

## The Aims of Education

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Some of you may feel that all that is original and interesting that can be said about the aims of education has already been said by a stellar cast of philosophers ranging from Plato to Dewey. I do not think that this is the case. It shall be my thesis that the subject should once again become a matter of vital concern — as it already is to many ordinary citizens. We can learn from the past, but we can also improve upon it. To provide both a historical and a conceptual framework for what I have to say, I consider Aristotle, Dewey, and Freud. Analysis of their views occupies much of this paper; my emphasis is not on scholarship, however, but on the use of the past in order to help us think more cogently about the present, and the future, of education.

### ARISTOTLE

There is in Aristotle's *Politics* (1932/1967) a succinct statement of the aims of education, but to understand Aristotle's thought on these matters it is necessary to examine a wider context, especially on the central themes of well-being or happiness, the nature of the intellectual and moral virtues, and the theory of right action, as developed in the *Nichomachean Ethics* (1941). The line of argument is subtle and difficult to lay out in simple form. Indeed, it is not clear that the main themes are entirely coherent with each other. But in Aristotle's educational thought, there is a way of thinking and talking about human action that is of fundamental importance. By being brief, I shall not entirely do justice to the subtlety of Aristotle's argument; but to some extent it is also my intention to reconstruct the argument, and therefore what I have to say might well be called an Aristotelian approach rather than a historically faithful account of what Aristotle himself said. The tone is set by the opening words of the *Ethics*:

Every art and every inquiry, and similarly every action and pursuit, is thought to aim at some good; and for this reason the good has rightly been declared to be that at which all things aim.

Aristotle continues a few lines later:

If, then, there is some end of the things we do, which we desire for its own sake (everything else being desired for the sake of this), and if we do not choose everything for the sake of something else (for at that rate the process would go on to infinity, so that our desire would be empty and vain), clearly this must be the good and the chief good. Will not the knowledge of it then have a great influence on life?

For our present context it is appropriate to add that knowledge of this chief good will have a great influence on education. Concerning this highest of all goods or ends, Aristotle continues:

Verbally there is very general agreement; for both the general run of men and people of superior refinement say that it is well-being [often translated happiness] and identify living well and doing well with flourishing [or being happy]; but with regard to what flourishing is they differ and the many do not give the same account as the wise. For

the former think it is some plain and obvious thing, like pleasure, wealth, or honor; they differ, however, from one another — and often even the same man identifies it with different things, with health when he is ill, with wealth when he is poor; but, conscious of their ignorance, they admire those who proclaim some great ideal that is above their comprehension. (1095a16ff.)

A characteristic feature of Aristotle's thinking is exhibited in this argument about flourishing, or eudaimonia. A formal argument is given — an argument that Aristotle takes seriously. But he then goes on to make the point that the formal argument as such does not take us very far, because it does not make clear what the characteristics of flourishing or eudaimonia are. Aristotle departs from the formal line of argument to observe that there seem to be four sorts of lives that are chosen by men (1095b14–1096a1). One is the life of pleasure. This life, Aristotle says, is appropriate for slaves or beasts. The second sort of life is one which aims at honor. The meaning that Aristotle gives to this kind of life makes it the object of politics. The third sort of life is one whose object is the pursuit of wealth, but, as Aristotle points out repeatedly in both the *Ethics* and the *Politics*, the pursuit of wealth is a means and not an end to the good life. Finally, the fourth kind of life is that of contemplation, whose proper object is theoretical knowledge, and in the latter part of the *Ethics* (Book X), Aristotle argues that it is the highest end.

Aristotle resumes the formal argument by saying that to speak of flourishing or happiness as the chief good seems a platitude, but a proper account might be given if we could ascertain the function of man,

for just as for a flute player, a sculptor, or any artist, and in general for all things that have a function or activity, the good...is thought to reside in the function, so would it seem to be for man if he has a function. Have the carpenter, then, and the tanner certain functions and activities, and has man none?

The analysis that Aristotle concludes with is that the proper function of man is "activity of the soul in accordance with virtue, and if there are more than one virtue, in accordance with the best and most complete" (1098a17). The important point is that flourishing or happiness is not a state of feeling but an activity. Aristotle next asks the fundamental question, How is happiness to be acquired? His answer is that happiness is a matter of learning or education. He makes this point in the most explicit way in discussing the acquisition of virtue when he states:

It is also plain that none of the moral virtues arises in us by nature; for nothing that exists by nature can form a habit contrary to its nature. For instance, a stone which by nature moves downwards cannot be habituated to move upwards, not even if one tries to train it by throwing it up ten thousand times; nor can fire be habituated to move downward, nor can anything else that by nature behaves in one way be trained to behave in another. Neither by nature, then, nor contrary to nature do the virtues arise in us; rather we are adapted by our nature to receive them and are made perfect by habit. (1103a14)

The next central question is the definition of virtue. As is to be expected, the first task is to determine the genus and the second the differentia. The genus must be one of three things, a passion, a faculty, or a disposition. After developing his argument, not reproduced here, Aristotle concludes that the virtues are dispositions or states of character (1106a10). Even more interesting

is his characterization of the differentia of virtue. It is a "state of character concerned with choice, lying in a mean, i.e., the mean relative to us, this being determined by rational principle and by that principle by which the man of practical wisdom would determine it" (1107a1). Aristotle points out that a virtue is a mean with respect to its essence, but with regard to what is best and right it is an extreme.

