

## Shadow And Act

MAXINE GREEN

G. H. Bantock, who is Professor of Education at the University of Leicester in England, has collected a number of his stimulating essays in *Education and Values* (Faber and Faber, 1965). They range from a critical analysis of English education to considerations of freedom, social justice, and Rousseau's *Emile*; and the reader who comes to them will find himself engaged in as cultivated and provocative discourse as can be found in education. Of particular interest to this reviewer is the essay called "Education and the Literary Intelligence," in which Professor Bantock expresses his mistrust of the kind of contemporary "rationalist" who doubts everything but what "is involved in his analysis" and who prides himself arrogantly on keeping his emotions entirely divorced from his reason. Bantock would like to see the use of reason refined—preferably by exercise of what he calls the "literary intelligence," which is intelligence trained to appreciate the resources of language used by literary works and to accomplish the "ordering of emotions" which occurs when the sensibilities are enlarged through engagement in literature.

This approach seems to be particularly relevant when, as in this issue of the *Record*, we consider the sociological and psychological efforts being made to understand the deprived children in our schools. It goes without saying that sociological and psychological inquiries are essential if we are to know enough to make learning possible. But it must also be pointed out that the knowledge made possible by the behavioral sciences—like the syntheses made possible by reason—does not fully encompass or account for the reality of those we teach. Because teachers are human beings as well as technicians, because they are involved in encounters with other human beings in the schools (deprived or not), what Bantock calls the literary intelligence may well be required if effective work is to be done in this precarious human domain.

Ralph Ellison, novelist and essayist, has a good deal to say in this regard in his collection of essays called *Shadow and Act* (Random House, 1964). An interview is included, during which the writer talks of his Oklahoma City childhood and the things in the Negro environment he found "warm and meaningful" and has ever since desired to affirm. Describing his life as musician and novelist, he tells of how he had always wanted to write about American Negro experience—and of the importance of the "perspective from which it was viewed." Once he considered this consciously, he says, he realized that it is a "relatively unexplored area of American experience simply because our knowledge of it has been distorted through the overemphasis of the sociological approach."

No more than Bantock would Ellison substitute intuitionism or irrationalism for the exercise of reason; but he is intent (and with good reason) on spelling out the dangers of "a statistical interpretation" which some Negroes even impose upon themselves. Confining oneself to this interpretation excludes, Ellison says, affirmation of "those qualities which are of value beyond any question of segregation, economics, or previous condition of servitude." It was this affirmation which made *Invisible Man* such a great work of art and which enables it to continue engaging so many questing readers in its wide and ambiguous world. And it is an affirmation akin to this which may help the slum school teacher avoid making the dreadful mistake of stereotyping, of subsuming his students under categories, of rendering them "invisible" while trying to compensate for what, as human beings, they were denied.

In this manner the literary intelligence can serve—and, it would appear, should serve young teachers asked to do as difficult a task as teachers have ever performed. Professor Bernstein, also in this issue of the *Record*, reviews *Manchild* in the "Promised Land" as still another opportunity to put the literary intelligence to work. And there is, as

well, a new work by James Baldwin, a collection of short stories entitled *Going to Meet the Man* (The Dial Press, 1965).

Those who have been moved by Ellison's consistent concern with individuality and subjectivity have tended to place Baldwin, especially in recent years, at the opposite pole. This is because the Baldwin of *The Fire Next Time* and, especially, *Blues for Mister Charlie*, appeared to have chosen the role of propagandist (albeit propagandist for freedom and civil rights). It seemed as if the artist were being tempted by the rationalist; and the clamoring, activist Baldwin made a number of his admirers (guilty, perhaps, quivering under his attacks) give up hope for him as creative spirit.

*Going to Meet the Man* may move some of them to revise their estimates. There are stories here which offer sure evidence that the sweet singer of songs is still alive in the orator; and these stories are warmly recommended for the teacher—and not only in the Harlem schools. One tale, particularly, a new one called "Sonny's Blues," should be read. It tells of a young school teacher who tries desperately to understand the predicament of his brother, a jazz pianist and heroin addict, who had once said "I ain't learning nothing in school . . . even when I go." Grown, suffering, seeking through the world, he tries to explain that he needs heroin in order "to stand it, to make it at all." But, at the end, there are the blues he plays which are "no longer a lament." There is a kind of triumph in this story; and there is an opportunity for self-identification in reading it which fulfills the requirement Bantock has in mind. He, like so many modern commentators, stresses the pervasiveness of the search "for an answer to the question 'Who am I?'" And he goes on: "Surely it is just such a question that, in relation to the children he is educating, faces the educationist."

These books—and several others of our time—may serve to help teachers answer pervasive questions in some manner. In any case, they can sustain.—MG

## WHAT CAN WE EXPECT FROM THE UNPROGRAMED TEACHER?

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Professor Winthrop, Chairman of a Department of Interdisciplinary Social Science, does far more than sound a knowledgeable warning against the cybercultural enthusiasts. Identifying what teachers can do that machines cannot, he constructs a sophisticated theory of teaching in its multiple phase; and his essay culminates in a humanist affirmation, a celebration of the potentialities of man.

