

Two Wrong Steps for Curriculum Structures of knowledge and stages of development

It seems natural enough to resort to one or other of two related lines of enquiry when submitting education to serious study. After all, we have the familiar play upon words in answer to the question, what do you teach? Some answer as expected by giving the name of a branch of knowledge; others, more provocative, will say "children", or words to that effect. So curriculum-making has tended to rely on the results either of analyzing the structure of knowledge, or of detecting stages of development in individuals. Kieran Egan is not quite too polite to say so - he thinks both are a waste of time for people in education, and points to history curriculum as his example. Worse, they have commandeered all room for thought about curriculum, preventing adequate follow up of such productive and genuinely educational ideas as Whitehead's - of a stage of "romance" preceding a stage of "precision". Psychological stages are irrelevant in an essentially cultural process such as education is. The search for structures of knowledge is less harmful as an influence, but only because it has been less influential.

There is a common view that the way to address educational problems is to draw on the research tools and findings of various disciplines. In this view the study of education is a complex interdisciplinary task which involves welding together facts from the social and behavioral sciences, philosophical analyses of knowledge and values, future-oriented assessments of society's functional and other needs, and perhaps also some transcendent image of the educated person.

The aims of the educational process, in this view, are somehow set by "society". Philosophers do not set these aims, but they may serve to articulate them, show how they may be justified, or not, and make explicit the value assumption on

which they rest. As a part of this job philosophers may be expected to show what knowledge best contributes towards these aims and to tell us about its "structure".

In addition there are many facts that have to be established; facts about the relative effectiveness of different methods of instruction, about children's development, about the influence of family background and linguistic environment on academic achievement, about the administrative structures of schooling, and so on. "Science" is the stuff to use in order to establish the facts, and so, in this view, it is the most assertively "scientific" researchers who are looked to for such knowledge.

The role for curriculum researchers within this complex world of educational study is to take the aims provided by "society", the knowledge organized by philosophers, the facts given by psychologists and sociologists, and compose from these a curriculum. Or, more modestly, individual curriculum researchers may focus on some part of the sprawling fields of study that seem to impinge in various ways on education and sketch its implications for the curriculum.

My argument is that this common view of the proper way to study education is mistaken. It yields endless labour for endless researchers and inquirers but it yields little, if any, educational fruit. Its evident failure to yield fruit is not, I will argue, a contingent matter - due to our not having been clever enough in our inquiries or persistent enough in our research - but follows of necessity from the fact that it has been looking in the wrong places for the wrong things.

Two separate explanations

Influential in our traditions of inquiry, because so successful, has been the method of isolating objects for study, separating them from whatever they may be contingently connected with. The educational problem of dealing with the dialectical process of children growing older and of knowledge accumulating in them, and their thus becoming more sophisticated intellectual beings, has yielded distinct inquiries: a psychological one into children's cognitive development and a philosophical one into the nature and structure and logical development of knowledge. By better understanding these separately, it is assumed, we may bring them back together to resolve better the educational problem.

I will argue that the methodologies used in the distinct philosophical and psychological inquiries ensure that the problems addressed are significantly different from the educational problem with which we hope to deal, and that the contributions they offer can be accepted only at the cost of perverting the educational process. Before criticizing the educational value of these two areas of inquiry, however, let us look briefly at an ancient and irksome problem they face when attempts are made

to separate them.

It is hard to see how far developments of the kind we observe as important in education are caused by some natural cognitive maturation and how far they are caused by the acquisition of knowledge and experience. There is a tendency now, due to the influence of a particular kind of developmental theory, to see the two as "feeding" each other; thus experience and knowledge stimulate cognitive development, which in turn permits the acquisition of more complex knowledge, and so, dialectically, on. (This is not to say that this is the claim of any particular theory, but rather that the influence of some developmental theories has helped create this as the general "common-sense" position.)