Aristotle's theory of virtue as the mean between extremes is a deep-running part of his conception of the good life and one to which he devotes a good deal of attention. The more technical passages in which Aristotle talks about the mean are written in a style characteristic of elementary Greek geometry. In his influential book on Aristotle, Sir David Ross (1949, pp. 195-96) expresses skepticism about the doctrine of the mean, but in intellectual spirit it is closely related to the modern doctrine of moral expectation as developed by utilitarians and Bayesian decision theorists. I do not want for a moment to make out that Aristotle is a utilitarian, but rather to point out that his emphasis on the mean uses a general intellectual apparatus that is hard to avoid and that is, in fact, too much missing from the ethical theory developed by Ross himself. (For a rather formal development of these matters, see Suppes, 1973.)

Aristotle devotes a good deal of attention to particular moral virtues — not just the four cardinal virtues of wisdom, courage, self-control, and justice emphasized by Plato in the *Republic*. In Book VI of the *Ethics*, Aristotle also discusses the intellectual virtues. These he also characterizes as states of the soul, and they are five in number: art, scientific knowledge, practical wisdom, philosophic wisdom, and intuitive reason. There is no opportunity in the present context to examine these five intellectual virtues, but their central role in the pursuit of happiness can be stated in a general way. Their function is to provide methods for knowing what is true and thus to provide the intellectual basis for the selection of the right rule. The importance of both the moral and the intellectual virtues is emphasized in this passage:

The origin of action — its efficient, not its final cause — is choice, and that of choice is desire and reasoning with a view to an end. This is why choice cannot exist either without reason and intellect or without a moral state; for good action and its opposite cannot exist without a combination of intellect and character. Intellect itself, however, moves nothing but only the intellect which aims at an end. (1139a31)

In summary form, the aims of education for Aristotle, or for the Aristotelian viewpoint, to put it more generally, are to teach the intellectual and moral virtues necessary for right action. There is a long passage in Book VII of the *Politics* which expresses from a different viewpoint the same concept of aims. This passage ends in the following way:

The statesman therefore must legislate with all these considerations in view, both in respect of the parts of the soul and of their activities, and aiming more particularly at the greater goods and the ends. And the same principle applies in regard to modes of life and choices of conduct: A man should be capable of engaging in business and war, but still more capable of living in peace and leisure; and he should do what is necessary and useful, but still more should he do what is noble. These then are the aims that ought to be kept in view in the education of the citizens both while still children and at the later ages that require education. (1333a9)

## DEWEY

There are many different places that Dewey discusses topics falling under the general theme of the aims of education. I think, however, that I can restrict consideration primarily to his classic work *Democracy and Education* (1916), because although Dewey changes things around in terms of format and emphasis, there is remarkable consistency in his general views over many years. Moreover, the unsatisfying quality of diffuseness that permeates much of Dewey's writings is not remedied by specific details being given elsewhere. This diffuseness is a generic quality of Dewey's writings; consequently, we can get about as much out of a single work as out of the examination of several.

In the chapter of *Democracy and Education* specifically entitled "Aims in Education," Dewey is remarkably unspecific about such aims. He does begin the chapter with the following passage that mentions most of the points he develops later. Those of you who are familiar with Dewey's writings will recognize familiar themes.

The account of education given in our earlier chapters virtually anticipated the results reached in a discussion of the purport of education in a democratic community. For it assumed that the aim of education is to enable individuals to continue their education — or that the object and reward of learning is continued capacity for growth. Now this idea cannot be applied to *all* the members of a society except where intercourse of man with man is mutual, and except where there is adequate provision for the reconstruction of social habits and institutions by means of wide stimulation arising from equitably distributed interests. And this means a democratic society. In our search for aims in education, we are not concerned, therefore, with finding an end outside of the educative process to which education is subordinate.

After this passage, Dewey turns to a general discussion of the nature of an aim which he attempts to define as falling within an activity (as reflected in the remark about not seeking for the aims of education outside of education). However, from the standpoint of a systematic conceptual analysis of aims as falling within an activity, what he has to say is almost completely unsatisfactory. He draws a contrast between the wind blowing sand in the desert with the result being mere spatial distribution — "for there is nothing in the outcome which completes or fulfills what went before it" — and the activities of bees in gathering pollen, building cells, and reproducing themselves. He does not want the contrast to rest upon the fact that the bees are living biological organisms and the sand is not, nor upon any exterior notion of design or conscious intent. Consequently, he fails to provide any systematic basis for actually distinguishing between the two kinds of cases.