THE LITERATURE THESE DAYS on computers in general and programmed learning in particular conveys an undisguised enthusiasm over the possibility that the machine will make man obsolete. The zest is sometimes hard to understand. Devotes of cybernetics and automated teaching occasionally create the impression that they see no limitations in the scientific revolution opened up by the Age of Computers. They seem to consider that there is no skill, no aptitude, no trait, no quality, and no function of man which cannot be taken over by the machine and which, in some instances, can be exercised better than by man himself.

A paper by Vandenberg (34), for example, suggests that computer enthusiasts not only look forward to psychiatric diagnosis by machine, but that some of them may even feel that a machine can be programmed to furnish the empathy which a good clinical counselor can provide. Some of them seem to hope for a machine which will provide a reasonable facsimile of the emotionally supportive functions of the psychologist or psychiatrist. Presumably, we may even be able to program a machine which will cluck sympathetically, wipe away the patient's tears, and give her a comforting pat on the shoulder. The literature on computers is full of such conceits and conceptual extravaganzas. To be fair to the partisans of the computer revolution, it must be admitted that the original claims for the possibilities of simulating human behavior were, indeed, modest. Berkeley (4), who was one of the pioneers of the simulation of human

behavior, envisaged address books, libraries, translators, typists, stenographers, and various forms of recognizers and controllers, all of which were to be automated. He looked forward to mechanical prognosticators of the weather, psychometric machines capable of psychological and educational diagnosis, devices capable of providing training, including our modern teaching machines, and data-processing equipment for business and management decisions. Finally, he anticipated portable, auxiliary brain-machines—essentially huge mechanical memoranda devices—for enabling men to store information and to retrieve it easily, thus avoiding the cluttering of human brains which, presumably, could serve nobler purposes and more significant functions.

#### THE PARTISANS SPEAK

With the advances in cybernetics, the possibilities of simulating human behavior, chiefly of the motor-adaptive and sensory-discriminative types, are considered enormous. These possibilities have been described in a flood of semi-popular works (3, 11, 15, 26). Several learned compendia dealing with the range of accomplishments of computer applications in the behavioral sciences, like that of Borko (6), have also appeared. Enthusiasm for cybernetics and the simulation of human behavior has carried over into the concerns of psychologists and educators, Smith and Moore (30) for instance, and Galanter (13). Finally, advances into the territory of strictly psychological functions, wholly subjective and central in nature, have been assembled in the journal, *Behavioral Science*. Other advances along these lines have given rise to the new science of bionics, and the Bionics Symposium (5) bids fair to become an annual affair at which cyberneticians, general systems theorists, and other interdisciplinary workers convene to advance the state of the art.

The literature critical of the excesses and extravagant claims of the more enthusiastic partisans of these developments is oddly scanty. In his last book, the distinguished thinker, von Neumann (35), warned that the brain uses a statistical language unlike that employed in the operation of man-made

computers, but the warning was unheeded. Other severe critics of exaggerated expectations concerning computers in general and thinking and teaching machines in particular, like Taube (33), have generally received critical and unsympathetic reviews, many of them executed by obvious enthusiasts and supporters of cybernetics. Wiener (36) himself, who may be called the father of cybernetics, has warned against the possible abuse of both the philosophy and accomplishments of the computer revolution.

The important point here is not that the enthusiasts are in error, philosophically speaking. The liabilities lie entirely in another direction, the tendency to overlook what men can do which the machine cannot. Educationally, the sins of omission consist of not taking stock of the values inherent in a good teacher who is also a man, in not taking stock of what a great teacher can accomplish which a machine cannot, and in overlooking the indispensable contributions to the total context of learning, education and culture which only the human spirit can provide. It is of these distinctively human potentialities that we need to be reminded.

#### THE TEACHER AS MENTOR

All education which has left an impact upon those exposed to it bears witness to the fact that an inspiring teacher who can convey his enthusiasm for his subject leaves an indelible impression upon the memories of a large number of his students. The history of Western culture confirms this, from the personal magnetism of Socrates to the platform charm exercised by William James. Though we pay tribute to the stimulus value of a programmed question, how does it compare with the stimulus value of the unprogrammed teacher? I am willing to concede to the supporters of automated instruction that perhaps a good teacher should be defined as a well programmed human being. But he also has the additional virtue of being multiply branched: that is, he can go off in any direction which he can demonstrate is related to the main topic in hand and can create a recrudescence of attention and interest which no machine and no programmed text can supply. Furthermore, the stimulus value of an inspiring teacher

has the following to commend it. If we look at several good programs of automated instruction, defined as those which possess built-in safeguards against muddled, incomplete, illogical teaching, we will notice that they possess one of two intellectual virtues. Some programs are built like a funnel standing on its spout; others like a funnel standing on its mouth. If the former is the case, the program proceeds from factual minutiae to generalizations. If the latter is the case, the program begins with some well established and well understood generalization and then proceeds to interpret that generalization by applying it to a variety of relevant contexts. In either case the logical rectilinearity of the program prevents its branching out into domains of meaning apparently remote from the main area of concern.

