

THE OTHER KIND OF KNOWLEDGE

WHAT has the scientific theory of knowledge shut out from our lives and declared either second-rate or irrelevant, so far as progress in human understanding is concerned? Many writers have lately been making answer to this question. In the eyes of thinkers such as Whitehead and Lewis Mumford, René Descartes was the principal architect of the scientific outlook and mainly responsible for its exclusive focus on the external world and on the mathematical abstractions to which it is very largely reduced. Left out of the field of observation, Mumford says, in *Pentagon of Power*, are "history, symbolic culture, mind—in other words, the totality of human experience *not simply as known but as lived.*"

If you go to Descartes himself, you find him quite convinced that he was freeing the mind of man from the vagaries of medieval sciolism. As a mathematician—a very accomplished one—he naturally inclined to clear and distinct ideas, for how could what was not clear and distinct be accounted knowledge? He wrote:

There is no question more important to solve than that of knowing what human knowledge is and how far it extends. . . . The inquirer will find that the first thing to know is intellect, because on it depends the knowledge of all other things. Examining next what immediately follows the knowledge of pure intellect, he will pass in review all the other means of knowledge, and will find that they are two (or three), the imagination and the senses (and the memory). He will therefore devote all his care to examine and distinguish these three means of knowledge; and seeing that truth and error can, properly speaking, be only in the intellect, and that the two other modes of knowledge are only occasions, he will carefully avoid whatever can lead him astray.

The intellect, Descartes was sure, would eventually be able to explain everything by dealing with all phenomena as expressions of mechanical principles. Even biology would submit to this analysis: "If we possessed a thorough knowledge

of all the parts of the seed of any species of animal (e.g. man), we could from that alone, by reasons entirely mathematical and certain, deduce the whole figure and conformation of each of its members, and, conversely, if we knew several peculiarities of this conformation, we could from these deduce the nature of its seed." The Cartesian arguments were vastly persuasive. As Mumford has said: "Descartes' analysis of the machine, and his admiration for its automatism had, and still has, a potent effect in causing Western man to misinterpret and underestimate the unique subjective quality of organisms, and above all of man's own symbolic performances in crowning mere existence with meaning and purpose."

This is a recapitulation of the opening paragraphs of an article on Giambattista Vico (1668-1744) which appeared in MANAS for March 27. We now have additional material on Vico and return to him armed by quotations provided by Isaiah Berlin in the *New York Times Magazine* for Nov. 28, 1969. Vico was at first impressed by Descartes' remarkable achievements, but as a historian he was unable to tolerate the exclusion of that dynamo of human affairs—*feeling*, and of its consequences in thought and act. "When I suffer, for instance," Vico said in his *Autobiography*, "I cannot recognize any form in my suffering, nor set a limit to it . . . yet it is bright and vivid beyond others, so bright indeed that it can be observed only through a darkened glass." Isaiah Berlin paraphrases:

Am I to say that it is not real because it is not definable measurable, analyzable into uniform atomic constituents? Are qualities not real because they are not susceptible to Cartesian categories? We know more about mechanics than we know about physics, because there, as Hobbes has learned, we can manipulate the parts at will. We understand our own manipulations, for we do it ourselves; but external

nature obeys laws that we have not made, that we can only record and describe but not understand, as only He who has made them with a purpose can understand them. Hence, mathematics, physics and natural sciences in general are not the vaunted paradigm of knowledge that they have been represented as being from the time of the Greeks to the Renaissance and after it.

Here we encounter not only Vico's conception of knowledge (we *know* only what we can make), but also his piety, which turns Vico into a historical relativist—one who maintains that our knowledge is limited to changing historical achievement. Interestingly, Mumford also speaks of a knowledge outside of human capacity, but instead of saying that this knowledge belongs only to "God," he invokes the vast sweep of evolutionary development:

No machine, however complex its nature or however ingenious its human inventor, can even theoretically be made to replicate a man, for in order to do so it would have to draw upon two or three billion years of diversified experience. This failure to recognize the importance of cosmic and organic history largely accounts for the imperious demands of our age, with its promise of instant solutions and instant transformations—which turn out too often to be instant destructions and exterminations.

A more generous view of this question of the knowledge potentially available to man would be that suggested by pantheist philosophy, for Pantheism affirms the presence in man of at least a spark identical with Deity, so that the knowledge of all the world may grow in the human being as he learns to fulfill his godlike destiny—as the spark becomes the flame.