Dewey is on firmer ground when he simply assumes that an aim is present and discusses some of its features. He points out that the aim of an activity gives direction to the activity in at least three ways. First, it calls for observation of the given conditions to see what means are available for reaching the end. Second, consideration of the aim of the activity suggests the proper sequence in which means should be arranged in order to reach the end. Third, knowledge of the aim guides the choice of alternative courses of action available. Although the language is slightly different, this analysis is very similar to that given of a problem situation many years later in Dewey's *Logic* (1938). It is also close to

Aristotle's view. Dewey ends this particular discussion with the unremarkable statement: "The net conclusion is that acting with an aim is all one with acting intelligently" (p. 103).

Dewey next turns to the analysis of the criteria of good aims. He focuses on three characteristics. First, closely related to what has already been said above, an aim should be a natural outgrowth of existing conditions. Educational and moral theories, Dewey says, often violate this principle because they assume ends that lie outside their spheres of activities. Second, and again closely related to the first characteristic, is the requirement that aims be formed in the process of realizing them. We begin with a tentative sketch of aims and, as the situation develops, the aims directing it become more definite and clear. Again, this is in the spirit of not imposing aims from outside the activity. Third, "the aim must always represent a freeing of activities." The notion of freeing an activity is not a clear one. As Dewey explains the phrase, he seems to mean the review of the different functions that follow one another as part of the activity. He gives an example of hunting a rabbit and indicates that it is not simply shooting but also wanting to eat the rabbit or to provide evidence of marksmanship. It is apparently this complex set of activities, one following another, that is to be thought of as "freeing of activities." Put another way, an aim should have the characteristic, apparently, of setting in motion — freeing — a series of acts or decisions. It is this dynamic quality of freeing, again, that Dewey is contrasting with the overly static character of ends as sometimes discussed. He is objecting to the idea of a fixed end as something to be "attained and possessed."

In this connection, he sets forth a view of ends or aims that is very different from that of Aristotle: "Every means is a temporary end until we have obtained it. Every end becomes a means of carrying activity further as soon as it is achieved." Aristotle would object to this view as introducing an infinite regress of ends, and he would characteristically require that there must be an end that is an end for its own sake and not for anything else.

Dewey next turns to applications in education of the general discussion of aims. He sets forth three characteristics that he says are found in all good educational aims. First, "an educational aim must be founded upon the intrinsic activities and needs (including original instincts and acquired habits) of the given individual to be educated." This very much corresponds to dealing with the existing conditions mentioned earlier. Second, "an aim must be capable of translation into a method of cooperating with the activities of those undergoing instruction." Here Dewey seems to have in mind that the aim must match the capacities and current level of knowledge of the student to whom it is applied. Once again he inveighs against the vice of externally imposed ends. Third, "educators have to be on their guard against ends that are alleged to be general and ultimate." As before, the emphasis is on having the aim grow out of the context of current activity.

What is remarkable about this chapter of Dewey's is the almost total lack of specificity. With a change of only a few words, what he says about aims of

education could just as well apply to the aims of agriculture, the aims of steel manufacture, or the aims of warfare. As Aristotle might put it, there is in Dewey's discussion no serious concern for the genus or differentia of the aims of education qua education.

Dewey has more to say about aims in a later chapter on educational values. This discussion he regards as an amplification of what has already been set forth in the analysis of aims and interests of education. In this chapter he makes some typical Deweyan points, for example, the importance of prizing a thing for its own sake, or intrinsically, as the most complete act of valuation. Also, he objects strongly to segregation and separation of individual subjects in education with each having its own valuation and the total being merely a sum of the aggregate. He puts the matter this way:

No classification can have other than a provisional validity. The following may prove of some help. We may say that the kind of experience to which the work of the schools should contribute is one marked by executive competency in the management of resources and obstacles encountered (efficiency); by sociability, or interest in the direct companionship of others; by aesthetic taste or capacity to appreciate artistic excellence in at least some of its classic forms; by trained intellectual method, or interest in some mode of scientific achievement; and by sensitiveness to the rights and claims of others — conscientiousness. And while these considerations are not standards of value, they are useful criteria for survey, criticism, and better organization of existing methods and subject matter of instruction. (pp. 243-44)

In this passage Dewey is more specific than elsewhere and, in fact, it represents rather well what he feels should be taken as important in education.

I regret that the tone of my comments on Dewey is more negative than is my deeper assessment of his work. I like very much the originality of his ideas on means, ends and the initial indeterminateness of any situation that needs resolution. He just did not follow through with enough details.