If a good teacher is merely a good program which happens to be animated and talkative—a point of view which sometimes appears to inspire the worshippers of the mechanical calf—he at least can branch off into matters quite remote from the groove in which programmed questions or frames constrain the student. Such branching off has perhaps been necessitated by a student's question, by his bewilderment, or by the challenge he throws down concerning the value of the topic being discussed. Sometimes this branching off is the product of a lively imagination in either the student or the teacher. Sometimes it results from an inspiring and irresistible teacher who meets a perceptive but immovable student. Regardless of the genesis of the tangent, however, if it creates relevancy in a Gestalt sense for the main line of inquiry; that is to say, if it makes the latter seem to matter in a larger context of intellectual interest which exists for both student and teacher, then it is doing something which no strait-jacketed, teaching-machine sequence can accomplish.

We have not as yet built this quality of imagination into our automated programs, but its usefulness in the instructional process is hardly to be questioned. Imagination may be an attribute which an unimaginative programmer would define in terms of electronics as analogous to a mixed-up circuit, a blown fuse or a non-

conforming relay. The analogy may be just but I do not think this or any similar analogy would warrant devaluing the attribute itself. In any case the branching provided by a stimulating teacher can unquestionably pour emotional, social and aesthetic meaning into our lives—in addition, of course, to the cognitive experience he can and does provide—and this is something which I believe no amount of self-instruction by machine can furnish. To use the jargon of programming itself, every good teacher creates his own multiple tracks and these need not always be subdivisions of the sequence with which he began.

## MEDIATING TRANSFER

A top-notch teacher's capacity to shift attention to the relation of the topic at hand to a quite different one is clearly relevant to the problem of how one concept influences the learning of another or, to put the matter in more familiar terms, to the problem of transfer of training. Kendler (20) has shown that transfer of training seems to be more a matter of individual differences rather than of programmed instruction. He believes such transfer to be a matter of centrally mediating factors in behavior. He reports the following:

Experimental results seem to indicate that problem solving is intimately related to the ability of organisms to generate appropriate response produced cues. These cues mediate the transfer from one situation to another with the amount and kind of transfer, depending on the implicit responses of the subject.

The gifted teacher, I submit, possesses the ability to generate such appropriate response produced cues. If to this ability we add a rich mine of information whose content has been well monitored and knit together (the implicit responses to which Kendler refers), we get a teacher who can set the mind to racing by the prodigal way in which he can establish contexts of relevancy and relatedness for a plethora of concepts. In this respect he cannot be simulated by a teaching machine at all.

Kendler also points out an aspect of a mass, standardized, educational program, to

which, it is reasonable to assume, teaching machines may someday lead. This is the threatened decline of the gift of imagination, a quality which I hold to be an extremely important ingredient in inspired teaching. One piece of evidence as to how imagination has been flattened by human exposure to another type of mass education, is revealed by Kendler. He notes that, as a result of the probable influence of our mass media programs, the American college student's capacity to employ free association, using the Kent-Rosanoff Free Association Test, has declined considerably from 1929 to 1952. A result of this sort is, perhaps, an indirect measure of declining imagination in our national loadings in Thurstone's V (verbal) and W (word-fluency) factors. By contrast, the response variability of French and German subjects in word association is much greater than ours and perhaps it may be reasonably argued that this is because the content of education in these countries is less regimented than in our own.

One additional cause for educational lament in the present instance, indicating the enfeeblement of imagination as well as the effects produced by the limitations inherent in mass media vocabularies, is Kendler's report that our national language habits are becoming less abstract and more concrete. The probability is slight that this will occur in the classroom when instruction is received from a group of good teachers all of whom are very different from one another. By contrast this is likely to be one of the unwanted and unanticipated effects of automated instruction. Kendler's remarks appear to emphasize one basic danger, namely, that the selection of a particular teaching machine or a programmed textbook may place severe limitations on the type of variables and aptitude development which the student can make the focus of his attention. By contrast, the wraps are off in the form of a competent and inspiring flesh-and-blood teacher.

## THE INTERDISCIPLINARY SCHOLAR

Consider the interdisciplinary value of a stimulating and erudite teacher who can

relate a topic of moment in a given speciality to the concerns of other specialties. He possesses the happy faculty of being able to do more than compartmentalize and subdivide the topic of instruction. He refuses to define education as just a bowl of tasteless cherries. He is more likely to operate on the assumption that one good cherry deserves another. This is a metaphorical way of saying that he builds bridges between the material he is trying to teach the student and the material the student has already learned elsewhere. This results not so much in the shaping of terminal behavior, to borrow again from the vocabulary of the party not yet in power, but rather in the shaping of intellectual horizons, in enlarging imagination, in enhancing consciousness and in fanning the flame of the human spirit.

