

WHAT NEEDS TO BE DONE?

THE value of science and the scientific mode of thinking as critic of careless, partisan, and arbitrary beliefs is beyond dispute. Yet the tough-minded rejection of all forms of belief which do not submit to the procedures of the scientific method, as now conceived, is as much of an abuse of intellectual powers as the exploitation by religious proselytizers of the emotional will-to-believe. Is there, then, a middle path for scientific thinkers which does not shut out intellectual daring and adventures of the mind? And which, on the other hand, provides necessary protection against fashionable extravagances?

To give the problem substance, particular instances are in order. But first a general statement of the issue between doubting science and the too-easy beliefs of religion, provided by Michael Polanyi in *Personal-Knowledge*, in the chapter, "The Critique of Doubt":

The weakening of religious beliefs under the impact of advancing historical and scientific knowledge during the past 300 years represents therefore, a case in which the effect of doubt was substantial. It destroyed the religious meaning of things without fully compensating for this *loss* by a different meaning, and the total volume of belief, from which all meaning flows, was effectively reduced. If the universe were in fact meaningless, I can admit only that the rejection of religion was reasonable in view of the grounds on which religious doctrines were asserted at the time. Today we should be grateful for the prolonged attacks made by the rationalists on religion. . . . But this does not remotely justify the acknowledgment of doubt as the universal solvent of error which will leave truth untouched behind. For all truth is but the external pole of belief, and to destroy all belief would be to deny all truth. . .

We owe our mental existence predominantly to works of art, morality, religious worship, scientific theory and other articulate systems which we accept as our dwelling place and as the soil of our mental development. Objectivism has totally falsified our conception of truth, by exalting what we can know

and prove, while covering up with ambiguous utterances all that we know and *cannot* prove even though the latter knowledge underlies, and must ultimately set its seal to, all that we *can* prove. In trying to restrict our minds to the few things that are demonstrable, and therefore explicitly indubitable, it has overlooked the a-critical choices which determine the whole being of our minds and has rendered us incapable of acknowledging these vital choices.

Polanyi was a scientist of some distinction and can hardly be accused of being "anti-scientific." What is he doing, here? He is endeavoring to restore science to its place and rank among the Humanities, by showing that it is one way of using the mind, but not the *only* way. Indeed, the point of his book is that when this one way—of doubting or rejecting all that cannot be made demonstrable—is turned into a general theory of knowledge, science becomes self-destructive, attacking its own moral foundations. This is essentially the contention of virtually all the thoughtful present-day critics of science, or rather scientism.

The issue comes into focus with Isaac Newton's claim that he made "no hypotheses," but simply gave attention to the visible facts of nature. Whatever the personal justice in Newton's claim, it cannot be made for his followers, who embraced a whole range of "hypotheses" such that, by 1904, Bertrand Russell was able to sum up (in "A Free Man's Worship") the total rejection of "meaning" in the natural world. This wholly barren outlook, he declared, was the hardly disputable conclusion of scientific thinking to date. Intentionally or not, therefore, the scientists have radically altered how people look at both the world and themselves, inevitably going far beyond the scope of the experimental, observational, and mathematical certainties used to validate what they say. This confusion of justified scientific conclusions with

general human truth is an undeniable reality in our time.

The fact is, then, for all their pretensions to unemotional objectivity, that scientists are human beings who can't *help* but be affected in their general outlook by their own theories. And by reason of the excellence of their minds and the momentum of their arguments, they can't *help* but influence profoundly the thinking of the rest of the world. When a scientist happens to say something "philosophical," the newspapers quote him almost as if he were pronouncing Holy Writ. Theodore Roszak took note of this in his paper in *Daedalus* for the Summer of 1974, saying:

. . . have scientists never noticed how the lay public hangs upon these professions of wonder and ultimate belief, seemingly drawn to them with even more fascination than to great discoveries? If people want more from science than fact and theory, it is because there lingers on in all of us the need for gnosis. We want to know the meaning of our existence, and we want that meaning to ennoble our lives in a way that makes an enduring difference in the universe. We want that meaning not out of childish weakness of mind but because we sense in the depths of us that it is *there*, a truth that belongs to us and completes our condition. And we know that others have found it, and that it has seized them with an intoxication we envy.

It is precisely at this point—where we turn to our scientists for a due to our destiny—that they have indeed a Promethean role to perform, as has every artist, sage, seer. If people license the scientist's unrestricted pursuit of knowledge in its own right, it is because they hope to find gnosis in the scientist's knowledge. To the extent that scientists refuse that role, to the extent that their conception of what science is prevents them from seeking to join knowledge to wisdom, they are confessing that science is not gnosis, but something far less. And to that extent they forfeit—deservedly—the trust and allegiance of their society.

