depth of caverns.

Perhaps things would have been better that way, but you meet few humans wanting to go back to being vegetables or sheep in order to lead an untroubled life. They are, after all, Titans in breed. They have minds with a tendency to over-reach themselves. Their nature, in this respect, seems established long past the time of decision-making.

Cutting the Gordian knot, let us say simply that there are two kinds of knowledge: Knowledge of technique, which is for doing particular things; and the other kind of knowledge whose practical utility is to hold technique in its place, confining it to technical things and controlling its intoxicating effects—a knowledge which includes the hierarchy of values, on which all human meanings are inevitably based.

What is wrong with the present age? Technique has invaded our lives and beseiged and reduced our identity. How can we become free of technique? Not by throwing it out. Not by refusing to apply it where it is needed and has indispensable use. Technique has the splendid if limited virtue of all earthly things—it is *definable*. From technique have come all the certainties we practice, except the hardly definable certainty (uncertain in practice) that there are areas where technique is a bull in a china shop, a booted destroyer, a foolish specialist who has lost his way.

Why should it be that the repeatable truths are all either definitions of technique or obscured by paradox?

Consider the magic word "organic." It refers to the countless interdependencies and collaborations within the constellations of life. If you ask for an explanation of "organic," no one can give you a formula, although there may be a lot of words. To answer this question, you have to use an illustration, provide the image of a living thing. You can't or don't know the meaning of

organic, but you can feel it. Being alive yourself, in the presence of a world of living things and vital processes, you are able to feel it. "Organic" is a word in the code of non-technical, non-analytical communication. It has almost the value that the word Grace had during the Middle Ages. We'll use it until it is worn out from carrying too many burdens, doing service as the name of too many wonderful mysteries. Yet we can't manage—can't really communicate—without words like "organic."

Consider a sentence in a book embodying some of the best of contemporary self-consciousness: "Political science is the study of various bad substitutes for organic relationships." In this context we see that "organic" means for people of today what Natural Law meant for the *philosophes* of the eighteenth century. It represents what we *feel* is real, what is everywhere present but eludes fixed identification, escapes all imitative fabrication, will never submit to precise definition. It is knowledge—an idea—which shines through the chinks of all our intellectual constructions. It is probably the light that we see by, and never, therefore, what we see.

We can no longer pursue knowledge with naive enthusiasm. Now we search hopefully for the knowledge that will protect us from the knowledge we possess. Douglass Cater seemed to understand this when he said, in the *Saturday Review* about a year ago:

> 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 an atom, we need to delve more deeply into these mysteries.

Does anybody know how "man chisels his little statues of perceived reality"? No, not really. Do the writers of books declare this general ignorance? Seldom, but now and then. That master of paradox, Lao tse, probably explained the matter as well as or better than anyone else.

What, after all, do people learn from reading books? The number of books published every year tells us absolutely nothing in answer to this question. It tells us no more than the number of people who go to church informs us about the moral condition of the world.

The writer of books is one who talks to himself. The more fool he if he supposes he can "instruct" anyone. Amuse them, perhaps; distract them is likely; but instruct them! An incredible presumption attends nearly all instructive undertakings. Yet there is a sort of writing that gives off sparks, which makes books beneficently radioactive for a certain number of readers. When or in what direction a spark will fly, no one knows. Who will see it and in some secret way become ignited, no one knows. Yet it happens.

Why should one read history? Arthur Morgan gave the best answer we know. One discovers from history, he said, that not all the people in the world have submitted to mediocrity. The man who does not read may be condemning himself to a knowledge of only the commonplace things and commonplace people around him. He may never find out that there was a Plato, a Shakespeare, or a Blake. He is not in a position to realize that a Thoreau once wandered through the New England meadows and forests and wrote things that have kept a considerable portion of mankind alive with hope, if with no other nourishment. He will not have heard about Tolstoy and his triumph over literary fame. He may think that men are always ordinary. In this he will be wrong. Being wrong, he will not listen to certain rare whisperings from himself . . . should they come. There are those, of course, who are born to fortunate lives in the foothills of Parnassus, and who may have chance encounters with greatness. But books put replicas of Parnassus on wheels.