A good teacher, relating realms of discourse to one another, is an audio-visual device which is hard to beat. He promotes meditation and contemplation, still, let us hope, among the objectives of a liberal education. Such a teacher does this by providing an example of a great conversation, as it were, both with himself and with his students. He opens up intellectual vistas which, I believe, are not likely to be a product of auto-instruction. It may be the case, of course, that good teaching in the form of interdisciplinary activity is rarely reinforced administratively by what psychologists call an extrinsic reward, namely, a salary increase. Nevertheless such teaching is certainly one of the major goals of education. A teacher of this sort usually makes a lasting impression on many students and becomes a model for future educational conduct and ideals. In contrast and to the best of my knowledge, no teaching machine has, as yet, become a father figure to any student or been taken as a model for imitation. I have still to see intellectual maturity defined in terms of a biped which talks like a series of moving frames. Sufficient unto the day is the evil thereof!

## THE NEED FOR HERMENEUSIS

Distinguished teachers who are also interdisciplinary, are likely to be especially

gifted in the exercise of what has been called in the language of philosophy, the hermeneutical function. This is the function of interpretation as applied to any of the problems, processes and phenomena with which true learning and education must be vitally concerned when they seek not only to be a criticism of life but a fulcrum for changing it. For instance, a good many of the social problems of concern to interdisciplinary scholars do not lend themselves readily to the neat experimental designs of the social scientist. Instead they frequently have to be approached by methods of meaningful correlation as described by Winthrop (37). Among such methods but without limitation, we find the approaches emphasized by Sorokin (31) and which he subsumes under the rubric of "meaningful-causal analysis," the methods of philosophical anthropology such as are exercised by Northrop (24) 9 the methods of phenomenological analysis described by Strasser (32) and the broad, synthetic approaches discussed by Reiser (28) and exemplified by Chardin (9). There are few activities exercised by an inspiring teacher who is also a good generalist which are more important or more creative than the hermeneutical function.

In the interpretation of human history, the human condition, the meaning of science for problems of human value and in our quest for the good life, hermeneusis is likely to be central. In holistic philosophical interpretation, in the evaluation of cultural trends and in the assessment of the delicate balance among cultural forces—an assessment which requires what C. W. Mills (22) has called the sociological imagination—hermeneusis is indispensable. In the effort to understand human conflict, seen from the subjective side and seen in terms of the more reasonable theses of philosophical existentialism, the hermeneutical junction is absolutely essential. In the effort made by a forceful teacher to exhibit the tragic sense of life through analysis in depth and in his attempt to deal with the relationship of the general and the abstract to the individual and the concrete in social contexts—so characteristically a concern of philosophical existentialism—hermeneusis is the sine qua non for the tasks involved. Whenever the

teaching function is dedicated to showing how our Western, humanistic ideals can be applied to our modern contexts of community living, hermeneusis tends to be the central creative activity of the classroom teacher. Wherever the presuppositions, the methods, or evaluations of the relevancy of the findings of modern science for social life, are to be examined, the hermeneutic function has to come into play, a thesis which has been amply demonstrated by Polanyi (27). In all of these areas, then, the great teacher who possesses insight must sharpen the hermeneutic function, so that the perspectives he presents are meaningful and relevant to the student and can be used as a basis for action—a basis which is not so strictly scientific as we might desire but which represents a reasonable estimate and assessment of a highly complex situation.

This activity, which I have spoken of as the hermeneutical function, is outside the pale for those who would limit the educational process to automated instruction. Yet where is the educator who would openly plump for the excision of that function from the educational process? Here again the unprogramed teacher, possessing depth of insight and a gift for organizing human experience, can provide his charges with precisely that vision which makes education exciting and learning infectious. The teacher who can exercise this function is worth a thousand automated instructional programs. These latter can at best only provide the grist for the educational mill. It is the accomplished and charismatic teacher, however, who must grind the grain.

## THE TEACHER AS MAN

We must also not overlook, I think, the value which the living teacher possesses by virtue of the fact that he can point out the relevancy of his subject to the personal and social concerns of the student. Again in the spirit of noblesse oblige and also, I might add, sang-froid, I will concede the opposition that, if the living teacher can be said to have this advantage, it is only because he has a larger storage capacity and a better monitoring system. But the live teacher has one other virtue which even a super-duper

teaching machine will probably never possess.

Since an ideal, automated teaching device (admittedly not yet produced) would have to be asked a clear question or, at least, be given a clear answer before it could proceed, a confused question or an unclear response would most likely gum up its works. This is precisely where the programming of the biped is of a superior type. He is programmed to furnish answers to unclear questions and vague or muddled answers by knowing how to recast these. These he can recast precisely because he is sensitive to the intent of the speaker or the questioner and precisely because he can be sympathetic to the concerns, anxieties, groping and Weltschmerz of the student whose reach unfortunately exceeds his grasp. Perhaps the first-rate teacher creates an existential sense of understanding for the student listener by the tone of his voice, by the expression on his face or by the touch of his hand upon the student's shoulder. It matters not. But create it he does. No teaching machine to date has been endowed with the tragic sense of life, and yet without this sense much of human learning must be as ashes in the mouth. As for the future, I am definitely not expecting to see the day when a rubber pad at the end of a steel arm, comes down upon the shoulder of student and a taped voice, speaking in sepulchral tones from the remote electronics interior of some marvelously advanced teaching machine, says "Yes. I know just how you feel!"