To try to clarify the problem, it might be useful very briefly to look at the extreme claims on either side of this "common-sense" position. On the one, "structures of knowledge", hand is the claim that there is no such thing as cognitive development. The developmental stages described in some psychological theories are not, in this view, descriptions of a natural maturational process but are simply reflections of developments in knowledge and language. The mind, then, is not to be seen as in any sense analogous to a physical organ that grows and develops in a particular way if given appropriate food and environmental support - in the case of the mind, knowledge and experience of social interactions being the appropriate food. Accumulating knowledge and experience are not stimulants to mental growth; they **are** mental growth.

The extreme claim on the other "stages of development" side is more familiar today due to the influence of Piaget. It is that the most important developments we observe in education are due to the natural and spontaneous unfolding of a sequence of cognitive structures. Their growth and development follows an invariant pattern more or less regardless of the particular knowledge and experience learned, as long as the child interacts appropriately with an adequately rich social environment. In this view, "thinking skills" - the ability to deal cognitively with any content - is a result of this underlying process of cognitive development going forward and not being inhibited by constraining pedagogical practices or impoverished interactions with restricted environment.

So, if we observe that young children have difficulty understanding certain kinds of abstractions, the latter position will explain this as caused by certain cognitive structures not yet having developed; the former by certain abstractions becoming meaningful only after certain sets of concrete particulars have been learned. For one group, the explanation is an age-related, psychological matter; for the other, it is a time-related, logical matter.

History in the Curriculum

As an introduction to some criticisms of both areas of inquiry I will consider briefly the place of history in the curriculum. Though there are widely divergent views about how much and what kind of history there should be in the curriculum, it is generally assumed that becoming educated entails accumulating some knowledge of history. If we try to focus on educational questions about history we might generally be interested in what role it should play in a person's education, how important it is vis-a-vis physics and computer programming, how much curriculum time should be given over to it, what history we should teach first, and how we should sequence a history curriculum, how we should organize its teaching at different ages. Let us consider one answer given to a part of one of the above questions and see what we may learn of the method that produced that answer, and what the answer suggests about the two main inquiry methods I am trying to criticize.

A.N. Whitehead in his seminal essay "The Rhythms of Education" proposes that in education a stage of romance should or properly does precede a stage of precision. What kind of claim is this? It is clearly not a straightforward logical or psychological claim. It is not a claim that it has been empirically established that a stage of romance is a prerequisite to a stage of precision. Similarly he is not claiming that as a matter of logical necessity romance must precede precision. He is claiming rather that for the fullest understanding of a subject, as Elton has claimed for history in particular, our curriculum **ought** to ensure that units of teaching focus on stimulating a romantic engagement with the subject matter and that this should be followed by a focus on developing precision.

But - to make matters a little more complicated - Whitehead is clearly not making an arbitrary prescription. He does think that if one wants to educate someone to have an historical consciousness, for example, then there is some sense in which a stage of romance is a kind of logical prerequisite to a stage of precision, and some sense in which he clearly believes that it could be empirically established that this sequence is required for reaching the aim of an historical consciousness.

Now we need to explore the "in some sense" and "kind of" qualifiers in the above. Any process is largely defined by its starting and ending points. If we focus on a particular strand of cognitive development whose end is a stage of formal operations, then the stages of the process are in some degree defined by their accumulating contributions towards that end point. If the end point is historical consciousness then the process will be defined in terms of the major cumulative stages towards that end. Given an end point such as "historical consciousness" it is on the face of it quite plausible that careful observation might expose, as an hypothesis if you will,

cumulative stages which we may call romance and precision.

Is Whitehead's, then, a logical - in the imprecise sense I'm using that term in this paper - or a psychological claim? Nothing in the "structure of knowledge" kind of analysis has yielded anything like a distinction between romance and precision, nor any suggestion that the sequencing of a history curriculum should be significantly discontinuous in such ways. Nor has any study in the "stages of development" tradition come to grips with stages of Whitehead's kind. The basic unit of such research is typically the concept, and the methodological tools available in this area are unable to come adequately to grips with such general processes as accumulating constituents of such complex ends.