And poetry? Have the poets anything to say about how man chisels his little statues of

perceived reality? "Didactic poetry," said Shelley, "is my abhorrence." Of necessity, the poets write more or less in the forms of their age, but for content must await something that they cannot have from others—"the uncommunicated lightning of their own minds." What would one learn from a transmitted portion of that lightning? Nothing practical. Yet the poet is known to increase general human resources by a means hardly understood. Emerson spoke of this:

> With what joy I begin to read a poem, which I confide in as an inspiration! And now my chains are to be broken I shall mount above these clouds and opaque airs in which I live,—opaque, though they seem transparent,—and from the heaven of truth I shall see and comprehend my relations. Life will be no more a noise . . . .

What is poetry for Emerson; where does it come from?

> For poetry was all written before time was, and whenever we are so finely organized that we can penetrate into that region where the air is music, we hear those primal warblings, and attempt to write them down, but we lose forever and anon a word, or a verse, and substitute something of our own, and thus miswrite the poem. The men of more delicate ear write down these cadences more faithfully, and these transcripts, though imperfect, become the songs of the nations.

The poet uses a language filled with natural metaphors:

> Nature offers all her creatures to him as a picture-language. Being used as a type, a second wonderful value appears in the object, far better than its old value, as the carpenter's stretched cord, if you hold your ear close enough, is musical in the breeze. "Things more excellent than any image," says Jamblichus, "are expressed through images." Things admit of being used as symbols, because nature is a symbol, in the whole, and in every part. . . . Since everything in nature answers to a moral power, if any phenomenon remains brute and dark, it is because the corresponding faculty in the observer is not active.

Finally—

> It is a secret which every intellectual man quickly learns, that, beyond the energy of his possessed and conscious intellect, he is capable of a new energy (as of an intellect doubled on itself), by abandonment to the nature of things; that, beside his privacy of power as an individual man, there is a great public power, on which he can draw, by unlocking, at all risks, his human doors, and suffering the ethereal tides to roll and circulate through him: then he is caught up into the life of the Universe, his speech is thunder his thought is law, and his words are universally intelligible as the plants and animals. The poet knows that he speaks adequately, then, only when he speaks somewhat wildly, or "with the flower of the mind", not with the intellect, used as an organ, but with the intellect released from all service and suffered to take its direction from its celestial life; or as the ancients were wont to express themselves, not with intellect alone, but with the intellect inebriated by nectar. As the traveller who has lost his way, throws his reins on his horse's neck, and trusts to the instinct of the animal to find the road, so must we do with the divine animal who carries us through this world. For if in any manner we can stimulate this instinct, new passages are opened for us into nature, the mind flows into and through things hardest and highest, and the metamorphosis is possible.

In a burst of eloquence, Emerson explains the meaning of "organic" beyond the reach of the enfeebled modern imagination. Emerson is a poet whose flow of ideas wholly conceals his technique, if he has technique in the sense commonly given this term. If you read much of him, it seems that he *always* writes in a cipher. He will not be pinned down. All he says is promissory, and not payable on demand. We can only feel what he means. He is a splendidly articulate Hope from the bottom of Pandora's box of miseries. Poets can offer no more.

But can *anyone* offer more? We, who have grown deeply suspicious of clever devices you can "do things" with, should know—if we have learned anything from our recent captivity in a spider's web of technical abstractions—that the knowledge we need is how to *live* in the world, not how to do things to it. We want very much to learn the secrets of organic life. Our trouble may be that we expect to learn them by looking down on them from the outside. Can anyone learn

anything "from the inside"? we ask. Would it be real knowledge, and would it be *ours?*

Ask a poet this question. Be sure to ask the right poet. He may want to know why you want to "possess" the truth. He might ask if a possessed truth is likely to be an impaled truth, or if the knowledge you are talking about is about things dead, laid out, and studiously dissected.

The passion for objective truth has some resemblance to the hunger for personal (*possessed*) identity. How much of this identity depends upon being consciously separate from the rest of life? Is it extinction to forget oneself? Every time a human being becomes totally involved in the work he has to do—totally engaged in meeting some manifest and urgent human need—totally delighting in some splendid spectacle—he forgets himself. He then becomes, in all his parts and extensions, an organic betng.

