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One does not usually like to brood long over books published. One either gets on to something else or, having brooded well, publishes a revised edition. But I confess that, in spite of getting on to something else, I have been unable either to put this volume behind me or to revise it—though I have written two books that are postscripts to it, *Toward a Theory of Instruction* and *The Relevance of Education*.

There are several reasons for this prolonged brooding. For one, the book has been caught up in educational debate, first in America and then, with translation, in other countries where the major issues at stake were quite different from those in America, countries ranging in ideology from Russia to Japan, from Denmark to Mexico. And, obviously, the seventeen years since its first publication have been years of intense and profound debate about education. For another, I confess that the book's initial reception and the widespread comment it produced surprised me. It was a surprise that a book expressing so structuralist a view of knowledge and so intuitionist an approach to the process of knowing should attract so much attention in America, where empiricism had long been the dominant voice and "learning theory" its amplifier. The volume has plainly been part of a change that included the emergence of other structuralist

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accounts of human knowing as well—notably Piaget, Chomsky, and Lévi-Strauss. I have little doubt, looking back now, that all three had a profound effect on my thinking. In the ensuing years, I was very much caught up intellectually in the work of the first two of these men and was a distant admirer of the third. As their work took new form, so did my thoughts about the process of education—mostly after the publication of this book. And finally, in the years after the book I found myself (again rather by surprise) increasingly involved in that part of the educational enterprise called “curriculum development,” and then directed a team that put together *Man: A Course of Study*, a school curriculum in the human sciences. It too kept turning my thoughts back to this volume.

It seems appropriate then, in writing this preface to the new Harvard Paperback of *The Process of Education*, to say a word about each of these matters, for I think that the three are closely related.

First, about the role of this book in the debates on education in America and elsewhere. The idea that knowledge in any field of study has a derivational structure, that a science, for example, is a very canny way of dealing with a very large range of particularities while keeping very little in mind in doing so, is hardly a new idea. Indeed, it is the heart of Platonism, and advances in physics, chemistry, and biology have been based upon developing a set of underlying theorems and paradigms from which particulars can be derived. Chomsky in his recent *Reflections on Language* speculates that there may be certain natural, even “innate” ways of organizing knowledge, which are possibly more powerful in treating

the realm of “things” than in dealing with the domain of people and their acts and intentions. It may well be that we may not so readily be able to find an axiomatic deep structure in politics, economics, and the humanities, that the forms of connection between events and ideas in these domains are not only different from those in the sciences but intrinsically less accessible to human minds. Be that as it may, the advances of knowledge in the last half century have been such as to lead any thoughtful man, especially one interested in education, to seek fresh ways of transmitting to a new generation the fund of learning that had been growing at such a rapid rate. It seemed natural that emphasis should shift to teaching basic principles, underlying axioms, pervasive themes, that one should “talk physics” with students rather than “talk about” it to them. We may indeed now know a great deal more about the difficulties involved in such an approach, but it is still the only one that makes much sense, if the object is to transmit knowledge and to create intellectual skill.

The program envisaged for such an objective was in the form of a “spiral curriculum.” One approached knowledge in the spirit of making it accessible to the problem-solving learner by modes of thinking that he already possessed or that he could, so to speak, assemble by combining natural ways of thinking that he had not previously combined. One starts somewhere—where the learner *is*. And one starts *whenever* the student arrives to begin his career as a learner. It was in this spirit that I proposed that “any subject could be taught to any child at any age in some form that is honest.” One matched the problem to the learner’s capacities or found

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some aspect of the problem that could be so matched. That was the spirit behind the dictum. It has sometimes been gravely misinterpreted, as when I am asked, "Do you *really* think the calculus can be taught to six-year-olds?" That is surely not the point. One can certainly get across the idea of limits to the six-year-old, and that is an honest step en route to grasping a basic idea in the calculus.

