

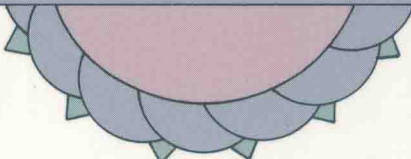


ON
KNOWING

ESSAYS FOR THE
LEFT HAND

Jerome Bruner

JEROME BRUNER'S MOST PERSONAL
INTELLECTUAL STATEMENT.
WITH A NEW INTRODUCTORY ESSAY
AND HIS CONTROVERSIAL
HERBERT SPENCER LECTURE,
PSYCHOLOGY AND THE IMAGE OF MAN



on
Knowing
essays for the left hand

Expanded Edition

JEROME S. BRUNER

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The two lines from William Butler Yeats's "Among School Children" and the stanza from his "A Prayer for Old Age" are quoted by permission of The Macmillan Company, New York (*The Collected Poems of W. B. Yeats*, 1955). The lines from Louis MacNeice's "Postscript to Iceland for W. H. Auden" are quoted by permission of Faber & Faber, London (*Collected Poems, 1925-1948*, 1949). The last chapter, "Psychology and the Image of Man," is reprinted by permission of Oxford University Press, from H. Harris, ed., *Scientific Models and Man: The Herbert Spencer Lectures 1976*, © Oxford University Press 1979.

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Preface to the Expanded Edition

There is something unique about the essay form. An essay posits for itself a topic and a set of constraints that limit the forms of comment one can make upon it. If the constraints are violated, the effect is to make the essay somehow slack, un-serious, undisciplined. The essay is the literary counterpart of the “possible world” of the logician or like the “thought experiment” of the scientist. As with each of these, it begins with a set of connected familiars and seeks by rearranging them to leap to the higher ground of novelty, a novelty rooted in what was previously familiar.

On Knowing was originally written in the form of separate essays, each of them organized around some familiar matter—the impact of Freud on common sense, the concept of fate, the nature of the modern novel, the role of surprise in thinking, and so on. They were all matters that were “interesting” to me. It is not what made them interesting to *me* that now concerns me, but rather what might make them interesting to somebody else—and my focus is on the nature of intellectual interest rather than, say, upon why these particular matters should have occupied a university intellectual in the late 1950s and early 1960s. For I am fascinated with what it is that makes people try to think through certain issues, whether in an essay, a logically connected possible world, or in a scientific experiment.

As a start, let me propose that interior intellectual work is almost always a continuation of a dialogue. This is not a new point. Its most famous exponent is the Russian psycholinguist Vygotsky, who argues that the development of thought in the child is dependent upon his entering a dialogue and that, in

time and with practice, the dialogue becomes internalized. Not that thought consists solely of internal speech—there is ample evidence to warn us off that view. Indeed, even external dialogue is built upon shared, nonlinguistic presuppositions about the world, and these, in turn, are shaped by structures of mind that predispose us to experience “reality” in one way instead of others. Rather, it is the dialectical, almost dramaturgic quality of dialogue that provides a model for pursuing our own thoughts in the privacy of our own consciousness.

Each of the essays in this volume started in conversation. The Freud essay, for example, grew out of conversations with Grete Bibring, Robert Oppenheimer, and Elting Morison. Its preoccupation was with the manner in which a system of thought—however verified it might or might not be by the usual methods of putting a theory to test—could change or, better, crystallize a generation’s mode of thought. My partners in dialogue were a psychoanalyst, a physicist (whose sympathies were very much with Freud although they were buffered in doubt), and a historian whose lifelong concern has been the relationship of power and ideas within a society. Each was a strong-willed protagonist. And in each conversation, the inevitable happened. By the very dynamics of dialogue you are constrained in two ways: first, you come to take the positions of the other rather for granted, and after a while it becomes an unfriendly act to challenge the other’s presuppositions. It is like the life-term prisoners in the sick story who are so familiar with each other’s jokes that it suffices to recount them by announcing their number. You begin to feel corseted in responding to *their* arguments or in noting settled agreements. The topic becomes interpersonally boring and, by unspoken mutual consent, it is either dropped or simply indicated by something like the life-terminer’s number.