Whitehead's and Elton's observation is introduced here to point up the fact that it is quite distinct from and indeed alien to whatever is or has been produced from the "stages of development" and "forms of knowledge" inquiries. My argument is that if we accept these methodologies from psychology and philosophy as appropriate determiners of what can count as educationally significant knowledge we will in fact discover nothing of genuine educational value; we may be able to use some of the products of this research but only at the cost of perverting the process of education. Observations such as Whitehead's, for example, must simply vanish when these research methods are dominant. This is what has happened. What has kept Whitehead's essay alive is the persisting sense that the process of education is something autonomous and complex and that his observation is rich and potent.

Structures of knowledge

The "structure of knowledge" inquiries, insofar as they are intended to have implications for education, aim to uncover networks of related concepts, inferential and deductive structures, and the kinds of propositions proper to each area of knowledge. From these exposed structures the researcher then seeks to discover principles that might help in designing a curriculum. On the face of it this seems a relatively straightforward, though obviously difficult, enterprise. Its plausibility derives from the common-sense observation that in teaching, say, mathematics we will teach addition prior to mathematic forms that require addition plus some further competence. Thus more refined inquiries may seem likely to expose more subtle logically required sequences.

One difficulty this apparently straightforward inquiry runs into almost immediately is that even in the apparently clear case of mathematics, it seems possible to begin building almost anywhere the network of skills and knowledge that accumulate to sophisticated mathematical understanding. That is, the apparent structure of the subject seems not to yield such obvious guides to the sequencing of instruction as at first

appears likely. As Philip Phenix has already made clear, even when we can establish logical priority in a discipline this does not entail temporal priority in instruction (Phenix, p.285).

A second difficulty that becomes plain shortly after the first is that it becomes obvious that any complex field is amenable to a vast number of structural characterizations. What we mean by "logical order" can have a strict meaning only in certain areas of mathematics and even more restricted areas of the physical sciences. What we mean by logical order in, say, history is quite a different matter. It is difficult to discover any set of deductively ordered theories, concepts, and phenomena. We might better follow Kneller's usage and call such structures "pseudological" (Kneller, 1966).

So our search for guidance from logical structures seems to run into problems immediately. We find there is very little that can be said clearly about the logical structure of even the most tightly organized disciplines, and that little carries no or remote entailments for the sequencing of the curriculum. We find also that ~~the~~ structure of most disciplines is a mirage. As we come closer the apparent structure breaks up into endless shimmering bits and pieces. Once we concede that there is nothing privileged about any particular structure, we are left with no good reason to infer from any particular structure principles for the sequencing of subject matter. Or perhaps better, we are left with equally good reasons to infer such principles from any structure - which is not quite what we had in mind when we set about the search.

Surely we cannot dismiss a large enterprise so casually. Paul Hirst argues that:

"What is needed is a much more careful examination of what the logically necessary features of areas of knowledge are and, in particular, the extent to which learning a subject involves adherence to what can loosely be called rules of logical order. Once these questions are answered, we can hope to see more useful empirical investigation in this area". (Hirst, 1974, p.120-121)

But why does Hirst think that such questions are answerable? What would the rules of logical order of history look like? What kinds of concepts would they embody? Concepts such as "revolution", "social change", and so on? But the primary stuff of history is the particular - what Alcibiades thought or did or suffered. And even if someone could sketch the rules of the (a) logical order of history, what relevance would they have for education? Hirst seems to think they would provide us with grist for empirical investigation. We presumably take our rules - which we have reasons to think are not securely establishable; infer from these a curriculum sequence - a kind of inference we have reasons to think will be largely arbitrary; and then empirically investigate which sequence produces the best historical understanding in children - a kind of

empirical question which our available methodologies cannot begin to come to grips with.