The star boarder who lives in his private mind outside the universe of common life is always some kind of invader, a user of tyrannical abstractions, a theorist whose means circle far away from natural human ends. The partisanship of a life based on quickie pragmatisms stretched far beyond their competence moves from dilemma to dilemma. The man who thinks he knows more than his ancestors always knows more *and* less. The more he knows, the more he shuts out. This is *our* dilemma of the hour.

These "motionless" societies which are still pretty much the way they were a thousand years ago—now we are eagerly going to school to them. Their people don't have cancer. They don't have heart disease. They don't have neuroses. They have strange customs and odd beliefs, but their customs don't make them die right after retirement (they don't know about retirement), and their beliefs don't make them put their fathers and mothers in ticky-tacky Forest Lawns for the aging. Those old societies at least know better than this.

In the service of a contention by no means clear, a *Saturday Review* writer recently quoted Harlan Cleveland of the Aspen Institute on the possible relation between economic production and education: "In the American experience, both the numbers of college students and the gross national product set records," while "Soviet growth, too, accompanied an enormous educational development." But on the page opposite, the *SR* editor, Norman Cousins, gave a more accurate idea of the gross national product. Speaking of present-day capability for nuclear destruction he said:

> A reciprocal insanity is at work in the world. . . . The line between ultimate absurdity and reality is getting thinner all the time. What gives our age its bitter flavor is precisely the triumph of irrational behavior in the operation of society. Total power is being wedded to total madness.

Whatever the educational development Mr. Cleveland has in mind, anxiety is becoming its most noticeable side-effect. And if madness results from exclusive cultivation of the knowledge you can "do things" with, surely it is time to add Lao tse to the curriculum, and restrict assigned reading to books which give off sparks.

REVIEW
THE BIOLOGICAL PARADIGM

IT seems likely that, within the next twenty years or so, the great scientific movement which grew out of the Enlightenment will be recognized as essentially a long-drawn-out philosophical argument based on intellectual hungers and moral emotions. The burning of Bruno and the persecution of Galileo hardened the determination of Western thinkers to make the machine the paradigm of all knowable reality the First Cause, so to speak. What would be the advantage of this? The point was plain enough. Having to refer everything that happens to the machine principle would put a final end to all theological authority. Nobody had ever seen "God," but those who claimed to know His "Will" had turned all Europe into a bloody shambles, to say nothing of the everyday tyrannies of priestcraft. Making the machine the basis of all explanation would allow no one the privilege of special or private access to truth. The laws of nature's machinery could be found out by energetic human inquiry, and then published for the use and benefit of all.

Bertrand Russell generalized what happened in his introduction to Frederick Lange's *History of Materialism* (1925):

> Historically, we may regard materialism as a system of dogma set up to combat orthodox dogma. As a rule, the materialistic dogma has not been set up by men who loved dogma, but by men who felt that nothing less definite would enable them to fight the dogmas they disliked. They were in the position of men who raise armies to enforce peace.

The changes which flowed from this decision are almost incalculable. The spirit of freedom spread over the Western world, animating the French and American revolutions, inspiring self-confidence in countless human beings, leading to a rush of inventions which were in themselves a vast stimulus to ingenuity and expansive enterprise. But there was also a cost, although hardly anyone, back in 1748 when de Lamettrie published *Man a Machine*—least of all its author—was able to foresee the effects of this contention. The exhilarations of minds set free were too intense for there to be any anticipation that, centuries later, human beings would begin to treat one another like machines, submitting to a psychological bondage as debilitating in its effects as dehumanizing religion. Yet the method of science, confined by the machine principle, eventually damped and then extinguished the spirit of the Enlightenment. No longer a surging release of human hope and aspiration, its hunger to know wasted in the sterile atmosphere of materialism.

That this is what happened has been the great diagnostic realization of the last half of the twentieth century, clearly put by A. H. Maslow, who wrote in 1968:

> . . . many people are beginning to discover that the physicalistic mechanistic model was a mistake and that it has fed us . . . where? To atom bombs. To a beautiful technology of killing, as in the concentration camps. To Eichmann . . .I point out that professional science and professional philosophy are dedicated to the proposition of forgetting about values, excluding them. This, therefore, must lead to Eichmanns, to atom bombs, and to who knows what!