The debates to which I alluded, in America and elsewhere, took various forms. All of them were polarized around some version of a contrastive pair: the book's view was too cognitive in contrast to some other view that was more affective, more pragmatic, more political, more "traditional." In America, where more than elsewhere the school is seen as an instrument for teaching social and emotional skills, critics pointed to Bloom's *Taxonomy of Educational Objectives* as source for the charge that the program being proposed was one-sidedly devoted to the training of mind. Critics like Richard Jones in *Fantasy and Feeling in Education* proposed an orientation in education that was more given to self-discovery. And, surely, one cannot fault such criticisms—save to note that there need be no conflict between fostering intellectual power and cultivating emotional maturity. In the Soviet Union, where the first translation of the book appeared, its "message" (if such it can be called) was taken as a weapon in the battle against politically inspired dogmatism in the schools, as a program likely to produce more independence of mind. In Japan the book achieved wide currency as a voice against the rote traditionalism of classical education. In Italy, the battle was three-sided

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and intense: Marxists attacked the book as a form of epistemological idealism (and therefore bourgeois) and classicists saw it as an attack on humanistic learning in the great scholastic tradition. In all of these confrontations, it was quite plain that debate about education was not just about education but about political ideals and ideology. It was perhaps Michael Cole, more than any other, who made me realize the deep connection between politics and education by pointing out that the introduction of a Western European ideal into African schooling, implicitly pressing the child to become his own thinker and his own authority, in effect undermined the traditional authority structure of the indigenous society. One cannot change education without affecting much else in the society as well—if the change takes, and it often fails to do so by virtue of running headlong into a contradictory set of cultural ideals. And so when the battle is joined over the “comprehensivization” of the British school system, the debate, in fact, is only indirectly about education and far more directly about the British class system.

In America, particularly, the issue of curriculum as a means of cultivating intellect was very soon swamped by another matter. By the mid-1960s deep social forces were producing an unforeseen turmoil in the American school. They seemed to come out of a common source: a striving for a new equality, for a fresh redefinition of the nature of society. Initially, the push came from the aspiring American black community seeking a legitimate share in American life, including the opportunity for education at its best. The widespread discontent created

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by this “revolution of rising expectations” was then many times amplified by the turmoil of the Vietnam war in which many Americans discovered unsuspected corruption and callousness—and this was felt nowhere more deeply than among the young. The young felt as never before that they had to go it on their own. There were surely other factors as well that led to what, by the late sixties, was widespread alienation from the society and from its schools—schools being that part of the society with which the young were most closely in touch. In such an atmosphere of moral crisis, the issue of curriculum paled in significance as the cry for more “relevance” in education rose in volume. I recall a visit in those dark and stirring days from my friend Ivan Illich, who by then was convinced that the school was the principal enslaver, the prime instrument of an unjust society for creating a “malleable and just sufficiently skilled labor force.” As Fred Hechinger of *The New York Times* recently put it, the educational system had become a target of attack rather than a means to be improved.

But again, we are witnessing another redressing of the balance. James Callaghan’s speech at Ruskin College, Oxford, was the first Prime Ministerial pronouncement on matters of education since Gladstone; President Carter chose as his running mate a senator whose reputation as an educational statesman in the Congress was preeminent. Neville Bennett’s *Teaching Styles and Pupil Progress* has reopened the discussion of how to conceive of the teacher’s role, and Great Britain, by proclamation, if not in fact, is about to launch a national debate on a national curriculum. But one had best be cautious in predicting where

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educational debate will lead. In the pages of this book there is no mention of the dropout, very little if any awareness of the problem of alienation from school and society, and not a suspicion of deschooling.

Let me now turn to the less worldly matter of the changing intellectual scene of which this book is a part. I recall, while I was writing it, George Miller's bringing to my attention Chomsky's new *Syntactic Structures*, and remember reading with excitement his powerful rejection of finite-state grammars that tried to explain the order in language by invoking a form of chain-linking of neighboring words in a sentence. He insisted and proved that the formation and transformation rules of a sentence had to be grasped as a whole by a speaker if he was ever to be able to utter sentences with any degree of embedding (or to comprehend ones like the one you are just concluding). Had I fully grasped then the significance of what Chomsky was saying, I would surely have been tempted to analyze educational achievement in terms of competence and performance, with the latter being a set of surface expressions of the former. And as with language whose rules are based on intuitively simple concepts such as ordering, substituting, transposing, and the like, so too the deep understanding of any subject depends upon such intuitively simple concepts as cause and effect, transitivity, and equivalence. Yet there is something more to it than that. Chomsky's formalism, like Piaget's, has become less and less attractive. They have both been carried away from the functional concern that initiated their enterprises—the adaptive “reasons” that impel or motivate the intellectual activity. In recent