#### FREUD

Sigmund Freud wrote relatively little about education as such, but the literature of psychoanalysis dealing with the development of the child and the broader framework of education, that is, education, as received from the parents as well as the schools, is fairly extensive. In particular, Anna Freud considered these matters, and we may choose, as a source very similar in spirit to Dewey's *Democracy and Education*, Miss Freud's classic lectures to Hort teachers in Vienna which appeared in English translation in 1935. A Hort in the Vienna of the 1930s was similar to our present day-care centers (except that the children were older, ranging in age from 6 to 14 years), the children spending their time at the Hort when they were not at school, either because their parents were working or because there were difficulties in the home. Thus, the teachers to whom the lectures were addressed were not ordinary school teachers but ones who dealt with the children in a more personal and less scholastic way than would ordinarily be the case. This fact, however, does not affect the content of the lectures too much, only certain points of emphasis. Miss Freud's work is divided into four lectures, and I shall try to convey here the Freudian principles she considered important to introduce to teachers.

The first two lectures concern the prelatency child — that is, the child before he enters school at the age of five or six — and are devoted to the development of the following themes. First, education must be considered to begin on the first day of life and not when the child enters the formal school setting. Second, the instinctual life of the child must be taken into account if education is to succeed, or, put another way, too narrow a view of the purpose of education is doomed to failure. Education has as its general aim to make the child become like the adults around him, and consequently, both parents and teachers must engage in a constant struggle with the instinctual life of the child.

Miss Freud lays out some of the main components of this instinctual life: sibling rivalry, the Oedipus complex or rivalry of the male child with his father (she does not discuss the corresponding situation for the female child), and the transference of this constellation of family feelings to the school, often with student peers playing the role of siblings and teachers receiving the feelings already developed toward parents. She stresses the importance of viewing as natural the robust instincts of the child and the fact that they follow definite stages of development. The following passage vividly depicts this “natural state” of the child which the parents or teachers must struggle to change.

The child is frightfully inconsiderate of others and egotistic; he is only concerned with getting his own way and satisfying his own desires; he is quite indifferent as to whether this hurts others or not. He is dirty and odoriferous; he does not mind catching hold of the most disgusting things or even putting them to his mouth. He is quite shameless so far as his own body is concerned and very curious about the things that other people wish to conceal from him. He is greedy and will steal dainties. He is cruel to all living creatures that are weaker than himself and filled with a perfect lust for destroying inanimate objects. He has an abundance of naughty bodily tricks, he sucks his fingers, he bites his nails, he picks his nose and plays with his sexual organs; he does all these things urged by his intense desire for self-fulfillment, and regards the slightest hindrance as intolerable. (pp. 46-47)

I have deliberately used the word *struggle* because perhaps one of the most important general conceptual messages of Miss Freud is the continual presence of conflict in the emotional life of the child. The problem for education, as she emphasizes, is to be neither too repressive nor too permissive, but the wisest message of all is that conflict is inevitable and should not be considered unnatural.

The natural stages of development and the corresponding activities characteristic of each stage are reviewed in simple, clear, but vivid prose. The oral stage, lasting the first year and part of the second, the anal stage of the second year, and the genital stage, reaching its most active point during the fourth and fifth years, provide a way of fleshing out the details of the kinds of instinctual life of the child that are to be expected as a natural part of his development. The point is made again that the role of education is to train the child to restrain the gratification of his impulses at each of these stages.

Most unfortunate for the development of the child has been the tradition of imposing education on the child by force (as if it could be done), either by threat of direct punishment or by threat of the loss of love. The phenomenon of

infantile amnesia is the residue of such measures taken to change the child, for as the child adopts the viewpoint and values of the adult he represses his past, which is full of so many experiences and feelings that are now not acceptable.

The third lecture concerns the latency period, from the fifth or sixth year until the beginning of adolescence at about the age of 11, 12, or 13 years. This period is marked by the repression of the instincts characteristic of the earlier stages. Various mechanisms are at work in this repression, for example, reaction formation by the child toward his own excrement. He passes from a desire to taste and touch it to a strong feeling of repulsion. Many desires from the earlier stages are sublimated. The earlier preoccupation with urine and feces is replaced by pleasure in games with sand and water or with mud or paints. There is, as already remarked, in the latency period a transference of the love for the parents to love for the teacher, but this transference does not ordinarily carry with it the same strength of feeling, and is often accompanied by the teacher becoming an ally, so to speak, of the superego of the child. The strength and, indeed, violence of his love for his parents begin, during latency, to become more detached. This period, which is called the latency period because of his escape from the force of his instincts, is generally a period of emotional calm. That the child is, at this stage, especially receptive to learning has been recognized in education from time immemorial.

Adolescence witnesses to some extent a repetition of the stages prior to the latency period. There is a revival of strong emotions, especially of sexual instincts, and the school must be prepared for this change in the instinctual life of the child.

The last of Miss Freud's lectures concerns the relation between psychoanalysis and pedagogy. There are, she says, three important clusters of ideas that psychoanalysis brings to our understanding of the child. The first concerns the division of his development into stages having the characteristics discussed above. The second has to do with the growth of the child's personality, beginning with the instinctual life and followed by the development of the ego and the superego — which is derived from the impact of the parents and constitutes, if you will, the parents' primary contribution to his education. The third cluster of ideas concerns the interactions between the various parts of the child's personality. One of the most important mistakes of classical pedagogy is to think that development can be a peaceful process. There is conflict between the ego of the child and his instinctive desires. There is, at a later stage, conflict between the libido and the superego, and also, at a still later stage, between the ego and the superego, between new knowledge and the deeply held habits and ways of looking at the world acquired from his parents.