Perhaps this is unfair. But consider again Whitehead's and Elton's category of romance. None of the things recommended here will uncover, in the structure of history, the student's romantic appreciation of history. It cannot emerge from the structure of knowledge because it is not a part of the structure of knowledge. It is a part of what happens when we use knowledge for human purposes. It can emerge only when we consider education; it cannot emerge when we consider psychology or structures of knowledge separately.

At present, then, there seem good reasons to doubt that the kind of research program that has been going ahead under the name of structures of knowledge and which Hirst proposes, is likely to provide us with principles derived from the structure of a discipline that will guide our construction of the curriculum better than the kind of common-sense or better "educated" principles we have available to our own reflection.

Hirst and Peters (1970), however, argue that the kind of analysis Hirst has performed in establishing the "forms of knowledge" helps to clarify what is or ought to be meant by a general education. Their arguments in favour of width and depth of understanding then allows them to specify rather precisely how the breadth criterion may be satisfied. A curriculum which aims to provide a general education must be organized so as to initiate children into each one of the distinct forms of knowledge.

Hirst's divisions show areas that share distinctive concepts, logical structure, and manners of testing the truth of their claims. He argues that as the different forms of knowledge represent the set of significant ways of knowing, to be lacking in any one or more of them constitutes clear and unarguable gaps in one's experience, and such gaps have to be considered educational deficiencies.

But decisions about the width and breadth of knowledge required for a proper education are made on grounds quite different from any that Hirst's "forms of knowledge" rest on. If we agree that there should be initiation into all forms, it will not be because we are impressed or convinced by Hirst's divisions of the epistemological universe. In this at least we must agree with Robin Barrow (1981) that nothing follows from Hirst's kind of analysis for what the educator should do - however persuasive one might find it. The "forms of knowledge" might provide a usable heuristic for a curriculum designer, but that is quite different from its intended purpose as a principle guiding and constraining the designer to construct a curriculum in a particular way.

Stages of development: two kinds of attack

I refer specifically to Piaget's work under the "stages of development" heading because his theory has been most influential in education, both on educational practice and on thinking and research on development. A fundamental assumption of this thinking and research, of Rousseau and Dewey as well as Piaget's, is that there is a natural substratum to cognitive development whose process can be exposed by empirical inquiry, and that conforming with this natural process is one influence which should determine educational prescriptions.

What is wrong with this?

First and most generally, it underestimates the degree to which human beings are cultural animals. Even those appetites and behaviours which we most clearly share with our animal relations have been transformed for us by our language and culture. It is reasonable to assert, in a perverted echo of Ortega y Gasset, that human beings do not have a nature; what we have is a history and culture. There are two ways of using this observation to attack the program of educational intrusions by cognitive developmental psychology.

The first and most extreme argument is to point out that the presumed subject matter of this area of research does not exist. It is not a matter of it's simply being difficult to separate the fundamental natural process of development from the overlay of cultural contingencies. It is impossible, because our nature is absorbed by our culture; we are essentially cultural animals. Methods of inquiry that were developed and are designed for inquiring into natural phenomena are not much good for inquiring into cultural phenomena - and our cognitive development is a cultural phenomenon.

The second and less extreme argument is to argue that while indeed a methodology with the presuppositions underlying the "stages of development" field may turn up some interesting facts about human cognitive development, such facts will be too remote from the proper interest of educators to have any significant implications for education.

"The topic is not isolable": Prong 1

The general argument on behalf of the first position is two-pronged. The first prong follows from a close examination of the results of the experiments which yield the data on which the developmental theory in question rests. From the argument that human beings do not have a nature, we will want to show that the data which support the theory are not data about the nature of human development, but are simply descriptive of a particular form of enculturation. So Piaget, for example, claims to have characterized in his theory something that is true about the way human beings develop. If we believe that human beings

do not have a nature, in the sense indicated above, we will begin by doubting that Piaget's claims can be true, and the nature of our doubts will focus our attention on particular areas of the theory. We will focus on those areas which claim to describe invariant developments and those which claim universal applicability.