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years, functionalism has returned to linguistics with the emergence of “speech act” theory—John Austin’s *How to Do Things with Words* appeared a year after *Process* and its full impact on linguistic pragmatics is only now beginning to be fully appreciated. And the new departures of Bärbel Inhelder in Geneva, studying the conditions under which hypotheses become susceptible to change, are redressing Piagetian formalism. My own work, first in cognitive development, then in early language acquisition, has also pushed me in the direction of studying the role of function in creating mental and language structural rules.

Indeed, I find the discussion of pedagogy in the pages of this book to be almost unrealistically airy. I come to the opinion partly through matters related below, but just as much from my own research on the nature of “adult tuition” in both early problem solving and in language acquisition. With respect to the former, there is a vast amount of skilled activity required of a “teacher” to get a learner to discover on his own—scaffolding the task in a way that assures that only those parts of the task within the child’s reach are left unresolved, and knowing what elements of a solution the child will recognize though he cannot yet perform them. So too with language acquisition: as in all forms of assisted learning, it depends massively upon participation in a dialogue carefully stabilized by the adult partner. So much of learning depends upon the need to achieve joint attention, to conduct enterprises jointly, to honor the social relationship that exists between learner and tutor, to generate possible worlds in which given propositions may be true or appropriate or even felicitous: to overlook this func-

tional setting of learning—whatever its content—is to dry it to a mummy.*

So, while in 1960 a structuralist view of knowledge seemed out of the main current of American thought, particularly when related to educational matters, it no longer seems so. Indeed, functional and motivational considerations seem now to be taking a more central position in the revision of what have now almost become “establishment” views.

Let me turn finally to the last of the things that have kept me brooding about this book—the production of a curriculum. Whoever has undertaken such an enterprise will probably have learned many things. But with luck, he will also have learned one big thing. A curriculum is more for teachers than it is for pupils. If it cannot change, move, perturb, inform teachers, it will have no effect on those whom they teach. It must be first and foremost a curriculum for teachers. If it has any effect on pupils, it will have it by virtue of having had an effect on teachers. The doctrine that a well-wrought curriculum is a way of “teacher-proofing” a body of knowledge in order to get it to the student uncontaminated is nonsense. *The Process of Education*, in that sense, is only part of a book, for it is mostly about students and their learning processes. Perhaps it is not a surprise that the book most immediately following it bore the title *Toward a Theory of Instruction*.

*The interested reader is referred to J. S. Bruner, *Entry into Early Language: A Spiral Curriculum*, Charles Gittings Memorial Lecture, University College, Swansea (Swansea, Crown Printers, 1975); David Wood, J. S. Bruner, and Gail Ross, “The Role of Tutoring in Problem Solving,” *Journal of Child Psychology and Psychiatry* 17 (1976), 89–100; and J. S. Bruner, “The Nature and Uses of Immaturity,” *American Psychologist* 27 (1972), 1–22.

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Having said this much, I am bound to answer the query why I did not, in good time, write a second edition of this book, having brooded as much as I confess to having done. I do not think it was possible to do so. The book was a creature of its time, place, and circumstances, for better or worse. The changes that it produced in my mind, just by virtue of its having been written and put into the public domain, are recorded in my later work (a sample of which can be found in Jeremy Anglin's collection *Beyond the Information Given*, which includes his shrewd commentary on the course of that work since 1960).

I want, finally, to express my gratitude to the Harvard University Press for having kept this little book flourishing all these years, and for giving me this chance to say a few words about what has happened in the meanwhile.

Jerome S. Bruner

Oxford
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