Almost uniquely among important philosophies of education, psychoanalysis recognizes an explicit need to limit the goals of education. Without such limitations, education tends to drive out the important part that instinctual desires and drives should play in the life of the child and the adult. The profound problem of education is to find the right proportion of instinct gratification and



instinct restriction. This brief description of the main themes of Miss Freud's lectures gives a good summary of what psychoanalysis does bring to education. A great virtue of Miss Freud's statement is its simplicity and clarity of language.

I restrict myself here to a second work on education written from a psychoanalytic standpoint. This is a short work written in the 1920s by Siegfried Bernfeld, *Sisyphus or The Limits of Education* (1973), which has only recently been translated from German into English. Bernfeld's trenchant analysis of the limits of education is a salient corrective to the optimism of Dewey that reflects too often the idea that more is better, but there is naiveté in other directions in Bernfeld's own thought, especially in his advocacy of socialism as a cure for most if not all problems of society. I shall not be concerned with this aspect of Bernfeld's thought, but instead with his penetrating remarks about some of the intrinsic problems of education that cannot be overcome by any conception of aims or system of implementation no matter how idealistically or optimistically conceived. Bernfeld's basic thesis is that the situation in the school duplicates the situation of the family. The darker psychological side of the family can no more be avoided in the school than it can be eliminated in its original setting.

The limitations of education that cut through the naive idealistic aims of educators are based on deep-running psychological facts that are too often ignored in theories of education. Bernfeld does not muster the kind of detailed empirical evidence on these matters that one would like, but there is much that is appealing about his central thesis. Even if we quarrel about the details, the aspect of education that he brings to the surface and scrutinizes is one that has too seldom been pursued in setting forth the aims of education. I summarize in somewhat bald form the limitations he emphasizes.

1. Teachers are trained to instruct and not to educate. Professional training in instruction is possible, but not in education, given the present makeup of the teaching profession and the institutions that train them.
2. There is a nascent science of instruction; there is no science of education, and there is none in sight. Statements of aims of education are based on sentimental ideals that have no serious chance of being realized.
3. Educational theories have an almost entirely naive conception of childhood, because educators think about childhood and the life of the child in terms of their own conscious memories of the past, but not in terms of the darker side mentioned earlier.
4. Past achievements of great educators are "intuitive products of art, they are not science. Valued as poetry, they may rank high, but by the same token their value as science will be low. The question is, however, whether they want to be and should be valued as poetry. To have to ask that question only shows how disagreeable the situation really is" (p. 23).
5. Educational theory and the statement of the aims of education are awash with a priori assertions. "The science of education asks how children behave, not how they affect the observer. But the great pedagogues of

history are concerned with how and what they feel toward children, with emotions such as love, pity, hope, disgust and horror. They do not see the child as it is but only the relationship that exists between it and themselves. Even if they were able to leave themselves out of it, the question as to what the child is, in and by itself, still would not interest them because their sole concern is how to transform it into something else. To them the child is a means to some theological, ethical, or utopian end" (pp. 24-25).

6. More particularly, both the aim and the object of education are given apart from experience. "These pedagogical theories are so constructed as to put them beyond the range of verification. However they may differ in content, presentation and systematic rigor, they rest alike on two fundamental constants that defy empirical examination and correction. These are the aim and the object of education. The views of the object of education, the child, are uncontrollably influenced by unconscious drives while the aim of education is treated as given. The pedagogues will accept nothing less than the highest ideal—moral, social, religious, or intellectual—as the aim of education. It is beyond question, it exists for them prior to and independent of experience" (p. 25).

As is evident, both Anna Freud and Siegfried Bernfeld write much more in the spirit of philosophy than of scientific psychology, but Dewey does as well. Their suggestive ideas need positive buttressing and much critical assessment from a scientific standpoint, but any view that reduces the aims of education to standard scientific results is bound to fail, a point which I amplify in the next two sections.

#### PROSPECTS

The diversity of views cited and analyzed thus far gives clear indication that there is no one acceptable high road to the aims of education. Of the philosophers and psychologists I have cited, Bernfeld is the one who most clearly recognizes the great difficulties of the task of adequately formulating such aims. Without attempting to be at all inclusive, I do want to end by suggesting various kinds of intellectual work that can contribute to a better formulation of the aims of education.

First, we need to make good use of the wide agreement on the restricted aims of instruction and of the possibility of building from this base a sounder structure of educational aims. Every society and essentially all institutions responsible for the public education of the young recognize the priority that should be attached to instruction in the basic skills of reading, language, and elementary mathematics. There are other matters of instruction that are nearly as widely agreed upon. A systematic formulation of aims should build as thoroughly as possible on this wide factual basis of agreement.

