

Education as an Art

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OF MACHINES AND MEN

By Ernst Katz

When Plato likened man's task in life to that of a charioteer driving a chariot drawn by a white and a black horse of different inclinations and temperaments, he presented to mankind an archetypal image which is still full of vital significance for our times. And when Sir C. P. Snow signaled that humanity is dividing into two cultures, one humanistic and one technological, without mediation, he was, in fact, describing Plato's white and black horse. Unfortunately, Snow was insufficiently aware of the third force, which can and must take charge as a charioteer at all times: the wisdom of man, "anthropos-sophia."

Our time tends to be dominated by problems which arise from an awareness in terms of absolute contrasts. Issues are defined in terms of:

pleasing others	versus	pleasing oneself
black power	versus	white power
public schools	versus	private schools
fundamentalists	versus	evolutionists,

to name merely a few examples.

Our national examining and testing effort. admits only answers of 'true' or 'false,' though not rarely are 'wrong' answers merely proof of a superior insight on the student's part) . Indeed, it may become necessary to impart to bright students, along with a real education, a special course in test taking, the skill of interpreting questions without profundity or originality.

Thinking in terms of true or false, make or break, fail or safe, etc. is justified in the realm of technology. Our digital computers operate merely on the often-repeated alternatives of zero or one.

Thus a conceptual climate is generated in which also man tends to be regarded in similar terms: You are 'turned on' or 'turned off.' When this kind of thinking penetrates into education there is cause for concern.

In educational psychology today the country listens in the main to two schools of thought. A more or less humanistic school, usually with strong Freudian overtones, of which J. S. Bruner may be viewed as a prominent representative, versus a mechanistic school, usually with a strongly behavioristic outlook, of which B. F. Skinner is probably the best known exponent. Looking at this state of affairs one is reminded again and again of Plato's white and black horses, and one wonders: Where is the charioteer, the truly wise human guidance?

Here Waldorf Schools, based on the educational psychology of Rudolf Steiner, have a real contribution to make. Their entire effort is permeated by a striving to recognize in each child and in each issue the charioteer. His growth is fostered; his integrity, his freedom, and his creativity are cultivated, so that he may find his way through life not only with skill and understanding but also with deep joy.

In our country with its high standard of living, children as well as adults are constantly surrounded by machines and technology. Seldom do we give serious thought to the question whether and how these affect man. Machines are thought of as instruments for affecting man's environment so as to suit his

needs, not as affecting man himself. And yet they do tend to affect men of all ages profoundly and often adversely, and children even more so than adults. What are these effects? And how can one neutralize them?

My primary concern is not with effects which stem from faulty technology, such as: impairment of hearing due to industrial noise; diseases and deaths caused by air pollution or by the addition of unsuitable chemicals to food; or cancer or genetic damage caused by an accumulation in time of the effects of small doses of ionizing radiation emitted by TV sets. Much well-documented research has been published about such effects and is widely ignored. The causes for this type of effect can be recognized on a purely technical level. By designing machines better, with more sophisticated insight into human physiology, these causes can, in principle, be eliminated. It is true that many casualties will probably have to occur before enough pressure is built up to force industry to reckon more conscientiously with the well-being of the population; but my primary concern is with problems that are inherent in the human use of machines, problems which, by their very nature, cannot be eliminated by technical improvements.

Man's organism has evolved through long ages under relatively stable environmental conditions on earth. His bodily functions as well as the functions of his mind have become attuned to these conditions. He has developed internal biological clocks which more or less synchronize his waking-sleeping cycle to the diurnal period of twenty-four hours. His physiology makes profound adjustments to the seasons. Man could not live on earth in his present form if the average temperature were a mere hundred degrees hotter or colder. He could not survive if the flow of sense impressions ('signals') that goes with his normal activities were many times greater than it is at present. Not could he properly survive if his internal and external bodily movements were subjected to severe restrictions.

It is part of the nature of man's journey on earth that his body and mind are attuned so as to operate, within certain tolerances, around a certain balance between meaningful bodily activity and corresponding sense impressions: a balance between motor and sense activity. The circulatory system functions prominently in maintaining this balance, and our entire life of feelings is closely connected with this balance. Indeed, happiness and health are rarely found where this balance is upset.