## THE GREATNESS OF BOOKS

Even at second remove, in the form of the printed book, the humane teacher can create an atmosphere of understanding of the student's personal and social concerns, which is highly inspiring and conducive to the learning process. All our contact with great books furnishes living testimony to the fact that motivation can be kindled and human energies galvanized by a greatness of mind and soul which speak to us across the centuries. The writer who can pour meaning into our personal lives, either through his capacity to use expressive language, his demonstration of beauty and

precision in intellectual organization, or a style which creates an air of intimacy and rapport, is also doing something which lies outside the range of effects producible by a teaching device.

Where a book deals directly with the importance and the nature of true education and true culture, the use of expressive language may be of even greater value to the student who is struggling to find himself intellectually than the unadorned prose of straightforward exposition. Such prose, stripped bare of emotional content and the stimulation provided by a preoccupation with values, often furnishes only a shell without the husk. No teaching machine can do for a student, for instance, what the little known classic of Hamerton (17) did in the past for those of us who were struggling to enlarge our horizons, both intellectually, aesthetically and socially. In the same way one gets a feeling of what a superb teacher can be like and what life's intellectual adventure can provide, through two highly interesting books by Barzun (1, 2) or through a recent volume by Hadas (16). Finally, a sense of the atmosphere which might be created for a student by a genuine community of scholars, and which no series of teaching machines providing a variety of programs could possibly confer, can be dimly glimpsed, I believe, from the picture of an ideal university as described by Hutchins (19).

There is a major disadvantage of the teaching machine, in contrast to the good teacher, which is hardly ever mentioned in the literature. This is the fact that programmed material which is as extensive as that of Holland and Skinner (18) whose program deals with human behavior, will rarely be devoted to pulling together all that has been learned. Such a pulling together provides an organic unity and perspective for the student, in which everything tends to fall into its proper place. This is something which the student usually has to provide for himself by mulling over what he has learned. Occasionally the needed recapitulation is provided by a good teacher. Once again we may concede the devotees of automated instruction, using their own terminology, that such recapitulation and such unifying activity as we refer to here, is merely selective playback. So be it. I have not, however, read

of any program which has so highly sophisticated a scanning operation of its storage content as to be able at the end of an extensive learning sequence, to provide the same type of playback. Let us therefore not devalue this important function which as yet only the live teacher can perform. Within the framework of our Western, cultural legacy there are certain pithy sayings which indicate a general recognition of the importance of a unified perspective upon life and learning. One of these apothegms is "Let us not lose sight of the forest for the trees." Another is "Let us view life steadily and view it whole." There are few aspects of great teaching that are more important than this unifying function which is completely outside the performance of any type of programed instruction.

## THE FULL MAN AS TEACHER

Finally, let us consider the teacher as a person. What does it mean to be a full man as well as a teacher in the classroom? Such a question is a roundabout way of emphasizing certain highly valued instructional gifts which belong to the unprogramed biped. These are gifts which by no stretch of the imagination will ever be exercised through the invasion of the precincts of learning by technological barbarism.

As a full man, the really outstanding teacher sees to it that, wherever possible, learning is related to life. Much and perhaps most of man's learning has sprung from problems with which he has been preoccupied. These sometimes have a contingent character, as when he is concerned with wresting maximum productivity from the soil. Other problems\* however, with which he wrestles are perennial, such as his concern with the answers to such questions as "What is the good life?" or "What is the ideal society?" The first seeks to define a personal ideal. The second is always raised in connection with the quest for community and Utopia. The instructor as complete teacher eschews concern with the accumulated learning and skills of the race, when these are presented only as a set of abstractions to be found between the covers of a textbook and memorized. He has no patience with the

worship of information for its own sake, divorced from the everyday concerns of men. No matter how beautiful the foliage may be overhead and no matter how interesting some of the individual leaves may appear to be, all of it leads back to the roots at the base. These roots are almost invariably concerned with finding the means for the solutions of both man's contingent and man's perennial problems. They are basic to man's daily struggle to create meaning, value and purpose in his life, particularly in the presence of a universe which, as Russell has phrased it, is completely neutral to man's efforts, a universe which, left to work out its own grand and accidental designs, might even succeed in making a mockery of those efforts.

These functions of creating meaning, purpose and value by building ladders between abstractions and their earth-bound bases, the dedicated and charismatic teacher never loses sight of. The teaching device obviously will never be able to assume these roles. We too easily forget this fact. What is worse, we too easily devalue it. Without someone with intellectual presence, such as the complete teacher, to help us move familiarly and with sure foot up and down the ladder of scholarly abstractions, the process of learning would rapidly degenerate into a series of tortured and meaningless drills. Too great a dependence upon the automated program carries a similar educational threat which we would do well not to overlook.