What is Mr. Roszak attempting, here? He is laying upon scientists—or on the best spokesmen among them—the responsibility of philosophers, priests, and oracles. They don't of course want any such responsibility—"I'm just a chemist," one of them will say. Or, I'm busy building jet

bombers, or maybe even solar collectors. The fact is that scientists or scientific technicians have developed practically all our progressive gadgets. But the point is that after some three hundred years of doing this the scientists have been raised in the public eye to the status of world philosophers; and, when they have a mind to, some scientists may exercise this more than royal authority in almost any direction they please. Perhaps without meaning to, they give the impression, quite often, of knowing just about all, right now, that can be known. So, like it or not, they are cast in the Promethean role in our culture, and they ought to accept its full obligations or retire from the scene.

But this is ridiculous! They *can't* retire from the scene. Furthermore, we need them. They can do great things. Well, then, if we're fated to have a society immeasurably influenced by scientific discovery and scientific thinking, both we and the scientists—all of us together—need to think a great deal about the distribution of human responsibility and consider whether technical specialists who have been pushed—or have pushed themselves—to cultural front center in our time should accept this obligation. Actually, it is already *theirs*. And they ought, for example, to respond with a little more generosity of mind than is shown by the reply of Steven Weinberg, an eminent physicist, to Mr. Roszak's appeal.

Prof. Weinberg, who teaches physics at Harvard and holds various eminent posts, said in the same issue of *Daedalus*:

The most profound challenge to science is presented by those, such as Laing and Roszak, who reject its coldness, its objectivity, its nonhumanity, in favor of other modes of knowledge that are more human, more direct more rapturous. I have tried to understand these attitudes by looking through some of their writings, and have found a good deal that is pertinent, and even moving. I especially share their distrust of those, from David Ricardo to the Club of Rome, who too confidently apply the methods of science to human affairs. But in the end I am puzzled. What is it that they want *me* to do? Do they merely want the natural scientist to respect and

participate in other modes of knowledge as well as the scientific? Or do they want science to change in some fundamental way to incorporate these other modes? Or do they want science merely to be abandoned? These three possible demands run together confusingly in the writings of the critics of science, with arguments for one demand often being made for another, or for all three. . . .

Prof. Weinberg continues, readily conceding that there may be other sorts of "knowledge" than the scientific, but in his consideration of the three demands he points out that science cannot alter itself to include those other kinds "without destroying itself." As he puts the argument, he is certainly right. All genuine growth obliges some destruction. And one could say that he ignores the underlying message or invitation in Roszak's paper, which is to accept a Promethean role—that is, to respond not only as a scientist but much more eagerly as a human being. The age of the specialist is coming to an end, yet he does not seem to recognize the problem as set by Roszak, or admit the far-reaching responsibility of scientists for its existence, whatever the necessities of scientific method. And there seems a low-key petulance in saying, "What is it that they want *me* to do?"

We are compelled to recognize that there is hardly any clarity, today, concerning what scientists or other people *ought* to do, although there is already a great deal of evidence that *something* needs to be done. Mr. Roszak is simply saying, *Look* at the modern world, see its pain, feel the longing, the fear and the hope of the people, and try to determine, using all your talent, all your problem-solving experience, what might be done to lighten and relieve the present human condition. Nobody is asking the scientists to *do* anything except accept more responsibility for the impact of their accomplishments, and the misapplications of their thinking. They need either to redefine science or become much more than scientists. That seems to be the choice.

Scientists, as Prof. Weinberg points out, are professional doubters. The scientist, he says,

"commits himself to work out the consequences of his system and to test them against experiment, and he agrees in advance to discard whatever does not agree with observation." Fine. That's it, then. It's the scientific method.

But isn't it time for scientists to say, after Polanyi, that "Objectivism has totally falsified our conception of truth, by exalting what we can know and prove, while covering up with ambiguous utterances all that we know and *cannot* prove, even though the latter knowledge underlies, and must ultimately set its seal to, all that we *can* prove"? Or to repeat after Peter Elbow what he explains about scientific doubting in *Writing without Teachers*:

Descartes, the archetypal player of the doubting game when he doubted everything and then only readmitted clear and distinct ideas, was among other things engaged in a purification rite. He was re-enacting the parable of sweeping the house clean of evil spirits with a new broom.

What is finally becoming clear, I think, through increased understanding of human emotional and cognitive functioning, is that you can never produce enough security clearance, no matter how new or powerful your broom: you can never keep out all wrong ideas, all disgusting or threatening ideas, all ideas tainted by previous tenants—all infection. . . .

If the world is to be helped to recover from the Cartesian delusion, the scientists will have to take part, and they should, since they did the most to spread it around. *This* is what Roszak is asking them to do.