Boredom is a powerful phenomenon—a poison to the intellectual in large doses. And like many poisons, it is a rather benign stimulant in small doses. I think it always infuses in-

tellectual work in some deep way. For all of the sciences and most of the humane disciplines of learning proceed by working with the familiar and attempting to rearrange it in certain ways so as to make the familiar generate something novel. It is inevitable that, from time to time, we get trapped in the familiar and suffer its boredom. Dialogue with others provides some escape from the procrustean familiarity of our "subject." But, alas, dialogue eventually goes the route of the life-termer's story.

But just here the essay as a form comes into its own. It is an invitation to ignore the constraints of the other that you encounter in dialogue, to consider and to unpack any presupposition without giving umbrage and to do it in a manner that permits a use of metaphor forbidden to the logician or scientist. Yet the essay form is tightly wrought enough to keep one's nose not so much to the grindstone as to the touchstone. Indeed, David Olson insists (and I think with good reason) that it is characteristic of the essay form, and may even be its historical origin, to try to transcend the constraints of dialogue and its context-bound definitions of truth—"the meaning is in the text," as Luther urged.

I remarked that each of the essays in the volume grew out of an encounter with certain matters that had interested me. Obviously, they come out of a common source, and friends have said to me that it is a very personal book. That may well be because the topics were ones I could not cope with by the universalized methods of experiment or logical analysis alone. Hence the subtitle: "Essays for the Left Hand." The left hand, *my* left hand, has known hard times since these essays were published. Or perhaps it would be better to say, left hands in the sixties and seventies were otherwise occupied, and principally with the politics of the revolution through which we have been living.

There has been Vietnam, the student uprising, the emergence of a Third World, and the battle against racial and

ethnic discrimination. It was impossible not to be involved. The clumsy cruelties of the student protests and the infamous "police bust" at Harvard in response drove me more deeply into an active role in the day-to-day life of the University. I became involved in school reform, in Africa, in Head Start. Were the times better suited for action than for reflection?

I recall sitting as chairman of the committee appointed by the president of Harvard to liquidate the Reserve Officers Training Corps at the university. Across the table were the representatives of the Navy and Army, serving officers with whom I disagreed but whom I greatly respected. I recall too, at the same time, the students and tutors in my Harvard house. I also admired their nerve and conviction in "trying on" new ideas and life styles. Though I didn't agree with them either, my respect for their integrity was complete. Perhaps I am the typical conflict-laden liberal, torn by an appreciation of contrary excellencies.

That period was a time for tracts rather than essays, particularly essays for the left hand. The essay form did not return my way for a decade, and then it emerged as the Herbert Spencer Lecture delivered at Oxford in 1976. It is the only new essay in this volume, and I am particularly pleased to have it included. It restored my faith in the importance of the essay as an intellectual experience.

In the seventeen years since the first publication of *On Knowing* there has been a steady polarization within psychology between the "hardnosed," psychonomic study of psychology and the more "humanistic," methodologically unconstrained approach. Those at the far reach of each movement have had a tendency to heap scorn on the other. Within the American Psychological Society, there are separate divisions where each lives, and the hardnosed genus of psychologist has set up a separate society—the Psychonomic Society. I see in both extremes a manifestation of anti-intellectualism: the one denigrating the processes that give rise to hypotheses, the other

damning the techniques designed for their testing. I find myself uneasy with both extremes. My idea has always been that the antic activities of the left hand offer gifts to the right for closer scrutiny and hardnosed testing.