## SHAPING PAIDEIA

Consider the original function of education or paideia as conceived by the Greeks. The ancients were convinced that education and culture cannot be separated from the historical and social structures which underly a nation's spiritual life. Paideia involves a conscious ideal of education and culture, which combines a concern for self-development and the enrichment of all our human potentialities with the inculcation of the obligation to serve one's own community and to bring it somewhat closer to whatever notions of the good life move the mass of its



citizens. For a long time this ideal was incorporated into the humanistic heritage of the West. It is only now growing slowly moribund, as de Grazia (10) has amply demonstrated in a recent volume, being displaced by shoddy and superficial ideals of gracious living and high mass consumption.

A true education and culture must provide for the unfolding of the moral grain in every man. Few question the great importance of this task. All of us, at some time or other, have been deeply impressed by the examples of greatness of soul, deriving from a conspicuous concern with the education of character, as held up to us, for instance, by Plutarch. In the past the young in the West have frequently been urged to emulate the Plutarchian virtues. For those of us who have not lost sight of the ancient, cultural ideal of paideia, the molding of character is still one of the major goals of education. In what respect, may I ask, can automated instruction, providing chiefly facts clothed in representative language rather than ideals of character described in expressive language, help to achieve the great educational goal of paideia? In what respect can automated instruction provide the emotional tone and admiration which Plutarch's word pictures can convey? These questions may be rhetorical but their intent, I believe, requires an educational instauration.

In what sense then can the moving description of a great human soul be simulated by automated instruction? Better still, in what sense can the impact of nobility of life and purpose, given by a great man we have been privileged to know or a great teacher at whose feet we have been privileged to sit, ever be furnished by a teaching machine? Only written descriptions of such great souls, delineated in expressive language, have the power to move us and to serve as models for our moral development. The very techniques of programming destroy the inspirational function and the moving drama which are frequently the virtues of great prose. This function is forever lost in the fractionation of information which a proper program requires and in the matter-of-fact, unadorned style which the items of automated instruction require. The moving power of great novels, distinguished plays,

poetry which touches us in depth, and even the non-fictional classics are clearly alien to the objectives of automated instruction. Every form of aesthetic catharsis, producible in the theatre or by great forms of art, is eternally foreign to the mission of a teaching machine. What then can replace the great teacher who can give life to all those elements of education and culture which depend for their powers on the expressive rather than the representative functions of language? These depend more on the student's sensitivity to the power of words to bring out the best in each of us than upon their information content. What can a teaching machine do here?

Morris (23) has made a case for the existence of 16 different types of discourse with which men relate to themselves, to each other, to society, to work, to nature and to God. Leaving the language of technology aside, only two of these are employable in programmed instruction, namely, the designative-informative discourse which belongs to science and to descriptive prose and formative-informative discourse which belongs to the analytic disciplines, such as logic and mathematics. If Morris is correct, then surely we have to cast about for ways of preserving the other functions of language and human relationship. But the solution, of course, is at hand and was obvious all the time. It is the competent, dedicated and inspired teacher, in love with learning, who is seeking to pour meaning into life and who wishes to share that meaning with his students, who will have to be our chief source of reliance in these matters.

## RELIGIOUS DYNAMISMS

In connection with our recognition of the importance of the dimension of value in the human condition, we need to remind ourselves of the central source of most of our values, namely, Religion. The religious impulse, so vital for establishing proper relations between man and man, is also something which can in no sense be aroused by automated instruction. On the contrary it can be felt in some great teachers and borrowed by psychological osmosis, as it were. In what sense can the dynamism of a sincere religiosity, expressed in works as

well as faith—a dynamism which inflames to imitation and unselfishness—be conveyed at the end of a programmed sequence? A powerful and sensitively written volume on the lives of the saints or an impressive teacher who can give us a moving account of the funded decency and good will which the saints introduced into the human condition—these surely are educational means for arousing the religious passions. I am using the phrase "religious passions" to refer to our drives for honest self-fulfillment, decency and social justice, unalienated relationships among men, and the quest for community. These matters too may be part of the process of learning to pour meaning into the totality of our lives. Quite obviously the computer can make no contribution in this direction. It is only an impassioned and well-informed teacher who can make men of learning and largeness of heart come alive for us. This he may do via the showmanship and histrionics of the educational forum, if you will, through his expert use of the expressive functions of language and perhaps also because he, himself, is moved by the ideals of those he seeks to recreate in the flash-pan of the classroom. These are all educational assets which automated instruction cannot provide. It would be a gray world, indeed, which could educationally offer men only accumulating inventories of fact and intellectual skill.

## CREATING AND COMBINING

A teacher is essentially a means for fulfilling what the great Italian sociologist, Pareto, called the instinct for combinations. He can combine ideas in a highly novel fashion, bringing together notions, processes and attributes into relationships hitherto unnoticed. The inspiring teacher can do this by creative processes which have been richly described in recent years by such writers as Bruner (7), Crutchfield (8), Gordon (14) and others. These creative processes are, in many respects, unlike anything within the armamentarium of programming techniques. Creative teachers, possessing this instinct for combination, like creative writers, artists, scientists, philosophers and thinkers in general, have qualities of mind and heart—amply described in the research literature on creative personalities—which,

in the main, cannot yet be programmed. On the other side, let it be said that Simon et al. (29) is one researcher who is convinced that within ten years we shall have computers which will discover and prove an important mathematical theorem and compose music which will be regarded as aesthetically significant. Few are as optimistic as he. Even were he to prove to be correct, however, this would only be a modest triumph, for the qualities of mind and heart which are reported to be attributes of the creative personality exist along several dimensions and not merely the cognitive one.