In his critically brilliant *Greening of America*, Charles Reich spoke at length of the effect of machine "values" on American civilization. Nothing but more "production," he pointed out, has importance in machine thinking:

> Only such single-valued mindlessness would cut the last redwoods, pollute the most beautiful beaches, invent devices to injure and destroy plant and human life. To have just one value is to be a machine.

But what must be remembered in these "anti-science" days is the peculiar—and fortunately undying—virtue of the scientific spirit. No other calling in modern life gives equal emphasis to the importance of discipline in action and accuracy in thought. The idea of professional integrity has survived the moral decay of the times better among scientists than in other areas. What needs changing is not the spirit of science, but the paradigms and assumptions of scientific method. While many scientists still think that abandoning

the machine principle would mean an end to science and a return to superstition and wishful thinking, there are others who sense that the time has come for radical revision in the concept of scientific method, and for its renewal with wider foundations. Actually, the scientific establishment, although slow-moving, may prove to be the only institution that is capable of self-reform.

Now, from India, comes a book which seems a veritable encyclopedia of the changes which have been going on during the past fifty or so years in the field of biology. *The Biology of Freedom* (Bombay: Somaiya Publications, 1975, Rs. 50, or about $5) is by Krishna Chaitanya, a historian of science whose earlier work, *The Physics and Chemistry of Freedom*, dealt with similar breakthroughs in the hard sciences (noted in MANAS for April 18, 1973). The theme of *The Biology of Freedom* is the gradual relinquishment of the mechanical principle in recognition of the purposiveness of all life. Apparently, there is now such abundance of evidence of purpose in living organisms that the mechanical principle has been reduced to but one of the means by which life fulfills its ends. In a book of more than 350 pages, the author gives coherent unity to material from many hundreds of scientific investigators, summarizing their experiments, researches, and reflective conclusions.

In the section on the formation of the individual organism, there is this passage:

> "In all these questions," says Needham, "the principal conceptual difficulty for the biochemist arises from the fact that the cohesive and organizational forces seem to act on what may be called the suprachemical level. We can as yet hardly form a picture of the way in which the chemical affinities, the colloidal forces, and the large-scale mechanical factors, are integrated in development to produce the morphology of the completed animal." The problem is yet to be solved, but there is no warrant for thinking in terms of an extraneous force intervening for the control of organismic processes like a *deus ex machina.* The principle of integration is immanent at all levels. It does not discontinuously manifest itself only at the level of biological organisms in the way the vitalists imagined. Einstein wrote: "Before Clerk Maxwell, people conceived of physical reality—in so far as it is suppose to represent events in nature—as material points whose changes consist solely of motions. . . . After Maxwell they conceived physical reality as represented by continuous fields, not mechanically explicable. . . . This change in the conception of reality is the most profound and fruitful one that has come to physics since Newton." And Sommerfeld links up the particle, the smallest and simplest unit in the atomistic-mechanical view, with the conscious and self-conscious being, the highest of organisms, in a comparison which may have more depth than mere analogy. "If we treat the human body physiologically, we must speak of a corpuscular localised event. To the psychic principle we can assign no localisation, but must treat it—and this is also the opinion of the psycho-physiologists—as if it were present more or less throughout the body, just as the wave is connected with the particle in an unspecifiable way."

Another passage makes it evident that the paradigm of vital, organismic phenomena cannot be a machine, but must be *life* itself. Life is the original principle:

> With feedback, says Urquhart, "causality flows round in a circle, making ambiguous the distinction between cause and effect. . . . Multiple interaction poses a problem not really different from that posed by feedback, since the ambiguity inherent in tracing and quantifying a circular line of causality also exists with patterns which are otherwise tortuous and may include extensive divergent or convergent lines of causality. And he concludes that the conceptual framework that can analyse these realities is systems theory. For Commoner, the system here is the cell as a whole and there seems to be no statement to which one can take exception in his conclusion. "Thus the available evidence leads to the conclusion that the biological specificity of inheritance originates in no one molecule but in a complex circular network of molecular reactions in which various DNA, RNA and protein agents participate. As far as we know, this system exists only in an actual living cell. . . . The inherited specificity of life is derived from nothing less than life itself."