In Great Britain, psychology is not much liked. It is seen as an upstart discipline and one without either a settled body of theory or a method of work and, supreme sin, cut off from the more humane and literary approaches to the study of man. It has been the reaction of some British psychologists to become even more implacably positivistic in their approach and to cultivate a connection with either biology or the computational sciences. The tempering effect of the psychology of language that has done so much to keep American psychology from dividing totally into separate fields is not nearly so evident in Britain. "Psychology and the Image of Man" was my effort to bring the two views of psychology back into single focus. It did not convince many of my Oxford friends who were initially of a contrary view, but unpopular views may at least seem to raise consciousness about alternatives. In any case, it created a good row—and that is always welcome on the British intellectual scene!

I don't think that psychology should enter the age-old battle to understand the nature of man with one hand tied behind its back—left *or* right. I can put it best in terms of a lament of a former postdoctoral fellow in my laboratory at Oxford—Michael Scaife who had just taken his degree in bird behavior and had been awarded a fellowship to be "retreaded" as a human psychologist. He said that when he worked on animal behavior he felt constantly deprived by the species difference between him and his subjects. He had always wanted to "get into their minds." Now that he was working on human beings he kept encountering critics who urged him to ignore the fact that he was the same species as his subjects. He had chosen to study how infants learned to share a common attentional focus with their mothers. How *could* he overlook what he already

knew as a human being about shared attention! It is surely foolish to pretend that it makes no difference that we are human beings when we begin to study human beings. It is enormously useful to have, in their full subjectivity, works such as A. R. Luria's accounts of the mind of a mnemonist and of the shattered world of one of his brain-injured patients. They are rich in evocation, a seedbed of hypotheses. And they are, each in its way, bits of literary art.

I hope we can encourage our students to use their own knowledge of the human condition, of themselves or their language or their families to derive, if not a hypothesis, at least a hunch that will start them on their way toward one. It would be a pity if we psychologists were to be condemned to a one-handed existence. It is a curious though not really an immodest thing to say, but I found that the rereading of these essays—my *own* essays—lured me back into a reconsideration of the unfinished business that had started them into existence in the first place. Perhaps, with some unpredictable luck, they may lead others back to some unfinished business of their own.

J. S. B.

Wolfson College
Oxford
January 1979

Preface

There are many debts to acknowledge and credits to be given—to the friends with whom one dines, to the colleagues with whom one works, to the students whose impatience helps keep a sense of doubt well nourished, to those administering spirits who keep chaos from descending, to foundations that have made some free time possible. The existence of a great university also makes a deep difference. Josiah Royce, commenting on the Harvard community, once remarked that for it talking was the most natural form of breathing.

Several close friends have been particularly generous in advice and encouragement. George Miller, Albert Guerard, and Elting Morison have been sources of instruction and models of patience. Elizabeth Weems Solomon could be counted on for arresting advice. Mark Saxton has labored with me long and generously in the process of making a continuity of the ideas expressed in these essays. Ruth and Richard Tolman, whose loss many of us still feel, encouraged me long ago in the pursuits reported here. My wife, Blanche Marshall Bruner, has been a constant and illuminating companion in the making of the book.

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Cambridge, Massachusetts
January 1962

J. S. B.

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Introduction



You are concerned, let us say, with the nature of myth and wherein it plays a role in man's thinking. An occasion arises—perhaps an invitation to speak or to contribute an article to a magazine—and you commit your thoughts to paper. Some years later there is another occasion: this time the topic, presumably a different one, may be freedom and the control of behavior. Only later, only in retrospect, does a continuity emerge. In any man's intellectual life there are only a few topics, only a limited set of persistent queries and themes.

This book took its origin in a collection of occasion pieces, essays written for the left hand, as I shall explain in a moment. The intent was to bring them out one day much as they had originally been written. But as I worked over them, they changed and merged and were no longer so occasional. The period of five years over which they had been written melted and the underlying themes emerged in their own right.

The themes are few enough in number. The first part of the book concerns itself with how we construct reality by the process of knowing: it deals with the act of knowing in itself and how it is shaped and in turn gives form to language, science, literature, and art. In effect, we shall be dealing with the issue of how we know and how knowledge reflects the structuring power of the human intellect.