Mr. Elbow goes on, inviting his readers to *dwell* in their issues and problems, not argue so much about them, not shut out what can't be demonstrated or even put into propositional form. As Maslow said, even vague truth, truth mixed, perhaps, with error, is nonetheless truth. "What kind of truth do you need?" Mr. Elbow asks. How about the truth you have to live with for a while to find out whether you need it, and how much of it is actually true? He continues:

Many people would say you haven't got the truth until you have it free from error: part of our feeling

for the word "truth" is certainty. But this feeling misleads us. If you have three answers and one of them is true, you *have* the truth—even if you don't know which one it is. . . .

How soon do you need your truth? . . . The shape of the believing game is waiting, patience, not being in a hurry. Answers come later: finally comes a reorientation of thinking or perception that makes clear the answer to an issue that was raised much earlier. Now it is clear without argument or uncertainty: earlier you would have had to argue for an answer and you might have gotten the wrong one.

Perhaps the most important point to be made here is that people who rely on Cartesian argument, insisting on clear and distinct conclusions, *do* get the wrong answers along with the looked-for right ones. This is illustrated in the chapter quoted earlier in Polanyi's book, and throughout the volume. In one place he speaks of how eighteenth-century scientific skeptics made serious mistakes by insisting on *their* kind of explanations or theories. An instance was the denial of the fall of meteorites by the French Academy of Science. They simply ignored the abundant evidence for them, massively obvious to everyone else, simply because of the supernaturalism of popular explanation. This disdain for unacceptable fact lasted for about a hundred years. Polanyi continues:

It was again scientific scepticism which brushed aside all the instances of hypnotic phenomena occurring in the form of miraculous cures and spellbinding, and which—even in the face of the systematic demonstrations of hypnosis by Mesmer and his successors—denied for another century after Mesmer's first appearance the reality of hypnotic phenomena. When the medical profession ignored such palpable facts as the painless amputations of human limbs, performed before their own eyes in hundreds of successive cases, they acted in a spirit of scepticism, convinced they were defending science against imposture. We regard these acts of scepticism as unreasonable and indeed preposterous today, for we no longer consider the falling of meteorites or the practice of mesmerism to be incompatible with the scientific world view. But other doubts, which we now sustain as reasonable on the grounds of our own scientific world view, have once more only our beliefs in this view to warrant them. Some of these doubts

may turn out one day to have been as wanton, as bigoted and dogmatic as those of which we have now been cured.

Another sort of argument might be made, in tandem with Mr. Elbow's point that "you can never keep out all wrong ideas, all disgusting or threatening ideas," no matter how severely scientific you are. The habit of ignoring possibilities which seem unverifiable and therefore not candidates for consideration may open the back door to unexamined or unnoticed assumptions, all the more polluting as a result. There is ample evidence of this sort of thing in the literature of science. For example, a paper in the Winter 1977 *Daedalus* (devoted to health in America) by Walsh McDermott, author of *Textbook of Medicine*, has this passage:

At any one time . . . the body of knowledge that forms the practice, especially the therapeutic practice, of medicine is a curious mixture of a highly effective technology interspersed with islands of dogma, empiricism, conventional wisdom, and, at times, superstition. With the exponential growth of "interventions," however, this situation can no longer be tolerated. The persistence of unvalidated technologies leads not only to serious diagnostic error but to waste of skilled senices and of money; it also contributes to the increasing load of medically induced, i.e., iatrogenic, disease and, by perpetrating untruths about serious chronic diseases, can give rise to untold anguish and misery.

There are, Dr. McDermott says, "abundant examples," of which he offers a few:

Chest x-rays were introduced early in this century, became standard procedure in the twenties, and had come to be considered a most exact diagnostic technique for tuberculosis by the early nineteen-thirties. Solely on the finding of an abnormal density on the x-ray or a change in the appearance of a density in serial films, momentous decisions were made that profoundly altered the lives of individuals. A young wife living in Brooklyn would be made to leave her husband and small children and be hospitalized in the Adirondacks for periods of a year or more, medical students would have to quit; young physicians, to change careers; school teachers, to abandon teaching. Moreover, these things happened *frequently* because, until the end of World War II, tuberculosis was the greatest

cause of death and invalidism in the 15-to-35 age group. After the war, in the nineteen-forties, in one of the first attempts at "validating" a technology of medicine, Yerushalmy et al. found that, in making this x-ray interpretation, in one out of three cases the physician would not only disagree with a second or third "reader" but in 20 per cent of the cases would not even agree with himself. That is to say, when confronted on two different occasions with the same pair of x-ray films, he would give diametrically opposing answers. Yet it was on this supposedly "decisive" technology that decisions radically affecting the lives of people were made.