But let us consider Vico's positive contributions, which were both numerous and great. Suppose, for example, he had been able to persuade his contemporaries of the importance of human feeling as an essential element in knowledge: Would we then have the kind of science which trains its practitioners in disciplines which take no cognizance at all of either motives or values? Would we have had to wait for the agonies of the twentieth century to demand the

reforms now begun by Michael Polanyi in science generally and by Abraham Maslow in psychology? Would there have been the science-managed war in Vietnam? Would there be a RAND Corporation, and so many different sorts of schizoid splits in our lives? Berlin says of Vico:

He was by temperament an antiquarian and a jurist steeped in the history of law, of institutions, especially of the Roman world; he was devout, intuitive, literary, imaginative, sensitive to nuances of style, outlook, expression—not to the structure of abstract systems or to the quantifiable properties of the external world. He belongs to the tradition of those who respond to the impalpable and unanalyzable characteristics of experience, rather than to that which alone is measurable, definable, capable of fitting into a transparent, logically organized scientific system.

Yet Vico is a serious thinker, no dabbler; in some ways a systematic thinker, as he would have to be to earn the extraordinary praise that Berlin gives him: "he virtually invented the idea of culture; his theory of mathematics had to wait until our own century to be recognized as revolutionary; he anticipated the esthetics of both romantics and historicists, and almost transformed the subject; he virtually invented comparative anthropology and philology and inaugurated the new approach to history and the social sciences that this entailed; his notions of language, myth, law, symbolism, and the relationship of social to cultural evolution, embodied insights of genius; he first drew that celebrated distinction between the natural sciences and humane studies that has remained a crucial issue ever since."

Men, he believed, could understand themselves, their own lives, because they *made* their own lives. And they could understand the social world because the social world is the work of men. Berlin reproduces Vico's logic:

If I explain my own conduct I do not merely describe it, but give my motive, my reason for acting, the plan of which this action forms an element. I convey the form of life in which it plays a part—something which, at any rate in theory, I can alter at will, adopt or discard, something for which I am

responsible. There is clearly a sense in which I invent my own conduct, at least when I am acting consciously, and here I can ask not merely what my body is doing, but also what I am at, what my movements are intended for, or meant to achieve. This is precisely what I cannot do in the case of trees or rocks or indeed animals, into whose motives, if they have them, I cannot pretend to penetrate.

The feeling and mental endowment of the human being enables him to understand his fellows, calling upon both memory and imagination:

I do not know others merely by observing their bodily movements and inferring causes, as a biologist might. I understand them by immediate analogy, by the response they give to me, by the sheer phenomenon of interaction. Creatures similar to me speak to me and I understand them. In civilized times they use developed language, but men can speak to each other in other ways also—by means of gestures, by hieroglyphs, by song and dance; writing may well precede spoken words. They speak to each other, and they speak also to the unseen powers that they believe to be greater than themselves. . . . Because we are men we can enter into the experience of other men; we may make mistakes—such knowledge is not infallible. But the very possibility of such intercommunication, based, as it is, on the understanding of motives, outlooks, ways of life, rests in principle on something different from the knowledge that we have of the external world which can never, in the end, be more than a recording of what occurs, or how, without knowledge of why it occurs. . . . myths, fables, structures of language, rites, poems, works of art, laws, customs—men have made these to express themselves with, and therefore other men can by imaginative sympathy grasp them. . . .

Vicots ambition was to create a truly new science—a science based on an examination of what men have made, been done, suffered, from an "inside" point of view, that of a participant, not an observer, by means of a process which he insisted, was possible, though at times exceedingly difficult—the "entering by means of *fantasia*—imagination—into the minds of men remote from one's own society in space or time. This can be achieved by letting their works speak directly to one, by seeking to understand how they saw the world, what they wanted to do in it and with it, how it appeared to them and how they tried to make themselves at home in it, understand it, mold it,

dominate it, dominate each other, enter into new relationships, create, express themselves, act.

It might prove very much worth while, with this paragraph on Vico in mind, to turn to A. H. Maslow's book, *The Psychology of Science*, for then it would become apparent that Maslow did what Vico proposed—began to build a new science "based on an examination of what men have made, done, suffered, from an 'inside' point of view." A further recognition might be that any sort of "inside" study requires, or soon generates, a governing structure of *value*. Man is a purposive being. An inside science of man must therefore be normative, for a science must correspond in its methods and approaches to the reality it studies. Human science cannot ignore the most fundamental quality of being human and claim to be "scientific." It cannot ignore the subjective life of man and have anything significant to say about him.