The concluding portion of this book (as in Roszak's *Unfinished Animal*) invokes Pico, suggesting that we are once more ready for

comprehensive humanist affirmation—with, perhaps, less likelihood, this time, of destroying its promise with polemical bludgeons:

> The formative thrust of evolving life has elaborated at the level of man a nervous organization that has competence for the free motor act and for the ideation which can enhance that freedom and irradiate it with voluntarily chosen values. "Man transcends all other life," says Fromm, "because he is, for the first time, life aware of itself." Hammarskjold has an even more pregnant statement. "Only in man has the evolution of the creation reached the point where reality encounters itself in judgment and choice. . . ." Penfield defined mind as "the faculty which is responsible for that portion of human behaviour which does not seem to be automatic." We will have to confront behaviourists who altogether deny the mind, psychoanalysts who assert that the activity of the conscious mind is automatically determined by that of the turbulent, irrational unconscious. Even after we establish the freedom of the will and the act, we may discover, with Pico della Mirandola and Fromm, that it is a bitter-sweet gift, for man may choose to become either a god or a devil. Since ideation is real, the false denial of freedom may poison thought and lead to the real loss of freedom. As Hannah Arendt said, the real danger in theories like behaviourism is not that they are true, but that they can become true. Further, the possibility of freedom need not mean the reality of freedom. Freedom not conserved may become freedom betrayed, thraldom embraced.

Books like this one show that, after winning our moral freedom back from the theologians, it has become necessary to win our intellectual freedom back from the mechanists. Once again we are on our own.

COMMENTARY
THE SANE SOCIETY

ERICH FROMM'S observation, quoted in Frontiers, that the demand for "total security" against military attack creates "more insecurity that it avoids," has applications in other directions. The everyday longings for totally "secure" economic arrangements, for a personal environment proof against not only want but even inconvenience, express the same attitude. So does the never-relaxing anger of the radical at any admitted limitation on absolute social justice as he defines it.

During the last years of his life Abraham Maslow gave much reflection to this misplaced "perfectionism." In an informal conversation (unpublished) with some others having similar concerns, he said:

> Longer life-spans, better fabrics, better shoes, etc., are purely technological problems that have nothing to do with ultimate values and 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.

Getting exactly what we want in external terms seldom works out well psychologically. More than likely, this sort of gratification will defeat the real growth-processes of human beings. People expect "too much of the lower need gratifications, of the material life." They expect "too much of sex and love, of having an auto, of having money to spend, of having a house, going to school, or having a degree." Therefore—

> The permanent lack of pain, trouble, depression, and the like must all be given up as expectations for human nature. There will always be grumbling, complaining, wanting, lacking, seeking, striving. Any theory of Utopia, of the good society, or of the good person, must be based on this accepted fact. The fury with which some attack the whole society, calling it evil and horrible, etc., shows clearly a kind of cognitive pathology, an inability to see facts which stare you in the face. . . . "this gratification did not make me happy and whole and autonomous and self-actualizing, therefore it's all a fake; it's of no importance; it's a swindle. It's evil." Such grumbles miss the point that this disillusionment was generated by illusions we had better get rid of. . . .

Maslow believed that any successful effort to create a synergistic, Eupsychian society would involve defusing such illusions.

CHILDREN
. . . and Ourselves

TOMORROW'S SCHOOLS?

SCHOOLS are products of the social community. They always have been and they always will be. When we have small, better communities, there will be smaller, better schools, and pioneering efforts in this direction won't suffer so much from lack of support. The schools will be natural expressions of community life.