I do not intend to deal in detail with Piaget's theory here (see Egan, 1983), but I will simply quote the results of some extensive reviews of experimental data. The first obvious area on which our particular doubt will focus our attention is cross-cultural studies. If Piaget's theory describes something natural then it will be true for everyone. But the nature of Piaget's theory makes it unlikely that we will discover straightforward confirmation or disconfirmation of his claims.

He does note that if his claims about the fundamental nature of the mental developments is true, "it would naturally mean a certain constancy or uniformity in development, whatever the social environments in which individuals live". (Piaget, 1976, p.260) The trouble is that it is not clear what findings would disconfirm his theory. That may seem odd, but it needs to be remembered that Piaget's is an odd theory. It is very sophisticated, and complicated, in the way it mixes logical claims and psychological data. Piaget is of course explicit about this, naming his area of study genetic epistemology. As a number of critics have observed, significant parts of Piaget's theory are not matters of empirical discovery but of logical necessity. For example, it is not an empirical matter that concrete operations precede formal operations because the latter are defined as operations that are built on those of the former. That is, the general sequence is guaranteed by logic.

Also, to complicate our expectations from cross-cultural studies, Piaget acknowledges that experience, environment, and social interactions will all affect the rate at which people develop the underlying cognitive structures and will affect the extent to which development will occur. It is not then easy to see where we should look for evidence either for or against the theory in cross-cultural studies. The general uniformity of sequence cannot count as evidence for, because that is guaranteed by logic, and some particular irregularities do not count as evidence against. Add to that the usual problems of cross-cultural studies, and experimental errors, and you can see the problems for the expectation of unambiguous findings.

What we have from cross-cultural studies is support for the general sequence of stages and considerable variation, not to say confusion, within that general sequence. Critical attempts to assess the reliability of Piagetian claims about cognitive development in general yield conclusions such as: "Despite progressive refinement of method aimed at removing from the experimental data all variations due to extraneous factors, the most striking feature of the results of these studies is the degree of inter- and intra-individual variety obtained" (Wallace, 1976, p.16); or "These data suggest that the assignment to a

particular stage seems to depend upon the task used as a criterion, and the implication of structure is that it should not" (Brown and Desforges, 1979, p.106); or "In general, logical task structure does not seem to be a good predictor of behaviour across situational variations". (Smedslund, 1977, p.1906) These and other analyses of data from experimental tests of Piaget's theory lead Flavell to judge "that Piaget's stage model of cognitive development is in serious trouble". (Flavell, 1978, p.187)

What we have, then, is also consistent with - and increasingly supports - the expectations that go with the belief that one cannot separate some natural or essential development from the language and cultural forms in which we become mature.

The importance of this for education turns on the status of the psychological facts from which theories like Piaget's are composed. If they are indeed facts about our nature, then any educational or curriculum prescription must conform with them. If it is true that historical concepts do not develop till mid-teens, then we cannot sensibly prescribe teaching history in elementary schools. If they are facts about our culture, then it is the educator's proper job to shape them, not to be determined by them. If the finding that historical concepts typically develop during the mid-teens is a result of how we teach history we may decide that this is undesirable, and prescribe a curriculum that will ensure that historical concepts develop earlier.

The general point to be derived from this is that one should be very wary of those always simplistic claims that follow the phrase "Research has shown that ...". Educational research has so far shown nothing that is generally the case about learning, development, motivation, or anything else people who design curricula to educate other people might want to know about. What research shows is that in x circumstances with y subjects a, b, and c results at t time were recorded. It establishes things, when done well and very carefully, that are true of some people in some circumstances at some time. At best it establishes facts which are dependent on cultural variables. It is the educator's job to shape cultural variables, not to confuse them with facts of nature which must constrain what may be prescribed.

"The topic is not isolable": Prong 2

Now for the second prong of the argument in favour of the first position (the first position being: we don't have a nature, we have a culture, so an experimental method to discover truths about nature is inappropriate as a tool to investigate culture). In sketching this I draw largely on the work of Jan Smedslund, a Scandinavian psychologist. This prong extends a point made in the first prong (prongs being separate

points coming out from the same stem). This is made up of the argument that educational research involves a confusion of what Smedslund has called "the analytic and the arbitrary."