Dr. McDermott is neither anti-science nor an angry critic of medicine, but simply a thoughtful practitioner and teacher who thinks that people, in medicine and out of it, should know what truth there is to know. He is writing, actually, not about the dreadful limitations of science and the mistakes medical men make, but about the human condition, and what may happen to make it worse when delusions of certainty are allowed to rule the decisions of trained specialists.

Another case of medical delusion of certainty was the Wassermann test for syphilis, which is now known to have been "overly sensitive." About half the people on whom the test gave "positive reactions" didn't have the disease at all. Dr. McDermott says:

These four or five decades, during which thousands of patients who did not have syphilis were subjected to the shame and dangers of antisyphilitic therapy, are not from the medical era of bleedings and leeches, but from the modern era of interventionist technology. It was science-based medical practice. The physician would choose and carefully administer the science-based technology, an arsphenamine derivative known to have a high degree of effectiveness in definable circumstances, specifically the presence of the microbes of syphilis. But those definable circumstances—the presence of the spirochete—were not actually there, or rather they were not always there, or even there with a high degree of probability. Yet the particular bit of unvalidated technology that led to this massive 40-year-long unfortunate mistake represented the practical application of basic principles of the new science of immunology.

What ought doctors to do? Well, as is surely the case with Dr. McDermott—the best they can. He is indeed "dwelling" in the problems of his profession, doing what he is able to reduce the delusions of infallibility which have been attached to the idea of scientific knowledge, which have had such weakening effects on the feeling of personal responsibility of patients. Another man who dwells in these questions and problems is Dr. Lewis Thomas, whose *Lives of a Cell* is a model of self-examination for every sort of "professional," but especially for doctors of medicine. If they look about, scientists will always be able to find, among their own number, examples of people who are doing precisely what needs to be done.

REVIEW

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 MAN SEES HORSE

IN his essay, "The Chinese Written Character as a Medium for Poetry," Ernest Fenollosa uses these three symbols or ideographs to illustrate the visual riches of the Chinese language and what it does for the imagination of its readers. The words printed in English tell what we may see in looking out of the window: We see a man turn his head, notice something, and fix his attention on a horse. Then, in telling about it, we break up the continuous flow of this action into arbitrary stages determined by our language. Gesture is a means of helping to restore the continuity of a happening that has been described by fixed verbal symbols.

Speaking of the ideographs, Fenollosa says:

But Chinese notation is something much more than arbitrary symbols. It is based on a vivid shorthand picture of the operations of nature. In the algebraic figure and in the spoken word there is no natural connection between thing and sign: all depends upon sheer convention. But the Chinese method follows natural suggestion. First stands the man on his two legs. Second, his eye moves through space: a bold figure presented by running legs under an eye, a modified picture of an eye, a modified picture of running legs but unforgettable once you have seen it. Third stands the horse on his four legs.

The thought picture is not only called up by these signs as well as by words but far more vividly and concretely. Legs belong to all three characters: they are *alive*. The groups hold something of the quality of a continuous moving picture.

This essay by Fenollosa, who combined philosophy with a profound understanding of Oriental art, was included by Ezra Pound, his literary executor, in Pound's book, *Instigations*, published in 1920. It will delight admirers of Owen Barfield's *Poetic Diction*, carrying much the same message concerning the roots of poetry in the living character of metaphor. "Poetry,"

Fenollosa says, "is finer than prose because it gives us more concrete truth in the same compass of words." He also says: "Poetry only does consciously what primitive races did unconsciously." The Chinese language, it becomes apparent, is a vast universe of metaphor. All the roots are based on acts, all words are evolutions of verbs. Reading Chinese is to experience the psychological history of the people, embedded in the characters of their language. Nature has shaped their speech. If you want to say in Chinese that something is "bright," you use the character which is the sign of the sun linked with the sign of the moon—all the brightness there is, day and night. This character serves as verb ("shine"), noun ("brightness"), and adjective ("bright"). To speak of a cup's brightness for example, you write, "the sun and moon of the cup."

Fenollosa contrasts Chinese with modern tongues:

Languages today are thin and cold because we think less and less into them. We are forced, for the sake of quickness and sharpness, to file down each word to its narrowest edge of meaning. Nature would seem to have become less like a paradise and more and more like a factory. We are content to accept the vulgar misuse of the moment. . . . There is little or nothing in a phonetic word to exhibit the embryonic stages of its growth. It does not bear its metaphor on its face. We forget that personality once meant, not the soul, but the soul's mask. This is the sort of thing one can not possibly forget in using the Chinese symbols.