Second, we need a theory of right action that extends and develops the excellent intellectual basis laid down by Aristotle. This theory should satisfy many aspects of the demand for moral education in the schools, but at the same time it should lay down a wider framework of the theory of rational decision

making that is implicit in Aristotle's thought and that has been developed explicitly and carefully in our own time. In Book VI of the *Ethics*, Aristotle says, "There are three things in the soul which control action and truth — sensation, reason, desire" (1139a17). In the theory of modern decision making, sensation corresponds to beliefs about the true state of nature, desire corresponds to the evaluation of consequences, and reason to the choice of the action or decision that maximizes expected value. Instruction in the theory of rational action should be a primary aim of education.

Third, we need to take a lead from Bernfeld and try to develop a clearer view of what part of the education of the child is the responsibility of the school and what restricted aims are appropriate within the institutional setting of schooling. The importance of making explicit the restricted responsibilities of our educational institutions is enhanced by the fact that young people in our society are now attached to these institutions until they are way past the beginning of their adult lives. That such restrictions are in fact operative is evident from many studies. I mention only the salient fact that the average young person graduating from high school will have spent more hours watching television than he will have spent in the classroom.

The kinds of things I have just been urging represent part of an old and honorable tradition of informed philosophical discourse about the aims of education. To reach a deeper formulation of aims of the kind hinted at by Bernfeld, for example, we need a much more adequate theory of the psychological functioning of individuals, both young and old. Such a developed psychological theory would not be in conflict with the philosophical tradition just mentioned. Aristotle, for instance, had the sort of sane views that combined philosophy and science. He certainly thought that he had, at least, the outlines of a scientific psychology as expressed in *De Anima* and in parts of the *Ethics*. An appropriately rich scientific psychology will in no sense be restricted to study of the cognitive structures which are currently so popular, but must include a full theory of human character, desires, and actions.

In the opening pages of *The Future of an Illusion* (1927), Freud discusses two features of human beings that constitute, he thinks, a sharp upper bound on what can be achieved by education: "To put it briefly, there are two widespread human characteristics which are responsible for the fact that the regulations of civilization can only be maintained by a certain degree of coercion — namely, that men are not spontaneously fond of work and that arguments are of no avail against their passions" (p. 8). As we near the end of this century, it is proper to speculate whether the next hundred years will be sufficiently fruitful scientifically to celebrate, at the end of the next century, a new science of man that better understands what our limitations are and, therefore, what our hopes and aims can be.

#### ANTINOMIES OF EDUCATION

A good many years ago I stated four closely related antinomies of education that I want to focus on to bring to the surface my views about the deeper analysis

of aims of education (Suppes, 1968). For uniformity of terminology I shall call each of the antinomies by the term that relates to the child-centered side of the antinomy rather than to the curriculum-oriented side. This corresponds, in moral philosophy and epistemology, to talk about the antinomy of freedom rather than the antinomy of necessity. (Those familiar with Kant's *Critique of Pure Reason* will recognize the meant-to-be affinities with the four famous antinomies he states in the Transcendental Dialectic.)

*Antinomy of Adjustment.* On the one hand, the principle is asserted that the school, particularly the elementary school, should be organized to provide the maximum amount of personal and social *adjustment* for the individual child. On the other hand, the principle is asserted that the school should be organized to provide the maximum amount of *achievement* on the part of the individual child. When these two principles are joined with some fairly widely accepted factual statements, an antinomy or contradiction is easily derived.

*Antinomy of Method.* The principle is asserted that in teaching we should maximize learning and problem-solving *techniques* independently of content, and selection of curriculum material should maximize student involvement and motivation. On the other hand, the principle is asserted that we should maximize the *content* of the curriculum in order to prepare students for specific jobs with specific skills or to provide them with a particular historical and cultural background. Dewey's *How We Think* is a typical defense of method and the Hutchins's program of great books a defense of content.

*Antinomy of the Child.* The principle is asserted that the school, particularly the elementary school, should be centered entirely on the *child* and not on the curriculum. On the other hand, the principle is asserted that the schools should, at all times, emphasize the *curriculum* because teaching the curriculum is the proper function of the schools, while the personal development of children is the responsibility of other segments of society, especially parents.

*Antinomy of Freedom.* The principle is asserted that the schools should endeavor in all ways to develop *freedom* of speech, thought, and choice. On the other hand, the principle is asserted that the schools should endeavor in all ways to develop a sense of *discipline* and criticism that satisfies the highest possible intellectual standards.

It is clear the existence of these antinomies does not stop the ordinary business of education. What it does mean is that there are problems in the foundations that we too easily avoid. Kant's solution to his four famous antinomies rested upon insisting that they each be conditioned by experience, whether one proposed to uphold the thesis or antithesis. Here is how I propose we think about these antinomies and other critical problems of conflict in the schools.