How far off are such developments? They may be closer than we think. In *Mother Earth News* for January, Karl Hess, once a speech-writer for Barry Goldwater, told an interviewer:

> Small-scale organization of all human activities is the inevitable wave of the future.
>
> All our current activities—government, business, social—are like dinosaurs. They've grown and grown until they're so ponderous and unwieldy and bogged down in bureaucratic paper shuffling, they can't even fulfill the simplest tasks. And, like dinosaurs, as long as the climate is favorable, they'll keep on dominating the landscape and keep on growing.
>
> But the climate is changing in this country, and changing fast. There's some cold winds blowing out of the north. We don't have unlimited low-cost energy to squander any more, and we can no longer count on an unlimited flow of inexpensive raw materials from backward nations. And most important of all, the American people are wising up They're demanding an end to things such as pollution and consumer rip-offs.
>
> Now this is only the beginning. When the *real* crunch comes, the dinosaurs won't be able to adapt . . . they'll die of their own ponderous inertia. And their place will be taken by small-scale organizations made up of people with a sense of individual responsibility because such organizations and such people will be versatile enough to adapt. . . . .
>
> You can already see it taking place all over this country. Our economic system is breaking down . . . so rapidly that people everywhere are starting to rediscover more primitive forms of social organization. Cooperative forms of organization. Food co-ops, action groups, community banks, and taxpayers' revolts are springing up everywhere in both the city and the country.

What signs are there in education? A new Harper & Row paperback, *What Do We Use for Lifeboats when the Ship Goes Down?* ($3.95), made up of material which appeared in a periodical issued in Maine—*Observations from the Tread-Mill*—has in it an interview with John Todd which tells how the New Alchemy Institute got going. It all began when he found himself tired and disgusted with "doomwatching." What alternatives were there to watching the world stop working?

> I taught this course called Cold-Blooded Vertebrates. There were ten or twelve graduate students, and we had been spending time at a commune in the mountains near the Mexican border. And so we went out there. We broke it up into subject areas, and each one wrote up what he would do to make the place autonomous. It was pretty uninspired. In fact, the most inspiring was one paper that said: I wouldn't do anything but build a beautiful Japanese bath, plant a couple of trees around it, and sit naked and watch the sun. The rest were just sort of crude: put a shelter here or grow chickens there. It occurred to me that here I'd been in university since 1957, thirteen or fourteen years in academia—and many of these students had been almost as long as I had—and we simply weren't trained in sensitive stewardship. We didn't know anything. Science hadn't trained us to be able to answer the most fundamental questions: How do you make that piece of earth sing, and how do you make it support those that live there? Degrees in agriculture, disease ethology, ecology . . . nothing!
>
> So I decided we had to figure a way. I decided each student is going to study one component of the place. You're gonna do rocks, you're gonna do earthworms, you're gonna do grasses, you're gonna do snails, you're gonna do wind, you're gonna do sun, you're gonna do ferns . . . fourteen components. And there's two things you're gonna do before you pass this course: one is to find out what's here and in what abundance, and the second is you're gonna teach somebody else what you've learned.

(We thought of a low-key comment on who was gonna do English grammar, but decided not to make it.)

> Several months later . . . people were camping out, living in trees, stuff like that . . . and they grumbled like hell! Studying earthworms was not their idea of graduate school. But then they started to teach one another, and all of a sudden, like the scales falling from our eyes, a piece of land came alive. One of the students found a plant that only grows where there's water! So we dug down and found water! And it happened in a place where we could build a series of little dams like steps down the valley, and with the sun there, all of a sudden we found we had a driving wheel for the whole system. Another student found miner's lettuce, which meant we had a sort of balanced soil association, and the guy with the worms was able to collaborate. All of a sudden we had gardens, and the wind guy figured out a source of energy. And all of a sudden we were talking for the first time like we knew what we were talking about, even though we had just barely got the doors open! And here was this piece of land which was no longer an inhospitable enemy. Everywhere we were finding allies. Without knowing what was there, we never would have gotten the door open far enough to see what was inside.

Once a teacher discovers that he knows what he is talking about in terms like these, there is nothing else worth talking about. This, or something like it, is what needs to happen for all the schools. And it *could* happen in the schools of tomorrow, if it can happen to the teachers first. John Todd was teaching at the graduate level, but similar things could be done at the highschool level, and inventive teachers could find ways to do it in the elementary grades.