Well, the poets have always declared for the reality and priority of feeling, and how is Vico's position different? He differs by endeavoring to be *scientific*. The poet has no epistemological problems: he feels and creates. But Vico, as scientist, faced the question of how man may study, in order to know, the "inside" life of other men. Isaiah Berlin tells how he dealt with this problem:

The central principle is still that men can truly understand only that which they have made; they understand best what they have made themselves, but they can understand also what others have made, because creation is collective, most of all in primitive times. Hence myths, so far from being false stories about reality spread by wicked priests, impostors seeking to bamboozle the foolish masses, or artificial embellishment created by poets to entertain and delight, or by philosophers to put their truths in more attractive guise, are, in fact, ways of conceiving and ordering the world natural to early man, the concepts and categories that govern his vision. . . . the task is to transpose oneself into a condition where one can begin to have some inkling of what the world must have looked like to those who expressed themselves in this fashion—by means of what Vico calls "credible impossibilities"—to whom such metaphors,

images, similes were a natural way of description and expression. . . .

To understand is to enter into the outlook of those who speak to others, and whom we too can overhear. By tracing the history of words we can trace the altered attitude toward, the sense of, the things that the words denote, the part they played in the lives of those whom we seek to comprehend.

What is the first principle of such a science? Obviously, its major requirement is gaining the capacity to put oneself in the place of another. The power of the imagination is its most important tool. (Blake, Wordsworth, and Coleridge were poets who practiced some science in their study of the imagination—see Coleridge's *Biographia Literaria*.)

Another rule of almost equal importance would be the need for sympathy—or is it "empathy"?—since entering into the lives of others is no mechanical accomplishment. You can't do it simply by "deciding" to do it. You are able to do it only when there is warmth, a feeling of concern which goes beyond mere curiosity. Some species of love is involved. "Inside science," one might insist, depends upon it. Call it "intellectual love," if a qualifier will help.

This seems entirely reasonable. The "outside" sort of science, concerned only with objects, is notoriously value-free. Inside science, concerned with subjective reality, studies the complex relations created and informed by value. To ignore value in the contemplation of man is to make human science into the tools and apparatus of alienation.

The themes begun in Western thought by Vico have been generally neglected for centuries, as Berlin points out, yet they recur again and again in the work of the most distinguished thinkers—men who understood the requirements of "inside science," whatever they called it. Ortega, for example, wrote in *Concord and Liberty*:

It is the mission of history to make our fellow beings acceptable to us. To understand other people,

I have nothing else to resort to than the stuff which is my life. Only my life has of itself "meaning" and is therefore intelligible. . . . My life is the universal interpreter. And history as an intellectual discipline is the systematic endeavor to make of any other human being an *alter ego*, in which expression both terms—the *alter* and the *ego*—must be taken at their full value. I strive to construe my neighbor as an *I* who is another *I*—an *alter ego*, something at once near and distant. . . . my neighbor, though being the *other*, does not seem to be irremediably bound to be *other* than I. I continue to feel that, in principle, he could be I. Love and friendship live on this belief and this hope; they are extreme forms of assimilation between the *I* and the *you*. . . . I have in my intercourse with ancient man no other way of understanding him than to assimilate myself imaginatively to him—that is, to become that other man. The technique of such intellectual unselfishness is called history.

Vico was of this persuasion. As Isaiah Berlin says:

It is only because we lack historical imagination that the poetry of the ancients and their myths seem mere childish errors to us. We shall never understand the magnificent poetry of primitive times, the Homeric poems, for example, if we do not understand the society of which this was the natural vision and expression. Homer for Vico was not a single author who created his poems arbitrarily out of his head as a later poet might have done at some other time; he was the entire Greek people celebrating its heroic forms of life, as Dante did at the corresponding stage. . . .