The first point is that a purely first-order rational approach to the aims of education in any detail seems to me a hopeless one. The kinds of problems and tensions expressed in the four antinomies I have stated should make anyone skeptical of finding a strong line of argument that will lead directly to detailed

rational methods of resolving strongly held differences about what should be emphasized in the schools.

The antinomies in the foundations of mathematics were resolved by following Kant's line of moving away from absolute totalities to conditioning, or, as we might put it in the present framework, compromise. But it is not compromise in the sense of negotiation that resolved the antinomies in the foundations of mathematics historically, but very explicitly stated principles that were restricted in scope.

In contrast, in the case of conflicts about the aims of education, it is explicitly problems of conflict resolution that need to be addressed. To repeat, methods of restricted scope of a first-order nature, characteristic of the foundations of mathematics, need to be replaced by second-order principles of conflict resolution. It is not part of the introduction of such second-order principles to claim that they, in contrast to first-order principles, can be given a complete and consistent rational formulation. There is much evidence in the literature that this is not the case. A famous example is Milnor's argument (1954) to show that a natural set of intuitive principles of rational decision making are, taken together, contradictory.

Rather, what is important in my judgment is to emphasize that teachers, parents, school boards, and administrators need to recognize that conflicts are inescapable. Conflicts between administrators and parents for example, cannot be fobbed off with complicated technical jargon about education. The conflicts are real and cannot be dismissed. They must be negotiated. What we must aim for is to increase the sophistication of all parties in thinking about how conflicts can be resolved. What are the best methods for approaching conflict resolution? Here all the dilemmas of politics are writ small, but with equal intensity. Bargaining, the formulation of coalitions, the timing of strategic moves, all the elements of politics, necessarily enter into the arena of decision making on fundamental policies about curriculum, school organization, school management, or even styles of teaching. Some typical examples of conflict are given in the Appendix.

It is unfortunate that the rhetoric of education, like the rhetoric of democracy, does not often enough explicitly recognize the necessity of extended methods of conflict resolution and the necessity of using them effectively.

There is another important point, however, on which I want to end. Conflicts about aims are not simply conflicts about general principles. They are often conflicts generated by differing opinions about what are, at bottom, matters of fact. One of the best incentives to research in education is the desire to provide a better factual basis for resolving conflicts about aims. One could even go so far as to claim that one of the primary functions of educational psychology should be to engage in scientific investigations that are focused on the issues that are the greatest sources of conflicts about the curriculum and activities of the schools. It is not that scientific investigations can settle the conflicts, but they can give the conflicts a deeper and more sophisticated

framework for discussion and resolution. Something can be learned from the past, especially from some of the philosophers and scientists I have quoted. But what is essential is not to believe in a mirage of agreement about aims.

What we should strive for in setting aims for our schools, and in fixing policy in general, is clarity about methods of conflict resolution and to recognize that we shall not find conclusive scientific or philosophical arguments that will ever fix the aims uniquely on any issue of importance.

#### APPENDIX

In this Appendix, I give a number of specific examples of conflicting goals which cannot be settled by first-level rational argument but require negotiation and bargaining among interested parties.

#### EXAMPLE 1. ALTERNATIVE OBJECTIVES AND STRATEGIES FOR ALLOCATING COMPUTER AND TEACHER TIME AMONG STUDENTS.

| Objective                                                                                                | Strategy                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Maximize mean grade placement.                                                                        | Give most time to fastest learners.                                                                                                                                              |
| 2. Minimize variance.                                                                                    | Give almost all time to slowest learners.                                                                                                                                        |
| 3. Maximize mean grade placement subject to not increasing variance.                                     | Give more time to slower learners but not as much as 2.                                                                                                                          |
| 4. Maximize number of students at or above grade level.                                                  | Give most time to students who can barely reach grade level; give no time to students who are already above grade level or who would take a very long time to reach grade level. |
| 5. Maximize number of students who gain at least one year or some other goal expressed in amount of gain | Give most time to students who can just barely reach goal; give no time to students who have already reached the goal or who would take a very long time to reach it.            |
| 6. Equal time to all students.                                                                           | Uniform assignment of time.                                                                                                                                                      |

Table 1: Alternative Objectives and Strategies for Allocating Computer and Teacher Lesson Time Among Students

In this example I take as a detailed statement of conflicting objectives Table 1 from Malone, Macken and Suppes (1979). Notice that in Table 1 we go from elitist to utterly egalitarian objectives. What is important in the present framework is not to try to argue for how the chosen objectives should be selected, but rather to emphasize that there are no knock-down rational arguments for one of these objectives over the others.

### EXAMPLE 2. ISSUES OF PRODUCTIVITY IN EDUCATION.

Let me start with my remarks with a depressing comparison of the historical facts for agriculture and education in the United States (Suppes, 1982).