John Todd continues:

> There has never been any doubt for me since that time that the way to go is to be whole. Know the sun, know the plants, know the soil, know the people, know the shelter . . . have them all interlaced, begin from there.
>
> I had this fantasy about a little mountain village, which I knew San Diego State [College] owned or leased, and so I chatted about this concept of biotechnic village. I sort of got academic approval, but when I talked to the comptroller and the accountants, I found that all the things I wanted to do were not possible within the University of California system. I was asking to create a tiny village, and Reagan was having trouble over a parking lot at Berkeley!
>
> So it was very obvious to me that the best way to travel was to travel light. Well, we've ended up on ten acres of wasted land . . . sand . . . and I don't think that's bothered us one bit. . . .

The ten acres are the site of the New Alchemy Institute on Cape Cod, at Woods Hole, Mass. 02543 (P.O. Box 432).

> The goal of New Alchemy? The original purpose never changed. This rather grandiose legend which sits under our letterhead: To Restore the Lands, Protect the Seas, and Inform the Earth's Stewards. On a more practical level there are several purposes. On the short term is the backyard fish farm. The rationale was simply if there are going to be billions and billions of people without access to transport systems, is there any way we can alleviate mass starvation? And the backyard fish farm concept was the first solution. We wanted something that could go into a vacant lot or a back alley or a rooftop or arid regions where water is precious. It's got to be contained and used and then slowly dribble the enrichment out to gardens that surround it. That's the short term.
>
> The longer term is to make the concept of an autonomous small-scale commutat . . . semi-autonomous communities, whole-earth-system-derived, in energy and food and shelter attuned to their environment, to make the whole concept so bloody appealing that a lot of those stresses and strains that are chronic will be alleviated. In other words, twenty-first-century pioneering. Not in setting up a community but in sort of getting back to something Fraser Darling studied many years ago in Scotland: to provide the thinking, biological and physical, that would sustain regions or small groups of people with a fair degree of autonomy so that they would not be as subject to cooption or manipulation and could evolve to greater religious and artistic heights.

It shouldn't be difficult to imagine what sort of schools would develop under such auspices. Gandhi, as it happens, described them in his plans for village education in India.

FRONTIERS

Continuing Diagnosis

"GENTLEMEN: YOU ARE MAD" was the title of an article contributed by Lewis Mumford to the *Saturday Review* for March 2, 1946. The occasion was the atomic warfare tests which destroyed the tiny Pacific atoll of Bikini. Mr. Mumford began:

> We in America are living among madmen. Madmen govern our affairs in the name of order and security. The chief madmen claim the titles of general, admiral, senator, scientist administrator, Secretary of State, even President. And the fatal symptom of their madness is this: they have been carrying through a series of acts which will lead eventually to the destruction of mankind, under the solemn conviction that they are normal responsible people, living sane lives, and working for reasonable ends.
>
> Soberly, day after day, the madmen continue to go through the undeviating motions of madness: motions so stereotyped so commonplace, that they seem the normal motions of normal men, not the mass compulsions of people bent on total death.

Those who wonder if this description of the conduct of American affairs still applies have only to read "The Doomsday Strategy" by Sidney Lens in the February *Progressive* for an answer to their question. Mr. Lens begins his 24-page account of the continuing symptoms of madness with these facts:

> By 1976, twenty-two years after Eisenhower warned that "a single air group, whether afloat or land-based, can now deliver to any reachable target a destructive cargo exceeding in power all the bombs that fell on Britain in all of World War II," the United States—by the calculations of Ruth Legar Sivard, former chief economist of the Arms Control and Disarmament Agency—possesses "a nuclear stockpile of 8,000 megatons (million tons of dynamite equivalent)," equal to 615,385 bombs like the one dropped on Hiroshima which immediately killed 78,000 people and injured 84,000.
>
> "Using the Hiroshima analogy," says Sivard, "the nuclear stockpile of the United States alone translates into a potential kill-power twelve times the present world population." The rest of the planet, mainly the Soviet Union owns another 8,000 megatons of warheads—and the united States alone is still producing three nuclear weapons a day, as it has been for the past four years. And humanity is at the threshold of still another "new era" in which the "peaceful" use of the atom for electrical energy will make it possible within *the next few years* for dozens of nations—not to mention terrorist gangs—to fabricate their own atom bombs. What was once a monopoly of one country, then of two, three, and six threatens to become the property of almost every tin-horn dictator and opportunist on the globe.