Vico was a pioneer of ways of thinking and reflecting which only today are beginning to be taken seriously. We have spoken of Ortega and Maslow, whose work discloses the same objective of working toward the principles and rules of an "inside" science. Others made similar discoveries and reached much the same conclusions. The linguist, Benjamin Lee Whorf, showed how certain peoples, especially the Hopis, constructed cosmologies based on the laws of intuitive or subjective reality. Trigant Burrow, a little known but distinguished psychiatrist of the first half of this century, evolved a conception of mental health and therapy based on the original unities between man and nature, which may be discerned in pre-conscious foundations of human

experience. Today, the "concepts and categories" of Vico have been enormously amplified by dozens of workers in psychological research, as a reading of Robert Ornstein's *The Psychology of Consciousness* (Viking, 1972) will make plain. In his survey of work of this sort, Ornstein shows by quotation that William James, the founder of American psychology, was well aware of the potentialities of an "inside" sort of science. He wrote in *Varieties of Religious Experience*:

Our normal waking consciousness, rational consciousness as we call it, is but one special type of consciousness, whilst all about it, parted by the filmiest of screens, there lie potential forms of consciousness entirely different. We may go through life without suspecting their existence; but apply the requisite stimulus, and at a touch they are there in all their completeness, definite types of mentality which probably somewhere have their field of application and adaptation. No account of the universe in its totality can be final which leaves these other forms of consciousness quite disregarded. How to regard them is the question,—for they are so discontinuous with ordinary consciousness. Yet they may determine attitudes though they cannot furnish formulas, and open a region though they fail to give a map. At any rate, they forbid a premature closing of our accounts with reality.

Descartes and his followers *did* close our accounts with reality, and today they are being opened once again. For this reason it seemed well to go back to Vico for an appreciation of what he held to be important in the formulation of a science that would study human feelings, motives, and hopes. It seems clear that the principles of such a science must find their validation in the disciplined use of the essential qualities of human beings, as felt and known by every one of us. But only the barest beginnings have been made in this direction.

REVIEW

RESTORING THE FIELDS

THERE is really only one thing to write about—the feeling of meaning in our lives. Prose, poetry, essays, novels, plays, science and religion, statistics and fantasy—it is all about the same basic thing: Who or what are we, what is the world and how does it work, and what is it *for*, so that we can decide what to do?

Living has its requirements, but dreaming instructs in fulfillments, and the two worlds or regions of experience seem to fit together poorly if at all. A man can write about one world or the other with comparative ease and some consistency, but putting them together requires not only genius but a readiness to be misunderstood. Yet the two worlds are locked in tight embrace, as though the meaning of the one lives only in the sense of the other, while every straining for release brings a hunger for new entanglements. Shall we understand time in terms of eternity, or lose eternity in the passage of hours? Art seems a way of doing both, yet at the same time knowing better and finding secret ways of saying so.

Wendell Berry writes about the land, the earth, and its enclosing matrices of fertility. The humans who people his stories and poems embrace the earth in ways lighted by unearthly glimmers. The meaning of their lives is embedded in earth yet reaches in and through to the very axis of the world's turning, so that, in motionless and quiet climaxes, they are neither here nor there, but in their own place. It is a changelessness that resolves nothing, but simply is, can: be neither sought nor held, yet out of which flows all the wonder of human life.

Old Jack, whose story is told in *The Memory of Old Jack* (Harcourt Brace Jovanovich, \$6.95), is a Kentucky farmer so ancient of days that time has lost control of his life. When he thinks, he may think in the present or feel about him the realities of sixty years ago: they have not changed.

What has not changed has become the substance of his life. Berry's book attempts to distill this individual eternity of being from the years of a man's life. It can hardly be done, but there is a language of the earth and the stars which seems to succeed now and then.

He had known no other place. From babyhood he had moved in the openings and foldings of the old farm as familiarly as he moved inside his clothes. Before he bought it he had farmed it for five years as the tenant of the other heirs. But after the full responsibility of it fell to him, he saw it with a new clarity. He had simply relied upon it before. Now when he walked in his fields and pastures and woodlands he was tramping into his mind the shape of the land, his thought becoming indistinguishable from it, so that when he came to die his intelligence would subside into it like its own spirit.

The work satisfied something deeper in him than his own desire. It was as if he went to his fields in the spring, not just because *he* wanted to, but because his father and his grandfather before him had gone because *they* wanted to—because, since the first seeds were planted in the ground, his kinsmen had gone each spring to the fields. When he stepped into the first opening furrow of a new season he was not merely fulfilling an economic necessity; he was answering the summons of an immemorial kinship; he was shaping a passage by which an ancient vision might pass once again into the ground.

Old Jack comes to town, goes to the store; his friends watch him carefully lest he fall, forget to eat, or lose all track of the world which has such slight hold on him now. "There are only a handful of living names that he can remember." So he calls the men "son" and the women Suzy or honey. They could all be his sons and daughters.