It is these very qualities, used to highlight the relations of learning to life, which are indispensable for good teaching and which cannot be built into even the most advanced type of computer. By these creative functions a good teacher can undo or, at least, loosen the twisted character structure of a student whose social programming leaves much to be desired. He can do this effectively by showing the relationship of different aspects of his subject matter to the pathological and the undesirable values, attitudes, ideas and ideals of the deviant student whose community orientation has been badly short-circuited. To show the bearing of one's subject matter on some individual's social philosophy or upon those current problems and issues which press heavily and personally upon each of us—this is certainly one major function of an outstanding teacher. What teaching machine, may I ask, will branch off to provide such connections? What teaching machine will accompany the ability to branch off, with the sense of outrage and human concern, which the flesh-and-blood teacher can provide? What operant Deus ex machina will turn existentialist and provide the student with a sense of the emotional and social significance of what would otherwise prove to be a congeries of bloodless facts and alienated abstractions? In contrast with the warmth and concern of the great teacher the computer can only provide rigor mortis of the spirit.

## THE LIFE OF FEELING

Only the human being can provide a sense of what a lived culture can be. This, he does, not only by example but also by bringing to the fore the importance of the dimensions of feeling and sensitivity for the human condition. Knowledge is not enough. One must distinguish, as Archibald MacLeish once put it, between a fact and the feel of a fact.

Knowledge divorced from its significance for the life of feeling, knowledge disentangled from the social matrix to which it must have relevance, knowledge which does not determine the postures we take towards ourselves and each other can provide only an alienated type of education. This is precisely one of the greatest dangers in teaching by machine, for the automated program will frequently deal with abstractions completely alienated from the human context which gives them relevance. Alienated learning is a modern Frankenstein and it is tragically on the increase. Learning which cannot become part of the warp and woof of one's own inner being, is learning which, from the viewpoint of a philosophy of existentialism, is without commitment. Programed instruction cannot escape increasing the fund of alienated learning and education in our time. It could be argued, I believe, that the central function of a great teacher is precisely that of preventing the process of alienation in education. In this sense he has no substitute and remains an eternal bulwark against the twin dangers of the Scylla of overintellectualization and the Charybdis of emotional and sentimental surcharge.

## THE TEACHER AND ALIENATION

Today the perceptive social philosopher, the insightful literary critic and the acutely sensitive teacher observe the human condition and note the amazing amount of suffering which is reflected in myriad forms of alienation all around us. The ideals of Western learning demand that if one is to regard oneself as truly cultured then one must devote oneself to fighting all forms of alienation, both in oneself and in others. To accept the inevitability of alienation as a result of our modern, complex, bureaucratic society and, at the same time, to talk about

the need to develop an individual psychology, is a contradiction in terms. The latter development must in large measure feed on a social psychology which has been effective in liquidating or diminishing forms of alienation which inhere inevitably in the depersonalizing, dehumanizing and deindividuating features of a technique-worshipping civilization. This is the spirit which permeates the recent work of such truly cultured individuals like Fromm (12), Ortega y Gasset (25) and Marcel (21). Each of these in his own way is trying to fight the standard forms of alienation in our time: alienation from self, from the opposite sex, from one's fellow man, from work, society, Nature and God. In this context I am invoking the notion of Godhead, not in some secular, anthropomorphic and institutional sense, but rather as a well established sensitivity to the need for self-transcendence in this vale of tears and a capacity to preserve a sense of wonder and awe concerning the mystery of Being, Time, Matter and History.

Poets, novelists, playwrights, social critics, social philosophers and charismatic teachers alive to the social currents and pathology of our age, who genuinely feel the unrelieved anguish of those of their fellow men who are victims of modern alienation, have a very special task to perform. They have to cut through to the root sources and institutional follies which produce the excesses and absurdities of the human condition. They have, as their first duty, the task of exercising their talents in an effort to dissipate the traditional forms of alienation which have resulted from these same excesses and absurdities. These are all figures who by destiny are men with a mission, a mission which, in part, is concerned with helping each of us in his quest for personal identity. These frontiersmen of Western culture must, in a sense, be among those who make a flank attack rather than a frontal assault on alienation. The frontal assault is the duty of the psychiatrist and psychologist. In serving in this undeclared war such frontiersmen are, in their own way, furthering the development of an individual psychology.

## CULTS OF PERSONALITY

Another part of that mission which belongs to those who seek to dispel alienation from modern life, is the need to be alert to the new forms of alienation in our time. Among these is that form of alienation from self which goes by the name of "the cult of personality." This is that form of alienation which worships appearance, manners, grooming, role-playing and the social facade, in preference to the internal qualities of men and women. Thus we are encouraged to repudiate a concern for authenticity and the genuine encounter.