This is a very rich essay, making one conscious of language in unique ways. Musing on its suggestions can hardly fail to increase the power of one's use of words, as it has for Fenollosa, whose prose, from time to time, rises to heights:

In this Chinese shows its advantage. Its etymology is constantly visible. It retains the creative impulse and process, visible and at work. After thousands of years the fines of metaphoric advance are still shown, and in many cases actually retained in the meaning. Thus a word, instead of growing gradually poorer and poorer with us, becomes richer

and still more rich from age to age, almost consciously luminous. Its uses in national philosophy and history, in biography and in poetry, throw about it a nimbus of meanings. These center about the graphic symbol. The memory can hold them and use them. The very soil of Chinese life seems entangled in the roots of its speech. The manifold illustrations which crowd its annals of personal experience, the lines of tendency which converge upon a tragic climax, moral character as the very core of the principle—all these are flashed at once on the mind as reinforcing values with an accumulation of meaning which a phonetic language can hardly hope to attain. Their ideographs are like blood-stained battle flags to an old campaigner. With us, the poet is the only one for whom the accumulated treasures of the race—words are real and active. Poetic language is always vibrant with fold on fold of overtones, and with natural affinities, but in Chinese the visibility of the metaphor tends to raise this quality to the intensest power.

Implicit in such reflections is far more than "culture" or "art." The quality of this inquiry reaches a level where moral ideas need no weighty expression:

It is unfortunate that England and America have so long ignored or mistaken the deeper problems of Oriental culture. We have misconceived the Chinese for a materialistic people, for a debased and worn-out race. We have belittled the Japanese as a nation of copyists. We have stupidly assumed that Chinese history affords no glimpse of change in social evolution, no salient epoch of moral and spiritual crisis. We have denied the essential humanity of these peoples; and we have toyed with their ideals as if they were no better than comic songs in an "opera bouffe."

The duty that faces us is not to batter down their forts or to exploit their markets, but to study and to come to sympathize with their humanity and their generous aspirations. Their type of cultivation has been high. Their harvest of recorded experience doubles our own. The Chinese have been idealists, and experimenters in the making of great principles; their history opens a world of lofty aim and achievement, parallel to that of the ancient Mediterranean peoples. We need their best ideals to supplement our own—ideals enshrined in their art, in their literature, and in the tragedies of their lives.

Fenollosa says of Chinese poetry:

If we attempt to follow it in English we must use words, highly charged words, whose vital suggestion shall interplay as nature interplays. Sentences must be like the mingling of the fringes of feathered banners, or as the colors of many flowers blended into the single sheen of a meadow.

The poet can never see too much or feel too much. His metaphors are only ways of getting rid of the dead white plaster of the copula. He resolves its indifference into a thousand tints of verb. His figures flood things with jets of various light, like the sudden up-blaze of fountains. The prehistoric poets who created language discovered the whole harmonious framework of nature, they sang out her processes in their hymns. And this diffused poetry which they created, Shakespeare has condensed into a more tangible substance. Thus in all poetry a word is like a sun, with its corona and chromosphere; words crowd upon words, and enwrap each other in their luminous envelopes until sentences become clear, continuous light-bands.

Most interesting of all, perhaps, is what Fenollosa learned from the Chinese about English:

I have seldom seen our rhetoricians dwell on the fact that the great strength of our language lies in its splendid array of transitive verbs, drawn both from Anglo-Saxon and from Latin sources. These give us the most individual characterizations of force. Their power lies in their recognition of nature as a vast storehouse of forces. We do not say in English that things seem, or appear, or eventuate, or even that they are; but that they *do*. Will is the foundation of our speech. We catch the Demi-urge in the act. I had to discover for myself why Shakespeare's English was so immeasurably superior to all others. I found that it was his persistent, natural, and magnificent use of hundreds of transitive verbs. Rarely will you find an "is" in his sentences. "Is" weakly lends itself to the uses of our rhythm, in the unaccented syllables; yet he sternly discards it. A study of Shakespeare's verbs should underlie all exercises in style.

No one who writes or wants to write can remain entirely unchanged after reading Fenollosa on the written language of the Chinese.

COMMENTARY NO NOVEL SOLUTION

THE triumphant response of the San Francisco journalist to E. F. Schumacher's prescription of simply doing with less—"How do we get from here to there, without inviting economic disaster?"—seems a good illustration of what is wrong with about 90 per cent of the stand-pat contentions in public argument. (See *Frontiers*.)

Clever men earn high incomes by devising elaborate reasons why none of the *real* solutions will work. Take inflation, for example. The remedy is quite evident, as Dr. Schumacher once pointed out. Someone—those who are able—must pick up the tab. But since self-interest is held to be the ruling principle in human life, no one can be expected to be willing to pick up the tab. So the weakest must be forced to. But when what used to be the weakest groups—labor, for example—have become the strongest, they can't be forced to. So inflation will go on.