Little by little the story of Jack's life comes out in memory, so that the simplicities of his old age have a richness that is hardly evident in the words. Other words have generated that richness. You could call this the necessity of keeping in touch with the earth in order to have dreams. Berry doesn't explain any of this; he just does it. Reading along, you see that a word can have a whole universe behind it, or it can be little more than the chopped out, flat sound of a vowel. So

there seems desperately small chance that we shall ever understand one another, and yet we do. We sometimes succeed in generating structured and flowing fields of meaning that are clearly understood by other people; we know this because they respond in kind. There is no need to "prove" such assertions. We are talking about the things men use to prove the other thing: the first things we know, and have to know, just in order to think.

Old Jack is in the store:

From the front come the voices of women, laughter. Beside him the talk of the men drones on—something he has passed through and beyond. He does not listen to the words. And his eyes keep their fixed gaze upon the windows straight in front of him. The glare of their morning light, like darkness, suits him as well now as sight. When he wants to, or needs to, he can still see well enough, but it has got so it takes an effort as though to draw the world together, it seems less and less worth the trouble. His vision, with the finality of some physical change, has turned inward. More and more now the world as it is seems to him an apparition or a cloud that drifts, opening and closing, upon the clear, remembered lights and colors of the world as it was. This world as it is serves mostly to remind him, to turn him back along passages sometimes too well known into that other dead, mourned, unchangeable world that still lives in his mind.

Is Jack's unchangeable world the *real* one? Well, would it help to say that, if it is, he sees it through his own window and the coloring of his past? We get into trouble asking questions like that, if only for the reason that the abstract language an answer requires soon pales from its sad remoteness from experience. Yet we have to ask the questions, and we need to get deeper meanings for the language we use in speaking of unchangeable worlds. We need to keep in touch with the earth; but the embrace of earth grows sterile unless we keep in touch with the other world of dreaming and visioning. The symbolism of the earth dies a dusty death without the renewal of transcendent longings.

A finite dream gains ineffable dignity when a man lets it stand for the infinite, for the eternal, because it is the best he can do. The glory of a finite dream is that it will be remade. Yet in its golden moment it *meant the highest* for some human being. And so, in art, we write about such things for one another, setting little bells tinkling, using color and line, hoping to say something or picture something that will bear the impress of an eternal thought, repeat the resonances which are known to the dreamer in every one.

It seems just about impossible to "describe" *The Memory of Old Jack*. We can forgive the pieties of the notice on the jacket flap because they say accurately enough what publishers need to say about their books. It is true that "In our corrupt and profoundly troubled time the effect of this novel is profoundly exhilarating: it restores a vision of values and qualities that we may not, after all, have lost forever." The trouble with description is that it has to put words in the place of experience. A poet doesn't do this. He uses words to generate another order of experience. He makes words reach beyond their letter. He incants. But description requires the reader to do most of the work needed to awaken meaning and a lot of the time it doesn't seem worth doing.

So, in speaking of Old Jack's life on the land, we *could* say that it seemed to grow into a majestic fullness, making it stand for the things Berry meant it to stand for, and which we have tried to read in it; but if *Berry* had said that, the strength of the book would be diminished. Instead, he shows the feeling of the man:

Coming home that February afternoon after he had paid his debt, he saw that under the oppression of his darkness and his long struggle the farm had grown stark. The yard trees standing nearest the house had died or grown too infirm to be trusted to stand, and had been cut down and not replaced, leaving the house without shade. The orchard that his father had planted had nearly died out. The buildings all needed paint. . . .

He remembered what he had understood . . . that he could not ask another man to work without hope;

that therefore he would not acquire more land, but instead turn his effort with redoubled care in upon the land that was rightfully his, not because it belonged to him so much as because, by the expenditure of history and work, he belonged to it, and because he could properly attend to it by himself. The onset of that understanding had been the immediate cause of much of his hardship. Now it set him free. . . . His thoughts no longer ranged the distances of possibility but were contained within the boundaries of his farm. He became again the true husband of his land. He still worked and went ahead as before, but now his work was healing, it restored the health of his place and his own satisfaction. . . .

He began the restoration of his fields. . . .

COMMENTARY
NECESSITIES OF "INSIDE SCIENCE"

IT is abundantly evident from current discussion that Vico's proposal of an "inside science" to study the realities of man's subjective life is, as Victor Hugo put it, "an idea whose time has come." For example, one writer in the September/October *Humanist* remarks that whatever the excesses of the new religious cults, they have shown that "exact knowledge is not enough, because exact knowledge—objective knowledge—too often ignores the human subject who is, after all, both means and end in the pursuit of meaning in this universe." Another *Humanist* contributor calls for enlargement of the scientific outlook:

The polar dualisms that have torn our world view asunder and that have alienated man from the universe are not the results of rational science but of its partial, partisan application. The need is not for replacement of rational science by some new methods, but rather for the freeing of rational science from the burden of scientism and for its redirection toward the less common and more recalcitrant phenomena of human experience.