He argues that the traditional view of psychology, as an empirical science aiming at the formulation of general laws, is a wrong step for psychology. In this program of scientific psychology the researcher attempts to advance knowledge by forming testable hypotheses, subjecting them to empirical tests, reformulating the hypotheses to fit the findings, etc. Smedslund points out that nearly all empirical research which aims at the establishment of psychological theories gains its plausibility by confusing in what it tests both analytic and arbitrary elements.

If, for example, one wants to develop a theory about how one should organize lists in order for people to learn them better one might experiment by having subjects try to learn lists organized in different ways. One might then conclude that ordered lists are learned better than random lists. This as a generalization based on empirical research gains its plausibility from a fundamental confusion of the analytic and the arbitrary.

The analytic component involves the necessary connection between order and learning. A detailed definition of learning would imply notions of order; the structure of the human mind and what is conceived as order are not distinct things. The arbitrary element involves what particular kinds of things count as ordered to any subject. A list of numbers - 8735948 - might be random and difficult for one subject, but be immediately memorized by another because they bear a relationship with a phone number or year of birth. This arbitrary element, stated in a simple way here, is more generally a matter of cultural contingencies. It so happens because of the education or social mores in a particular culture that certain things are put together and so appear ordered. But in other cultures similar connections would not exist.

What makes pseudo-empirical studies seem empirical, and seem as though they are progressing towards more secure theories, is the confusion of these two elements. The analytic components are not empirical matters at all; they are logically connected. The arbitrary matters are only locally true; they are not generalizable. By confusing the two one seems to be establishing empirical connections - the problem is that the bulk of the connection is given by logical necessity.

The point of this argument again is to indicate that the findings of empirical psychology are almost invariably of this pseudo-empirical kind and consequently need have no constraining effects on educators. The analytic elements are matters of logical necessity which may be established and observed quite apart from - and much more clearly apart from - empirical studies. The arbitrary elements are, again, elements which educators can affect; they do not need to be constrained by them.

Consequences for a history curriculum

Let us return from these theoretical considerations to the example of history in the curriculum. Various studies drawing on Piaget's theory have explored the development of historical concepts in children and adolescents. Many of the concepts fundamental to historical understanding are, in this context, described as formal operational concepts, and experiment has established that these particular concepts typically do not develop till about 14 or 15 years of age. Thus until mid-teens, and even for some years thereafter, students would seem to have only a very limited access to historical understanding. The publication of the results caused considerable stir among history teachers. The results have been contentious, but their influence has tended to support the claim that history should appear in the curriculum later rather than earlier, and something like social studies, which deals in more concrete ways with the more local experience students are familiar with, is more appropriate for the earlier years.

We history teachers may do three (or more) things with the findings. One: accept them as a truth of nature which must be conformed with. Two: based on the earlier arguments, treat them as local findings which are culturally conditioned, and so no constraint on our prescriptions for a new history curriculum. Three: accept them as secure findings about the results of teaching history the way in which the subjects were taught, and use them as an example to avoid (if we do not admire the results, that is).

Our earlier (pronged) criticisms of developmental theories might embolden us to wonder whether these results are truths about human nature, or whether they are contingent cultural matters - due to the kind of stories, reading, and history teaching which the students enjoyed or suffered for preceding years. Are they fairly secure empirical generalizations as some have argued (Hallam, 1969; Elkind, 1976; Schemilt, 1983)? If we doubt it we would immediately look for disconfirming evidence, and indeed we begin to see such evidence appearing (Modigal et al, 1983) - though hardly conclusively.

Is it reasonable to see these results as due simply to bad teaching, or rather to teaching which is uninformed about how to bring children towards a proper historical understanding? Does it make sense to say that nearly all history teaching is bad? There are certainly those who assert this unambiguously (Elton, 1976); and of course this is implicit in our example of Whitehead's requirement that "romance" precede "precision".