A similar example is the present weighty discussion of the choice between saccharin and sugar. Saccharin, we are now informed, may cause or contribute to cancer. But if you give up saccharin, you will eat more sugar than is good for you, and perhaps develop diabetes—obviously a problem with no solution.

Yet the commonsense remedy is no more than intelligent self-denial—you give up both.

Advising people to practice self-denial is prohibited for both politicians and economic analysts. It would practically abolish both professions. What is in fact the only solution for a long list of ills is never mentioned in the public prints, which also survive by refusing to notice certain realities.

If it won't work why talk about it? It doesn't matter that self-control has been the remedy for the ills of excess adopted by intelligent people since the dawn of history. Our politics and

marketing procedures rack up gains only when the practice of intelligence is studiously avoided.

It is a bore, of course, to listen to lectures on self-denial. But there are those who know how to make interesting discoveries out of seeing how it works. The reach of the artist's capacities, for example, is often a function of self-denial or self-control. And you don't think of this as "puritanical" because of the wonderful things an artist does with his time.

CHILDREN ... and Ourselves WHAT IS A SCHOOL'?

WE have a letter from John Holt which says:

I've just received your issue of Feb. 9. Very interested in Vinoba's comments under "Children." He seems to me to be making exactly the point I am making in *Instead of Education*. The proper place to learn about the world is *in* the world not in some place called a school, no matter how intelligently or ideally designed.

It is this notion hidden in the word "education" that I object to so strongly, that, whether they exist now, it might be possible to design learning institutions which would be a better way to find out about the world than the world itself. To put this a little differently, I object to the idea that if we could only design it properly a school might be the best of all places for human beings, young or old, to be. Because, you see, it follows then that things learned in such a place are somehow better, more worthy, more deserving of respect, than things learned outside in the plain old world. And it follows equally that people are better, more worthy, more deserving of respect, in proportion to the amount of time they have spent in schools, as opposed to that plain old world outside. Education becomes a process apart from the rest of life, and the more of that process we have undergone, the better we are assumed to be.

Currents of thought initiated by these observations go in several directions. Here Mr. Holt puts quite simply the sort of criticism of schools and educational institutions elsewhere spelled out in detail by himself, Ivan Illich, Ivar Berg, and some others. The pertinence and general validity of the criticism are not at issue. We need it. Yet certain questions remain to be answered.

There is "the plain old world" out there, and there is the child who needs to learn things about it. The child requires help, and some people seem to know more about helping children than others—John Holt, for example, knows more. This need of teachers is a distinctive reality about human beings, who are neither birds in a nest nor wolves in a pack. More is involved in helping

children to know about the world than the awakening of instincts which animals accomplish with their offspring. What is involved? Learning about the world means, not collecting a lot of information, but the art of gathering it. Learning to use what one learns about the world means, not making the right decisions, but the art of making decisions.

How we are helped to learn these arts remains mysterious, but something good happens when the young are exposed to a person endowed with an intuitive grasp of what can be done along these lines. John Holt, it seems fair to say, is such a person. Ideally, of course, parents would perform these functions for their children. When we are as good, in our way, at doing for our offspring what animal parents do so well for theirs, no "teachers" will be needed. Meanwhile, good teachers are about the most valuable citizens around, whether we know it or not.

Another approach would be to ask: What do people—children or adults—really learn about the world? They learn to make generalizations about its different parts. If the generalizations are reliable, we call them knowledge. But the world is a vast place, and where do you begin? A teacher is a person with some experience in bringing into some kind of focus the good places to begin. The good generalizers, in other words, are the teachers of mankind. The good generalizers change what is chaos to sense into the cosmos of reason, or they show us how to do it for ourselves. What we learn from others and what we learn directly from the world—if we have *really* learned—are hardly distinguishable. The fact that we do learn from others obliges us to say, as a wise man of the Middle Ages remarked, that we stand on the shoulders of giants. This is what we mean by cultural progress. There is of course the question of what part of cultural progress is delusive and fraudulent and what part is true and genuine, and at some point the good teacher will shift the burdens of this decision to his pupils, declaring them to be adults; but you don't

do that with little children except symbolically—which is sometimes called teaching self-reliance. We may not understand much about teaching self-reliance, but since we seem to be experts at reducing people's self-reliance, we know there is room for improvement in our practice.

Whatever a teacher does, he is continually setting an example in making generalizations. His role is to hold up some sort of mirror to the world, providing a focus. The mirror is selective: you can't look at everything at once. The world has segments or joints, or we impose some joints simply to make a start somewhere in learning. Later we may have to erase the joints, if only as a way of showing the endless connections of things with one another, but you still need to start with joints. A teacher is a person with some working knowledge of the appropriate joints for children of different ages, or in terms of whatever it is that makes children different from each other.