These statements are a fair sample of the present "openness" of scientifically-minded observers, reflecting a strong sense of the need for some "inside science," but at the same time the hope of retaining the rigor of objective science.

This hope presents a real problem for the mathematically trained investigator. How can there be "measurements" and confirmations of the realities of subjective experience? Actually, the works of Plato may be the only widely known example of serious investigation of this sort. The Platonic approach may not have the form of the one we shall finally adopt—although we might do worse—but Plato's explanation of the value and objectives of the Dialectic is surely pertinent to any broad attempt to evolve a methodology for "inside science." For gaining initial familiarity with Plato's ideas on the subject, the best book may be *Therapeia* (Chapel Hill, 1958) by Robert

E. Cushman. Plato, Cushman shows, regarded mathematics as indispensable in the training of the mind to seek after inner or higher truths. Chapter VII of Cushman's volume deals with the parallels between objective and subjective inquiry. In mathematics Plato saw, not the means, but an analogue of the means, to self-discovery. Yet the study of numbers, Plato held, would help to "reawaken knowledge in the slumbering organ of cognition." Prof. Cushman's book makes clear both the rigor and the ethical ground of the Platonic Dialectic.

CHILDREN ... and Ourselves

"RESULTS" IN EDUCATION

BOOKS about national systems of education are usually the least fruitful for the purposes pursued here, but *Transforming the Primary School* (Schocken, 1974, \$6.95) by John Blackie is a delighting exception. British primary schools, about which Mr. Blackie writes, are apparently very unnational in their objectives, although no one would say that they are unBritish! (We doubt that the British ever use this expression.)

Americans learned something of the foolishness of formulating "national goals" a few years ago, when a committee took on the task. Empty clichés seemed about all the committee could produce. Mr. Blackie is well aware of such difficulties. When, in a discussion of the aims of education, he comes to "Political Aims," he writes:

In different parts of the world these may take such varying forms as: "To arouse in the children gratitude to the Party for providing such good education for them", "To arouse in the children a respect for democracy", "To train the children to be loyal to King and country"; "To encourage in the children the love of all men and the desire to improve society and make it more just"; "To help the children to understand the government and institutions of their country and thus learn to respect them"; "To bring up the children to be Godfearing and obedient." It is only necessary to read these aims and others like them to realise that to attain common political aims is at present a hopeless task.

Not only are these aims vague, but Mr. Blackie finds some of them incompatible with good education:

An approach which encourages children to think for themselves, to exercise choice, to ask questions, to cooperate, will not also encourage them to accept unexamined the society in which they live and its institutions; nor will it encourage an unthinking iconoclasm. The aim is to encourage a critical sensitiveness and understanding of society.

It is a curious fact that we all know in terms of feeling how we would like children to develop—the sort of people we want them to be—but find that a

fixed definition of how to achieve such a society always pushes both young and old in the opposite direction. In short, the apparent disorder of freedom turns out to be an essential ingredient of order for human beings. Yet, on the other hand, disorder in itself only produces more disorder, so that no simple rule applies in plans for child-rearing or human growth. Children, like adults, are unknown quantities and they respond differently to rules or methods. In one of his later chapters, Mr. Blackie remarks:

The researches of the Grants in California into the responses of delinquent boys to various kinds of treatment showed that the least mature and most egocentric boys responded better to a strict, unsympathetic type of treatment than to a liberal, humane, friendly one, but this finding needs very careful interpretation. The former type of treatment may well have been re-enforcing at a deeper level the deficiencies of character which it appeared to be correcting. At the earlier junior school age there is a better chance of correction and care, and a system which is sufficiently flexible to provide for the majority, if not all, has a far better possibility of all-round success than one which is rigid.

Here the expression "deeper level" seems especially important. What happens on the surface may not be representative of what is going on in the more fundamental formations of character. But how do you tell? How can we be sure that ugly ducklings will some day turn out to be swans? Can we *trust* the promise of such future transformations?