What is probably involved is the perhaps excessively respectful acceptance of these results. If we wish to design a history curriculum, and our mind is on history rather than Piaget's theory, the kinds of things that will be of concern will be Vikings, Romans, Industrial Revolutions and so on. That is, we will be dealing largely with content, not the conceptual substratum. Even if we constantly check our developing

curriculum against Piagetian stages in the development of historical understanding, it will be clear that any content can be presented in a variety of ways, none of which need involve concepts which students may not have developed at any particular stage.

But what of Whitehead's stages? If we are concerned with the proper development of historical understanding then we should be sensitive to choosing and organizing content to develop students' romantic engagement during earlier adolescence, and choosing and organizing content that will stimulate precision later. Such concerns will be remote indeed from Piagetian stages. We may be willing to accept Piagetian stages as constraints on what we will prescribe, but when dealing with the design of a curriculum these constraints seem very remote.

Conclusion

The end of any process determines the kind of stages that are the accumulating constituents of that end. If our end is a psychological one, we will require psychological stages. If our end is educational, we will require educational stages, and these will be quite different from psychological stages. The cost of looking for psychological stages as constituents of education, and as foundational to educational development, is that we substitute psychological matters for educational matters. Thus we measure educational advancement and achievement in terms of the kinds of indices that enable psychologists to answer psychological questions. So in education we confuse "thinking skills", I.Q., ability to answer quizzes, and all the other indices that are common in psychological research, with education.

There is a terrible declension that is perhaps the most significant theme in education during this century and, it seems to me, is the result of psychology's baleful influence on education:

Education is ineffable; educational achievement is ineffable.

We want, for whatever purposes, measures of it, and we want to discriminate between individual children's achievement of it.

We cannot measure the achievement, so we infer something that seems like an index of that achievement.

We measure the index.

We infer that the measurement of the index is a measurement of the achievement.

We teach for the achievement of the index.

Thus psychological means - gross, crude, and educationally insensitive - have become educational ends.

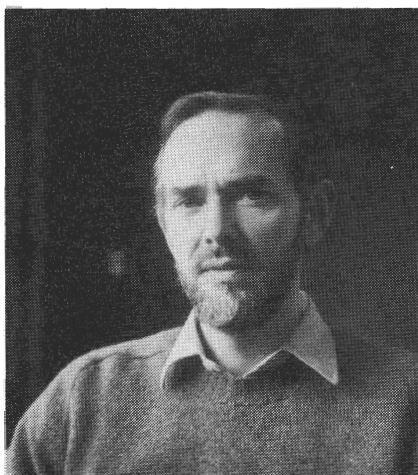
The influence of "stages of development" research is following this process now. We will forget Plato and Whitehead and measure educational development in terms of the development of restricted, psychologically measurable concepts. We will then teach to encourage the development of those concepts.

The search for the structures of knowledge is possibly of epistemological interest. It commits an equivalent educational sin to that committed by psychology. It has been less educationally destructive than psychology, only because it has been less influential (also perhaps because it has tended to be less grossly insensitive to the difference between its phenomena of interest and those of education).

Education is concerned with our development as cultural beings. The study of knowledge - one constituent of culture - separately from our uses and pleasures of it, becomes an educationally arbitrary and sterile activity. The study of psychology and our psychological development apart from those uses and pleasures whose constituents we accumulate in our enculturation is educationally irrelevant. We do not get educational enlightenment by bringing together two distinct educationally irrelevant areas of inquiry. We get educational enlightenment by being able to focus precisely on education; by being able to recognize the difference between psychological, epistemological, and educational questions and by being able to frame and investigate the last kind; and by being bolder in reflecting on our educational experience and in articulating our ideas of education, and in rejecting the pseudo-scientific and pseudo-philosophical mumbo-jumbo that presently dominates what is mis-called educational discourse.

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