But one's conception of knowing and of the nature of what

is known perforce lead one to a concern with how we impart knowledge, how we teach, how we lead the learner to construct a reality on his own terms. The second part of the book entertains conjectures on the nature of teaching and learning, conjectures that grew, in spirit if not in original sequence, from issues raised earlier. But sequence is a fiction, and in a human life what follows may have produced what went before.

Finally, the last part of the book examines how one's conception of reality, affected as it is by the uncertainties of seeking to know, influences action and commitment.

Since childhood, I have been enchanted by the fact and the symbolism of the right hand and the left—the one the doer, the other the dreamer. The right is order and lawfulness, *le droit*. Its beauties are those of geometry and taut implication. Reaching for knowledge with the right hand is science. Yet to say only that much of science is to overlook one of its excitements, for the great hypotheses of science are gifts carried in the left hand.

Of the left hand we say that it is awkward and, while it has been proposed that art students can seduce their proper hand to more expressiveness by drawing first with the left, we nonetheless suspect this function. The French speak of the illegitimate descendant as being *à main gauche*, and, though the heart is virtually at the center of the thoracic cavity, we listen for it on the left. Sentiment, intuition, bastardy. And should we say that reaching for knowledge with the left hand is art? Again it is not enough, for as surely as the recital of a daydream differs from the well-wrought tale, there is a barrier between undisciplined fantasy and art. To climb the barrier requires a right hand adept at technique and artifice.

And so I have argued in one of the essays in this volume that the scientist and the poet do not live at antipodes, and I urge in another that the artificial separation of the two modes of knowing cripples the contemporary intellectual as an effec-

tive mythmaker for his times. But it is not principally in the role of a would-be mediator between the humanist and the scientist that I have written and then rewritten the essays that comprise this book. My objective, rather, is somewhat different, perhaps more personal.

It is to explore the range of the left hand in dealing with the nature of knowing. As a right-handed psychologist, I have been diligent for fifteen years in the study of the cognitive processes: how we acquire, retain, and transform knowledge of the world in which each of us lives—a world in part “outside” us, in part “inside.” The tools I have used have been those of the scientific psychologist studying perception, memory, learning, thinking, and (like a child of my times) I have addressed my inquiries to the laboratory rat as well as to human beings. At times, indeed, I have adopted the role of the clinician and carried out therapy with children whose principal symptom presented at the clinic was a “learning block,” an inability to acquire knowledge in a formal school setting, though their intelligence seemed normal or even superior. More recently, I have turned my attention to the nature of the teaching process in an effort to formulate the outlines of a “theory of instruction” and so better to understand what we seek to do when we guide another’s learning either by a lecture or by that formidable thing known as a curriculum. Seeking the most beautifully simple case, I chose to study the learning and teaching of mathematics. But it was soon clear that the heart of mathematical learning was tipped well to the left. There have been times when, somewhat discouraged by the complexities of the psychology of knowing, I have sought to escape through neurophysiology, to discover that the neurophysiologist can help only in the degree to which we can ask intelligent psychological questions of him.

One thing has become increasingly clear in pursuing the nature of knowing. It is that the conventional apparatus of the psychologist—both his instruments of investigation and the

conceptual tools he uses in the interpretation of his data—leaves one approach unexplored. It is an approach whose medium of exchange seems to be the metaphor paid out by the left hand. It is a way that grows happy hunches and “lucky” guesses, that is stirred into connective activity by the poet and the necromancer looking sidewise rather than directly. Their hunches and intuitions generate a grammar of their own—searching out connections, suggesting similarities, weaving ideas loosely in a trial web. Once, having come in late to dine at King’s College, Cambridge, with my friend Oliver Zangwill, I found myself seated next to a delightful older man whose name I had not caught in the hurried and mumbled introductions. We agreed that the climate of debate at Cambridge might be vastly improved if some far-sighted philanthropist would establish a chair of The Black Arts and Thaumaturgy, that the effort to know had become too aseptic and constrained. My neighbor at table turned out to be E. M. Forster.