This is the problem of how to get "results" in teaching. Mr. Blackie uses the goal of neatness in handwriting to illustrate the superficiality of judging the work of children by external standards. He contrasts the results obtained in traditional schools with those in the progressive schools of England:

It was not unusual in traditional schools to find a high standard of neatness and presentation in the "show" books and nothing but a ghastly mess in the "rough" books. What is needed, surely, is a standard appropriate to the work which is being done. Few adults adopt identical standards in personal diaries and in letters of importance, but the contrast should not be too great. Rough work must be legible. . . . the quantity of written work done in progressive schools is so much greater than that in traditional schools that

there is a tendency for the handwriting to deteriorate, sometimes to the point of illegibility. Each teacher must decide what he will tolerate and how much work and of what kind justifies an insistence on high standards. Slovenly, careless work should never be acceptable, but it must always be remembered that what is unacceptable from one child as being below his best may represent a maximum of effort in another. . . .

This simple example provides a key to the problem of results. The virtues of hard work, accuracy, tidiness, carefulness and punctuality, often associated with the traditional school, are real virtues and the progressive school does not reject them or, if it does, is betraying the cause that it claims to uphold. It does, however, treat them as relatives, not absolutes. Moreover, it considers other virtues as well, some of which were neglected in some of the traditional schools—happiness, curiosity, cooperation, to mention only three—and tries to take into account the whole nature of children and to look for results over the whole. It thus has a much more difficult task to perform than the traditional school and a much more interesting and important one.

It is evident from this example that the moral equation is involved in the simplest tasks of learning. The "show" work books can be taken to stand for two things in adult life. Their "virtue" may be functional, contributing to clear communication, or it may be ostentatious—intended to impress. In the latter case, as Marshall McLuhan put it, "the medium is the message." The real signal of what is only or mainly for show is not in the words, but in the form. Here form does not follow function, but is made a thing or end in itself. Of course, if the study is learning how to make forms, then a "show" book has a place. That sort of learning would support Buckminster Fuller's practical rule: *Never show unfinished work*, which probably means at least three things—only finished work communicates clearly; don't waste people's time by trying to involve them in vaguely conceived projects; and, unfinished work is seldom persuasive.

This is enough to explain why simple rules alone can never work in education. There are always either good or bad reasons for making them, good or bad reasons for obeying them, good or bad reasons for ignoring them. Yet the entire project soon collapses if we try to conduct it without *any* rules.

Children, like adults, want the *feeling* of order without being oppressed by its rigidity. They want the orienting framework of rules without its tyranny. This is a way of saying that we all like to create our own schemes of order, but after we have a few encounters with other people's personal schemes of order, we start wondering about an "over-all" scheme that would be good for everybody. So we talk about "national goals" and "systems of education."

Why is it that well-defined objective plans don't work well for subjective intelligences who live and work in an objective world?

What happens in practice is a lot like art or alchemy. You do the practical thing, and sometimes something beautiful or enlightening happens, and sometimes not. You can't be sure. Least of all can you be sure about other people. What they need to do may not be what you need to do.

Yet we are all alike in the fact that growth and awakenings come for everybody in mysterious, unpredictable ways.

We do the practical things because we have to; but the practical things don't shape us into better, wiser, more friendly human beings. The practical things seem to serve our lives best or well when we don't expect more from them than they can give. The overtones of the good life can be heard only when people stop expecting to hear them as a result of what they *do*. You can't "teach" people the good life; it isn't an acquisition; it is a feeling about self, about the world, and about people that must have been there—undeveloped but there—at the beginning. Human beings can't command it; they can only open or close channels for its flow.

FRONTIERS

Pine Trees for California

PINES TO DESERT (or Pines to Palms) is the informal name of a highway which runs from high in the San Jacinto Mountains of Southern California to the desert floor below. Before very long, these words may apply in another way to nearby mountainous regions. In the neighboring San Bernardino Mountains the pine trees at more than a mile of elevation are dying at the rate of about 10,000 a year. If they go on dying, parts of the forest will give way to high desert. There will be no moisture-holding plants, no green canopy to shade the undergrowth, little or no water, and no habitat for the animals who have lived there for centuries.

This was the disturbing conclusion reached last year by Andy Lipkis, an environmental studies major at California State College in Sonoma. He had read that the smog in the San Bernardino area—now said by some to be the Smog Capital of the world—might destroy the forests there within twenty years. Then he learned that the California State Forestry service was planning to waste the 20,000 smog-resistant seedlings it had been offering for sale because not enough purchasers had appeared. Lipkis, who is nineteen years old, resolved to organize a tree-planting project, but he couldn't afford the 2½ cents a seedling, while the Forestry service couldn't let him have the baby trees free because a state law prohibits giving away public property.