Suppose, let us say, a hypothetical family in a hypothetical utopian community. However, both mother and father have non-utopian jobs and may not be able to change their work for quite a while, so their boy or girl—or boy and girl—will need to have help from someone else. At any rate, they *think* their children need someone's help. They *feel* inadequate; probably they *are* inadequate, even if they are less inadequate than they suppose; and they are delighted when they hear about a little red building over the hill—or around the corner—where a man named John Holt helps children to learn how to learn. So they send their children to him.

Is it a school? No, of course not. It's just a place, a home base from which John Holt helps children to encounter the world in appropriate segments or joints.

But why don't we call it a school, since it *is* a school? Well a school is a bad place where dreadful things go on and which people *suppose* is a good place, which makes it a good deal worse. So John Holt hangs out a sign, "This is *not* a school."

Who wants to argue about words?

But argument about words may be valuable indeed. There are those sanctified words which are not spoken but intoned. Magic is supposed to result. If you go to school you'll be saved (ruined). And so forth. But abolishing schools isn't going to change the need for a John Holt or of a place where children can come and see or play with him and learn from him.

All this applies to the Higher Learning as well. Millennia ago establishing a city meant making a place where some wise men could be found—individuals whose generalizations about the world and life were worth listening to. Since our world suffers a scarcity of wise men, places where they can be found have a certain importance. That there are or have been wise men is not at issue. That we need wise men is not at issue. That we have trouble recognizing them is as plain as day. That, despite all such confusions we need to try to identify them and then learn from them—which is no more than finding out how to authenticate our own attempts at learning from "the plain old world"—is perhaps not so plain as day but may eventually become so. What other reason is there for reading a good book? Or studying Lao tse?

In conducting this Department we try to keep in mind a hypothetical family in which are some hypothetical children who need help, as all children do. When this family gets an issue of MANAS and sits down to read the "Children" article, we want the readers to find something useful in some way or other. It is useful to know that by and large schools are not what is claimed for them. The "traditional wisdom" advocating schooling can be shot full of holes. For the most part, however, our hypothetical family, if its decision-makers decide that schools are bad places, will have no overnight alternative to apply. They need nonetheless to understand the criticism of schools—that big ones are likely to be bad, that the bigger ones get worse—that the things Ivan Illich says happen and John Holt says happen and

Jonathan Kozol says happen do indeed happen; they need to understand this, even if they have just come home from a happy conference with a fourth-grade public school teacher who has a startling understanding of their youngster and is obviously doing the child some good.

The only way to eliminate schools is to make "the plain old world" itself into a school, which, in undiscerned cosmic intent, may be precisely what it was meant to be. Meanwhile we go step by step, because all good change is growth, and growth takes time. Making the world, the community, and the family over is really what we have to do, in order to put natural teaching in the place of all the artificialities of our schools. The changes have to do with people, not places. They have to do with attitudes, not systems.

Generally speaking, these are the reasons why, in the articles in this Department, we report mostly on what people are doing, in schools or out of them. We try to write about teaching, not about places. Little importance attaches to places, and we couldn't agree more when Mr. Holt writes critically about the idea of designing *schools* properly. Yet there is such a thing as a container which holds in the solution of the thinking of a small group of people some sound ideas about helping children to understand the world. This is not a "system" but one of the dramatic unities of community culture. A school may or may not be a place where such a unity comes into flower. When it is not, it is a bad place; when it is, it's a good one.

FRONTIERS

Size, and Other Matters

HAROLD GILLIAM'S article on "Intermediate Technology" in the *San Francisco Examiner* for Feb. 6 ("World" section) brings halfway into focus the question of what needs to be done to turn the increasingly unworkable economic processes and self-destructive production and consumption habits of the modern world around. Halfway? The focus is only halfway because it sets the problem in terms of what seems an impossible dilemma, arguing, in effect, that the solution is not completely spelled out by Mr. Schumacher. In short, the *Examiner* article supplies a fine summation of the sort of objection to the ideas or proposals in *Small Is Beautiful* one hears from the hard-headed, tough-minded people who demand a dearly defined "systems" approach to whatever needs to be done.

Mr. Gilliam begins with a reasonably accurate account of Schumacher's Gandhian diagnosis of planetary problems:

Industrial civilization, Schumacher writes, is recklessly squandering [its] capital in its pursuit of never-ending growth. Instead, we need to recognize the limits of the earth and devise "a new life-style with new methods of production and new patterns of consumption: a life-style designed for permanence. . . . We must look for a revolution in technology to give us inventions and machines which reverse the destructive trends now threatening us all." . . .