Another new and miserable form of alienation which is beginning to appear in our midst is alienation from responsibility for programs, decisions and ideas which affect the lives of others. This will increasingly have to be the province of the social satirist and the focus of criticism for the distinguished teacher who keeps alive the fires of our humanist traditions. This new type of alienation, for instance, is highly visible in committee work, whether in industry, government or the university. In committee work it consists of getting one's way in spite of one's incompetence and immaturity. The formula is a simple one. Let us illustrate it using the executive from industry, the administrator from government or a committee chairman at a university. The individual in question will first pre-caucus his friends or hangers-on. These will be given some notion either explicitly of what he wants done or evasively by what passes for diplomacy and tact. Then, using the forms and trappings of democratic procedures, the big man gets his way by having his rubber-stamp entourage railroad through his wishes. Once done he sits back smugly and proclaims to the world that it was a collective, that is, a group decision. Subsequently those who have so little self-respect as to allow themselves to be manipulated in this way, get the rewards they were angling for. If the decision achieved by the group's "democratic vote" turns out well, the cock-of-the-walk struts up and down and proudly takes the credit for the sound group judgment which his leadership has provided. If, on the other hand, the decision turns out badly, if it is

reacted to unfavorably by power centers elsewhere, the cock-of-the-walk whines and repeats endlessly that the poor decision represents collective guilt and implies further that had the decision been his own to make, it would have been substantially different.

It is in this way that wooden and incompetent leadership masks its responsibility for pulling the strings in having its own way. Using mealy-mouthed excuses, a leader of this sort seeks to convey the impression that it would have been ignoble, undemocratic and unfair for him to have tried to interfere with the group's collectively expressed wish. By procedures of this sort the "stinkers," to use Sartre's apt expression, who alienate themselves from social responsibility, try to justify the results of that alienation in terms of collective guilt. The cant and buncombe with which they try to justify their moral defaults, make any truly sensitive and cultured soul want to retch. The bilgewater which forms the content of their hypocritical protestations, reminds one of a protracted form of autistic echolalia.

The dedicated teacher, possessing largeness of outlook and greatness of soul, a respect for truth and for painstaking detail as well as some understanding of that which is transcendent to the merely stimulus-bound, will almost always be found driving alienation from the temple of learning. Of this service, as of happiness and despair, we have no measure, but its value is beyond calculation. Once more we are forced to emphasize for the reader that mechanical aids to teaching will never be able to fulfill these functions. Yet without these functions learning would lose its savor and teaching would fail in one of its most crucial missions.

## THE CENTRALITY OF HUMOR

I turn finally to that quality so characteristic of man, which, in a sense, clearly distinguishes him from the brutes. I refer to his sense of humor. The capacity to laugh at human foibles, to see the incongruity between human behavior and human ideals, to see the unexpected and surprising relationships of similarity between what at first glance seem to be disparate elements of human experience—all these are of inestimable value in moving ever closer to

our definitions of the good life. I do not, of course, wish to pretend that every form of wit and humor known to us, is capable of being ticketed under one of the descriptive phrases I have just employed. But, of course, that is not the point. What is to the point is the remarkable fact that good teachers usually also possess a good sense of humor. This is a major asset in literature, the humanities, the behavioral, social and management sciences and, in fact, in all the disciplines which have to do with man. It is also, of course, very welcome when it is used as cement for training the young in the natural sciences, but it can most effectively be brought into play in those disciplines concerned with the affairs of men.

There is no limit to what a fine teacher can do with a good sense of humor. One barb which punctures a pattern of intellectual or social affectation, is worth a mint of dull chapters in a textbook. A single satire may do more to change the course of history than a mountain of learned monographs. An epigram or a humorous anecdote may sometimes undo more academic gibberish in a flash than all the ponderous proofs of pedants and a shaft of wit often quickly dispels the most effectively disguised forms of the learned ignorance. The teacher, with a touch of an Erasmus or a Nicolas de Cusa, is armored against folly. The devices of wit and humor are as much tools in the hands of a great teacher as his knowledge or his skill at some of the functions which I have already described. When I look back in memory and try to recall the most impressive wisdom of those teachers who meant the most to me, I find that I can remember more material which was accompanied by the use of wit than material which was delivered with an air of sobriety unrelieved by humor of any sort. This, of course, may be a personal idiosyncrasy rather than a representative result of instruction. I am not sure. But to the extent that humor can provide the common touch and sweep up both instructor and student in a bond of mutual appreciation, there are few substitutes for it.

Automated instruction, I am strongly convinced, will never provide a commodity which is competitive with an outstanding teacher's sense of humor. I will apologize for

the strength of this conviction on the day when I hear the first side-splitting, belly laugh emerge from the interior of a teaching machine. All my doubts will be completely resolved on that day when, in response to a student's pressing a button or turning a crank, a teaching machine will stop running true to programmed form and insert a risqué story in the stimulus frame it calls home. Until that great day I shall continue to place my bets on that poor but neglected biped known as a good teacher. Until then let us never allow ourselves to forget, in the excesses of our educational follies, an ancient adage. If I remember correctly that adage reads "Whom the gods would destroy, they first make mad."

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