Publicity in the *Los Angeles Times* and other sources helped, so that with some contributions of money and volunteer helpers Lipkis was able to get going on the tree-planting. There were some preliminary steps. The seedlings had to be transported from Davis to Sonoma, where Andy and his crew of fifteen friends had a week to replant them in milk cartons (gift of Clover Milk dairy), to keep them alive; there were crates needed to handle the cartons in bulk, and shipping to be arranged to carry them to the planting

area—Barton Flats, in the San Bernardino Mountains. There topsoil would have to be added to feed the small roots, and a mobile water tank found to take care of weekly irrigation until the little trees took hold. Eventually, about 8000 seedlings (the rest had been plowed under) were given to Lipkis for use in a "demonstration project" for the State Forestry Division. Sears supplied picks and shovels, American Motors lent Jeeps for the summer, and other companies helped. So all the seedlings got planted—by Andy Lipkis, with five friends for staff, a Boy Scout troop, and youngsters, age six to eighteen, from various summer camps. This year, after inspecting the baby trees, Andy said that 90 per cent had survived.

During the past few months Andy and his helpers, who now include the staffs and children of numerous camps and other groups—about 5,000 in all—planted a lot more trees, some purchased from the State Forestry service and some from the Los Angeles County Fire Department. These trees are mainly strains of sugar pine and Sierra redwood which are smog-resistant. "Smog-resistant" means that, for some reason or other, the ozone ingredient of smog doesn't weaken the tree. Weakened trees have less sap than healthy ones. Without enough sap, the leaves turn yellow and the cambium layer of the tree loses vitality. Then the beetle enemies of the conifers—a species of beetle for each kind of pine—are able to burrow under the bark and lay eggs. A sick tree cannot expel or smother the beetles with its sap, and in a month or so the beetles ring the trees and then they die. Referring to conditions in the San Bernardino Forest, Andy said (*Los Angeles Times*, Aug. 19, 1973):

The beetle population is out of control now, and the trees are dying more quickly. As the trees go, their canopy of leaves and branches go with them. More sun falls directly on the ground, evaporating moisture.

As the moisture goes, so does much of the ground cover. Parts of the forest are turning into high desert.

So—Pines to Desert.

Andy Lipkis calls his planting program the California Conservation Project (a non-profit corporation). The address is 1745 Selby Avenue, No. 18, Los Angeles, Calif. 90024, which is his father's home, best reached by mail. The project needs funds, of course, but also needs young people in groups (or singly) who want to plant trees, since the money and other practical help seems to come when word gets around that lots of trees are going into the ground and are alive and well. If trees in some parts of this area are dying—*now*, at the rate of up to 40,000 a year—just catching up will take considerable time. The goal Andy has in mind is somewhere between 30,000 and 50,000 seedlings planted in a summer. So far, the plantings have been on private camp grounds, but he hopes to reforest areas denuded by fire and logging operations. Concluding one of his appeals for cooperation, he said: "What all this means is: the lives of Southern California's forests are again in the hands of the people."

From time to time people talk about the importance of "infrastructure" in relation to ecological and other kinds of reconstruction. What Andy Lipkis did and is doing makes a fine example of how infrastructure comes into being and then becomes the focus for human energy. Government agencies, apparently, aren't much good at originating vital infrastructure. They are limited by laws and rules intended to safeguard the public interest. Don't give away public property, the law says. Let the little trees die, the administrator says, since the people don't want them at two and a half cents apiece. But this young man of eighteen—now nineteen—wanted them, raised some money, found some friends to help, and persuaded the Forestry Division to invent a way to let him plant the trees. And now there is infrastructure—existing means of putting smog-resistant trees on the mountain slopes of Southern California. "Things are running more smoothly this year," says Andy, "but I am still tripping over bureaucratic and economic

stumbling blocks." A few large companies have been contributing and helping, but many of them, when appealed to, explain that they are "using all their resources for dealing with the energy crisis." And the Forest Service has had its budget cut again.

This is a simple, uncomplicated story which shows how one individual gets a good idea, develops it, involves other individuals in various relationships, also involves public agencies and private industry at levels where they have a little flexibility and some options, and then does what he set out to do. Everybody gains and learns from this project—even the public agencies, since the State Forestry Division must now be a mite more resourceful than it was before Andy asked for the trees they were going to destroy.

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