The crux of the problem of our machine age is that machines tend to upset this balance, by reducing the bodily activity that corresponds to certain sensory impressions. How little do we move our body while riding in a car, and how many 'signals' do we receive during such a ride! How much do we feed into our senses when watching TV while our body is completely inactive!

How does human nature react to this type of imbalance? The senses become dulled, the person becomes inattentive, restless, and nervous. He finds it more and more difficult to concentrate, consequently he achieves little, yet he never has time or interest for undertaking anything. He may become apathetic, and often develops circulatory or heart trouble after a while. Teachers with some experience in these matters can easily tell the TV addicts from those who do not watch TV habitually, by their different attention in class. The 'hectic' pace of life that kills so many adult hearts is not hectic because so much bodily activity is required but because so much immobility, coupled with sensory overload, is imposed upon us.

The Amish communities live practically without machines, but to advocate a return to this mode of life for all of us would set the clocks back. No amount of persuasion in some such direction can hope for more than fringe support. We may admire from a distance people like Rousseau or Thoreau for their feeling for nature and for their strong individualism, but we cannot honestly expect that a majority of our contemporaries in the Western world will follow their example. The question is rather: What can be done so as to keep the real benefits which our technological age affords, while eliminating its adverse effects?

The Rudolf Steiner Schools have directed themselves for decades to such questions and have some very significant answers to offer.

Rudolf Steiner built his educational philosophy on his own extensive teaching experience as an educator working under a wide variety of circumstances, as well as on an encompassing fund of knowledge of earlier educational ideas before him. He concludes that the learning experiences of a child must always provide a balance between the sense-pole and the action-pole of man. And this balance can only be attained if all school activities are permeated by the arts. Not only the audio- and visual arts, but also, and especially, the art of movement known as 'eurythmy.' The arts should be integrated with all other subjects, so as to permeate these with creativity and beauty. In this sense all of education must literally become an art.

This type of education awakens and strengthens the 'charioteer' in the child. It allows the inner life to unfold in its own way and to draw enrichment from experience. It leads to purposeful self-control, and thus to the control of one's environment. Whatever is learned in an artistic way will not become rigid like a bouquet of plastic flowers. It should be flexible and subject to growth and further development throughout life. This kind of learning rests on 'empathy' of the child towards what is being learned, and on a teacher-child relation that is sustained by mutual empathy.

Here we touch a sensitive nerve of current educational psychology. Responses to stimuli, such as are required for tests of all kinds, can be acquired without affecting that deep inner life-level from which empathy springs. I doubt whether empathy, the complete surrender (for a short time) to what one observes, the identification with another person or being, can be tested. It is infinitely varied and subtle. It can only be observed again by means of empathy.

Empathy lies at the root of the student's capability for true learning, as well as of the teacher's ability to judge the results. And the artistic, playfully-serious teaching techniques tend to release this faculty of empathy. When learning is pursued at this depth, it can meet life successfully, because it is alive within the student; it leads to inner freedom and integrity.

The human spirit would not choose to live on earth if this life were not meaningful to him. And in this world he encounters today the domain of machines, man-made to be sure, but ruled by an order which is essentially foreign to him. He can learn to understand and to control this domain. In fact, only in this context can he grow towards freedom and integrity. In each one of us the human spirit longs and hopes to partake in this growth. This growth is meaningful.

Just as it is possible to nourish the artistic, creative, empathic in the child, so is it also possible to starve these faculties. Turn a child over to all sorts of teaching machines instead of to a human teacher with a heart in the right place, and you will find that gradually such a child will, as it were, turn into a machine himself. He will unlearn to see things in any other way than in a mechanical order.