Let us look at the data in 1870 for American elementary and secondary education and for college education and compare the ratio of students attending school or college to the ratio 100 years later in 1970. They are directly available in *Historical Statistics of the United States* (U.S. Bureau of the Census, 1975), and they show essentially no change over a 100-year period. In 1870 there were 4,077,000 school students and 201,000 teachers, which gives a ratio of 20.3. In 1970 there were 41,934,000 students and 2,131,000 teachers, producing a ratio of 19.7 (Part 1, pp. 375-6). In 1870 there were 52,000 college or university students and 5,553 estimated faculty, for a ratio of 9.4. In 1970 there were 7,920,000 college or university students and 729,000 faculty, for a ratio of 10.9 (Part 2, pp. 382-3).

As I have done in the past, I like to contrast these data with those for agriculture. In 1870, an American agricultural worker produced enough food for 5.1 persons, but in 1970 the corresponding worker produced food for 47.1 persons (Part 1, p. 498). There is essentially an order of magnitude improvement in the productivity of agricultural workers and essentially no improvement in the productivity of teachers.

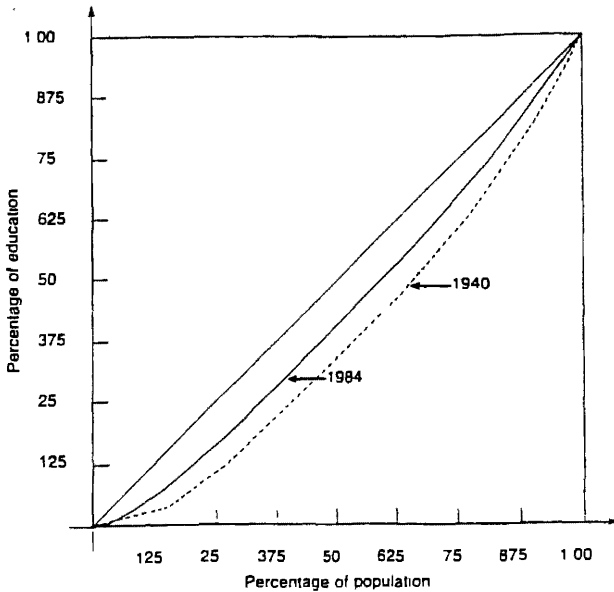
It is easy to inflame the tempers of all kinds of individuals sitting on either side of the productivity fence, as to whether there should be a serious attempt to increase the productivity of schools by decreasing inputs, especially by a gradual increase of student-teacher ratios, or by an increase in the annual working hours for teachers. Another approach is to push for an increase in outputs. I will not try to survey the many aspects of this controversy but only emphasize that it is evident that our educational institutions, and especially universities, are famous for their conservatism when it comes to their own organizational arrangements. It is obvious that there is no direct rational way to settle what should be the detailed productivity objectives for schools or universities who are supported primarily by public funds.

### EXAMPLE 3. EQUITY OF DISTRIBUTION OF EDUCATION.

A measure of equity in the distribution of education is the standard Lorenz Curve for the number of years of education where the Lorenz Curve is given the standard definition familiar in mathematical economics. (In this brief analysis I follow Suppes, 1988.)

I show in Figure 1 Lorenz curves for distribution of education in the United States in 1940 (*Historical Statistics*, Series H602-617, 1975) and in 1984 (*U.S. Bureau of Census*, Table 216, p. 133, 1985). To construct the curves I have treated years of education (0-16+) the same as income. The tables referred to use the same grouping of years, with seven data points. There is one difference, however. The 1984 data are for the entire population, but the 1940 data are for the entire male population. Fortunately, the 1940 data for the female population are very similar. (The data points are for 2, 6, 8, 10, 12, 14, and 16 years of

FIG. 1. EMPIRICAL LORENZ CURVES FOR DISTRIBUTION OF EDUCATION IN THE UNITED STATES



schooling, with .2 years the average for 0-4 years, etc. Undoubtedly this distribution assumption for the intervals 0-4, 5-7, 8, 9-1, 12, 13-15, and 16+ is not entirely accurate, but good enough to sustain the generalization asserted below. There are also some minor discrepancies in these intervals for the 1940 data but again not enough to be significant for the purposes at hand.)

Now it is a well-known and familiar fact that the number of years of education has certainly increased in the United States on the average between 1940 and 1984. For the populations indicated above, the median number of years of education in 1940 was 8.3, and in 1984 it was 12.6. (For females in 1940 it was 8.5.) But as in the case of income an increase in the median does not necessarily imply an increase in equity. On the other hand, it is clear from the two Lorenz curves of Figure 1 that there has been a marked decrease in education inequality between 1940 and 1984, and consequently an increase in equity on this dimension. I take this result to be a surrogate measure for the improvement in equity of the quality of life in the United States from 1940 to 1984 — at least from an Aristotelian standpoint. But in the present budget crisis in public funding of education, there is no visible first-order rational argument to determine what should be the current budgetary emphasis on problems of equity



These three examples are but a small sample of the many conflicts about aims we necessarily face, not because of bad faith, or ignorance, but because of the nature of social goal setting in a civil society with a proper sense of pluralism.

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