He makes the impressive point that aid to Third World nations should consist of small machinery to enable the farmers and villagers to work the soil more efficiently instead of flocking to the cities to live in abysmal slums. Large-scale labor-intensive technology would help people to help themselves where they live.

Mr. Gilliam then says:

What is pre-eminently unclear is how small-scale production and consumption would work in the industrial nations. The closest *Small Is Beautiful* comes to a concrete answer is a suggestion that we "reconstruct rural culture" now demoralized because of the flight to the metropolitan areas. We should

"open the land for the gainful occupation of large numbers of people." . . .

The reader of *Small Is Beautiful* is bothered by what seems to be Schumacher's assumption that life on the land, keeping people in touch with nature, is inevitably more fulfilling and ennobling than urban living. . . .

The chapter that has attracted the greatest attention is "Buddhist Economics." For Western economists the goal is maximum consumption. A Buddhist economist would look further: "Since consumption is merely a means to human well-being, the aim should be to obtain the maximum of well-being with the minimum of consumption."

That idea jibes with the old American tradition of frugality—from the Puritans to Thoreau to Governor Brown. The hitch is that the frugalists are now an infinitesimal minority and all the pressure is to induce us to consume greater and greater quantities of every imaginable product.

Then, after warning that were "frugality" widely adopted, many more people would be thrown out of work, since "half the factories would shut down and we would have an economic collapse that would make the Depression of the Thirties seem like a Golden Age," Mr. Gilliam concludes:

Simpler life-styles with less consumption would certainly conserve the resources of the earth and probably conserve human beings, too, but how do we get there from here—without inviting economic disaster? *Small Is Beautiful* does not tell us.

In one place, deploring this supposed lack of "specifics," the writer says that *Small Is Beautiful* "is mainly ideological." But this is precisely what it *isn't*. Schumacher rejects and avoids the various programmed solutions of familiar ideological thinking, being mainly concerned with showing—what is now virtually obvious—how badly they work. His thinking is two-pronged. One prong is diagnostic and, you could say, empirical. He points to the inevitable disasters produced by bigness—even intelligent and good men cannot prevent them if bigness remains the ruling principle. Meanwhile, smallness works well and has numerous healing effects.

The other prong is concerned with human attitudes and values: changed attitudes can become the sources of endlessly diverse small-scale innovations involving ingenuity, brotherly regard, and non-violent methods. But there is no formula, since self-reliant invention is called for.

All that the *Examiner* writer is really saying is that the changes Schumacher proposes will be *difficult*. Of course. Who will reasonably suppose that redirecting the course of a mass society can be anything else? Supported by a rapidly multiplying chorus of knowledgeable and energetic people, Schumacher is simply pointing out that changes are also *inevitable*. He is describing what will happen if new tendencies are not set in motion to operate side-by-side, gradually replacing the old and failing processes. No one has spoken with so much clarity and persuasive effect, with so many down-to-earth illustrations of how both the decline and the reform actually work, as E.F. Schumacher. No one has made it so crystal clear, by example after example, that the issues are not ideological, but commonsensical and ethical.

There have been numerous interviews with Schumacher supplying evidence of this, and one of the best appeared in the *East West Journal* for last November. The following extract is on the importance of size in economic enterprise:

Now people will debate all sorts of questions—saying "this is good" and "this is bad"—but then if you do only five minutes' thinking, what *size* are you talking about?

Let's say we are praising the virtues of private enterprise, understanding by that a man who runs a business. Well, are we talking about a business employing twelve people or twelve thousand people? Some people say, "Private enterprise is good." Others hold the opposite opinion: "No, we have to have a socialistic or communistic kind of thing." Well, now, are we talking about the little garage around the corner which employs five people or are we talking about General Motors? They don't say.

Now it may be—and this is what I claim—that some kinds of private enterprise are the ideal system when a business is small and involves real face-to-

face contact, where the outstanding entrepreneur means something. (He may, of course, be inclined to exploit his twelve employees, but we have the trade unions to look after that, there's no problem. Leave him free.) But when you talk about Anaconda Copper Company in Butte, Montana, the whole community hinges on this, and you can't pretend that this is private enterprise, even if the shares are held by all sorts of people. If they now want to move the whole town, which they may in fact want to do because they now want to extract copper from underneath the town, well, that's rather something different! Because it's so big. So whether something is social or private cannot be discussed unless you find out the *size*.

When the interviewer asked why people have lost sight of the value of smallness, Schumacher replied: "This is a very good question. I always say that when I really don't know the answer."

We'll always have unanswered questions. When you come across someone who has answers to questions that *can* be answered, and won't pretend to know all about everything else, it is usually someone you can understand and trust.