The psychologist, for all his apartness, is governed by the same constraints that shape the behavior of those whom he studies. He too searches widely and metaphorically for his hunches. He reads novels, looks at and even paints pictures, is struck by the power of myth, observes his fellow men intuitively and with wonder. In doing so, he acts only part-time like a proper psychologist, racking up cases against the criteria derived from an hypothesis. Like his fellows, he observes the human scene with such sensibility as he can muster in the hope that his insight will be deepened. If he is lucky or if he has subtle psychological intuition, he will from time to time come up with hunches, combinatorial products of his metaphoric activity. If he is not fearful of these products of his own subjectivity, he will go so far as to tame the metaphors that have produced the hunches, tame them in the sense of shifting them from the left hand to the right hand by rendering them into notions that can be tested. It is my impression from ob-

serving myself and my colleagues that the forging of metaphoric hunch into testable hypothesis goes on all the time. And I am inclined to think that this process is the more evident in psychology where the theoretical apparatus is not so well developed that it lends itself readily to generating interesting hypotheses.

Yet because our profession is young and because we feel insecure, we do not like to admit our humanity. We quite properly seek a distinctiveness that sets us apart from all those others who ponder about man and the human condition—all of which is worthy, for thereby we forge an intellectual discipline. But we are not satisfied to forge distinctive methods of our own. We must reject whoever has been successful in the task of understanding man—if he is not one of us. We place a restrictive covenant on our domain. Our articles, submitted properly to the appropriate psychological journal, have about them an aseptic quality designed to proclaim the intellectual purity of our psychological enterprise. Perhaps this is well, though it is not enough.

It is well, perhaps, because it is economical to report the products of research and not the endless process that constitutes the research itself. But it is not enough in the deeper sense that we may be concealing some of the most fruitful sources of our ideas from one another. I have felt that the self-imposed fetish of objectivity has kept us from developing a needed genre of psychological writing—call it protopsychological writing if you will—the preparatory intellectual and emotional labors on which our later, more formalized, efforts are based. The genre in its very nature is literary and metaphoric, yet it is something more than this. It inhabits a realm midway between the humanities and the sciences. It is the left hand trying to transmit to the right.

I find myself a little out of patience with the alleged split between “the two cultures,” for the two are not simply external ways of life, one pursued by humanists, the other by scientists.

They are ways of living with one's own experience. I recall a painfully withdrawn young physicist at the Institute for Advanced Study when I was a visiting member of that remarkable institution. His accomplishments as a flutist were magical; he could talk and live either music or physics. For all the rightness of his life, it was nonetheless a segmented one. What was lacking was not an institutionalized cultural bridge outside, but an internal transfer from the left to the right—and perhaps there was one, though my colleague could not admit it. It is a little like the amusing dialogue Louis MacNeice reports between himself and W. H. Auden on their trip to Iceland:

And the don in me set forth
How the landscape of the north
Had educed the saga style
Plodding forward mile by mile.
And the don in you replied
That the North begins inside,
Our ascetic guts require
Breathers from the Latin fire.

But the left hand is not all. For there is also in these pages much about the profound revolution that has been taking place in the sciences of man during the past decade and of the new dilemmas that have replaced the old ones. We know now, for example, that the nervous system is not the one-way street we thought it was—carrying messages from the environment to the brain, there to be organized into representations of the world. Rather, the brain has a program that is its own, and monitoring orders are sent out from the brain to the sense organs and relay stations specifying priorities for different kinds of environmental messages. Selectivity is the rule and a nervous system, in Lord Adrian's phrase, is as much an editorial hierarchy as it is a system for carrying signals.

We have learned too that the "arts" of sensing and knowing consist in honoring our highly limited capacity for taking in and processing information. We honor that capacity by learning the methods of compacting vast ranges of experience in