It is true that computer-based teaching machines, if carried to the extreme which technology permits today, are at present still prohibitively expensive. Consider, for example, the program of the Waterford School, Oakland County, Michigan, under subsidy from the Government Program for Educational Innovation, Title III. The acquisition of machines with the high degree of versatility and flexibility, such as used there, requires a capital outlay of more than a million dollars; operating costs run close to a million dollars annually. But these prohibiting costs are only superficial flaws, which may be overcome in time. My concern is with basic issues of what is desirable, rather than what is within one's budget. (2)

With regard to judgments concerning the long-range benefit or harm of the machine-world, a child is rather helpless and usually depends on its teachers and parents. In time the direction which these adults provide for such judgments becomes decisive for the question whether a child will live his

conscious life essentially at the level of the machine domain - or at a higher level which permits real control of this domain. In order to provide here the right kind of setting for a child, adults should understand and be sensitive to the meaning of technology and its relations to man and to his environment. One should understand the services but also the pollutions and dislocations caused by technology in man and in nature. With every decision to operate a machine, be it a car, a TV or radio set, or a computer, a feeling of heightened responsibility for one's inner human state should be aroused. This is especially important in regard to decisions to use machines for pure amusement.

If parents and teachers do not hold the reins, the child's empathy tends to be drawn down to the machine level. Raising and maintaining oneself above the world of machines requires, in addition to an *understanding* of the functions of machines, an attitude of restraint in their use, a kind of esthetic taste for the conduct of life. Let me elaborate this important point.

Suppose a good dinner is scheduled for six o'clock and the children come home at five. Some can control their appetite; others grab a whole box of cookies and whatever other edibles come within their reach. The latter spoil for themselves the full benefit and enjoyment of the good food when dinnertime comes around. Moreover, they tend to overeat, with consequent damage to their health. Likewise one can ask: Can the need for 'amusement' not be better satisfied in many instances by activities other than the passive stare at the TV screen? Must we ride for our Sunday amusement could we not drive to a place where one can safely go for a walk in the woods or on the beach?

Parents and teachers face a tremendous responsibility for their children in regard to upholding control of this sort. By their own actions they set the example which will become decisive. A good rule is: *What is worth doing is worth doing well.* And 'well' implies: taking into account the need for balanced activities, which are much more invigorating than the seemingly restful overloading of the senses, just as a well-balanced meal is more nourishing than a pound of sweets.

Never should a child —nor his adult companion —be permitted to indulge in a sloppy, passive, only half-attentive way in technological forms of amusement, such as TV watching or listening to the radio. These acts should be strictly limited in time so as not to exceed the span of really active attention, which rarely exceeds half an hour. During the time of watching or listening no other activity should be pursued; concentrated observation should be insisted upon. The content of what was observed should be made a subject for subsequent conversation, for painting, or for some other personal creative reaction. If one insists on this principle from the start, one will discover that many healthy children require relatively little (but consistent!) coaching, and soon lose interest in these forms of amusement, of themselves, except for some especially appealing programs. Of course, good habits tend to erode in the company of friends who don't have them, and thus they may need reinforcement from time to time. Many other children, however, have already been sufficiently weakened in regard to their inner activity, so that they crave for the trance which mechanical amusement tends to induce. Their continually disturbed motor sensory balance will gradually turn them into people who lack initiative, are alternately bored or frustrated, and explosively compelled to acts of violence or destruction. They enter on a path of life devoid of deep feelings and deep joys.

That is a high price to pay for the cheap 'amusement' received. The educational philosophy of Rudolf Steiner has a great deal to say about the connections between man and his environment. It is not necessary that all parents become experts in education, and Steiner Schools can often clear up questions for parents when they arise. But as a general rule I would like to urge every adult who has responsibility for our generation of children, to do one good deed every day for their sake, by attempting responsible, fully conscious judgment as to when to use the services of technology, and when to restrain oneself in its use.

Beneficial control of our overabundant environment can only be achieved through active, sensitive control, from within, of our own inner life.

(1) See for instance the humorous article by A. Calandra: 'Angels on a Pin' *Scientific Research*, p. 60, Dec. 21, 1968, McGraw Hill Co.

(2) Skinner's philosophy of teaching purports to provide ideas and methods for the management of education. These ideas and methods do not necessarily imply the use of teaching-machine-hardware and the investment of funds therein. Skinner himself takes a dim view of the effectiveness of the trend towards extensive teaching by means of machines. See, for example, his book: *The Technology of Teaching* (McGraw-Hill, 1968). It is, however, a fact that those who favor-or sell-teaching-machine. hardware take the view that, in so doing, they are implementing Skinner's philosophy: one of the many contradictions which life so often presents.