American planners—basically the think-tank theorists always plan, Mr. Lens points out, "not on the probable but on the *worst possible* contingencies." This, as Erich Fromm remarks in an article in the *New York Times* for last Dec. 11, is paranoia:

> Those who demand that political decisions must be made on the basis of excluding all dangerous possibilities "beyond the shadow of a doubt" make a sane foreign policy virtually impossible, since one can never prove that certain things could not *possibly* occur.
>
> By this demand all constructive steps for détente and disarmament are made impossible. Hence the arms race, on the basis of this paranoid logic, must be continued by mutual fears on technical and political "possibilities" rather than reasonable possibilities.
>
> We repress the facts that the nuclear arms race and even the currently built-up arsenal will with the greatest probability result in the destruction of America, Western Europe and the Soviet Union, if not of all life on earth. *In our obsession to consider all possibilities we end up by not considering the real probabilities* . . . paranoid-like thinking is mutually infectious.

The demand for total security, Fromm says, is a boomerang: "It creates more insecurity than it avoids."

What about the "peaceful" applications of atomic energy, so optimistically predicted by President Eisenhower in his famous speech? For consideration of this question, a reading of Hugh Nash's February *Not Man Apart* article, "Are Nuclear Power Plants Dangerous?", would reveal the "real probabilities." First of all, the insurance

industry "declines to insure the nuclear industry beyond a tiny fraction of the potential losses for which it might be held accountable." Insurance companies guide their policies by a careful study of odds. Mr. Nash concludes:

> Many critics would condemn nuclear power even if there could be an absolute guarantee against in-plant accidents. There are risks at every stage of the nuclear fuel cycle, from mining and milling of uranium ore to the ultimate disposal of nuclear wastes. Fuel reprocessing plants are dirtier and arguably more dangerous than the power plants they serve. Transportation of irradiated fuel and high-level wastes affords many opportunities for accident or highjackings. Diversion of weapons-grade nuclear material to unstable governments or sophisticated bandits is virtually impossible to guard against with an on-going nuclear industry, and 30 years into the atomic era, the problem of waste disposal remains unsolved and possibly insoluble. To have launched the nuclear power industry without first finding a demonstrably satisfactory way to dispose of its wastes was monumentally irresponsible.

Obviously, Mr. Mumford was right in 1946, and he is still right.

We hear much stern self-reproach, these days, concerning these unmistakable symptoms of madness. But sometimes a fresh perspective is the most valuable. In *Earthwalk* (Anchor, 1974) Philip Slater considers the difference between man's organic wastes and his psychic wastes:

> . . . the environment can absorb a man's organic wastes, and even turn them to good use; and as to his psychic pollution, what difference do fantasies make? Let him project his evil-heartedness wherever he likes—what does it matter?
>
> The danger arises when a man's psychic excretions are given material form—when his projections appear as physical objects. We cannot ignore his fantasies of superpotency when they are represented by overpowered automobiles that claim a thousand lives a week; his paranoid fears when they are expressed in bugging devices and security data banks; his hatreds when they appear in the form of a nuclear arsenal capable of eliminating vertebrate life on our planet.
>
> Our psychic excretions, in other words, show an annoying tendency to become part of our real environment, so that we are forced to consume our own psychic wastes in physical form. . . . A science-fiction film some years ago dramatized the problem of psychic waste materialization in the following way: Space explorers discovered a planet that had once boasted a civilization of the highest order, the inhabitants of which had found a way to materialize thoughts directly. The explorers could not understand why this civilization had vanished utterly, until gigantic monsters began to appear. They then realized that the planet's inhabitants had neglected to consider that unconscious wishes and fantasies would materialize along with their consciously purposed thoughts, and had been destroyed by this lack of perspicacity.

Ingenious myth for our time or accurate psychiatric diagnosis—it doesn't much matter how we name an effective means of recognizing the world our thinking has made.