

there is to know about numerical reasoning and representation. Nonetheless, it is somewhat unsatisfying that there are no precursors to understanding of the counting and reasoning principles; the principles seem to emerge full-blown, only requiring practice in execution and extension to a wider range of situations. The few change mechanisms that are proposed—practice, improved motoric coordination, and memorization of the list of numbers—are far less intriguing than the authors' descriptions of children's existing knowledge. In addition, no particular evidence is produced to support the claim that any of the proposed change mechanisms are important in the development of counting and numerical reasoning. Gelman and Gallistel are not alone in this shortcoming; information-processing, Piagetian, and other existing approaches all seem to have more difficulty characterizing change than steady states. Still, it is disappointing that their most interesting hypothesis about what develops, a progression from a numerical to an algebraic stage, concerns phenomena totally outside the range of their experiments.

IN summation, Gelman and Gallistel's approach is an innovative one. It represents a plausible alternative to both the Piagetian and the information-processing approaches to studying development. I think that the authors err in attributing too much competence to young children, I am not convinced that analyzing development in terms of understood principles will prove fruitful, and I regret the paucity of change mechanisms in the approach. Nonetheless, they have succeeded in their goals of demonstrating that preschoolers know more than most of us think they do and in underscoring that there is more to cognition than is captured in most contemporary real-time models.

... the truth is, I write by ear, always with difficulty and seldom with any exact notion of what is taking place under the hood.

—E. B. WHITE

New Vodka in an Old Bottle

A. R. Luria

The Nature of Human Conflicts: Or Emotion, Conflict and Will. New York: Liveright, 1932 (paperback ed., 1976). Pp. xv + 431. \$5.95 paper.

Reviewed by MICHAEL COLE

A. R. Luria was, until his death in August 1977, Professor of Psychology and Head of the Department of Neuropsychology at Moscow University. He earned the Soviet equivalent of a PhD from Kazan University and an MD from Moscow Medical Institute. Luria was a member of the Soviet Academy of Pedagogical Sciences and a foreign member of the National Academy of Sciences of the United States, the American Academy of Arts and Sciences, and the American Academy of Education. His more than 300 scientific works include *Higher Cortical Functions in Man*, *The Working Brain*, *Basic Problems of Neurolinguistics*, *Cognitive Development*, *The Neuropsychology of Memory*, and *Neuropsychology of Language and Speech* (translation in preparation). The book under review was translated from the Russian and edited by W. Horsley Gantt.

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and coeditor of *Handbook of Contemporary Psychology with I. Maltzman*, *The Autobiography of A. R. Luria* (in press) with S. Cole, and *L. Vygotsky's Mind in Society* (with V. John-Steiner, S. Scribner, and E. Souberman).

IN the very early 1920s, Alexander Luria was a junior researcher in the Institute for the Scientific Study of Labor in his native Kazan, where he was also a graduate student on the social science faculty and part-time student in the medical school. While still an undergraduate, he had conceived of a grand scheme for creating a unified science of humanity. Luria's new science of psychology would encompass the complex, idiosyncratic, emotion-laden features of people as described by the great novelists and philosophers of the 19th century, and yet permit rigorous specification of elementary physiological processes, linked to human physical nature, which could explain the phenomena we all recognize as Human Nature. The intellectual ambition of the enterprise was matched only by the energy of the man who conceived it.

In 1923, K. M. Kornilov was appointed Director of the Institute of Psychology in Moscow on the strength of his promise to create a Marxist psychology based on materialist principles

Prof. Cole's review of *The Nature of Human Conflicts* continues the series of specially invited retrospective reviews of seminal books that CP is publishing in 1979 in honor of the centennial celebration of the establishment of Wundt's laboratory.

and objective methods. His major experimental tool was a device that measured the strength of a motor response in addition to its latency. When he received a copy of a new journal from Kazan, entitled *The Psychophysiology of Work and Reflexology*, with reports of studies combining both verbal and motor responses in a reaction-time experiment, Kornilov thought he recognized a kindred spirit; Luria moved to Moscow where he would remain for the rest of his life (with the exception of the period when Moscow was under attack by the German armed forces).

The Nature of Human Conflicts is a summary of Luria's research beginning with his arrival in Moscow and extending to 1930. It was submitted for his doktorat, a degree that has no parallel in American academic life. In the Soviet Union, the doktorat is hypothetically reserved for mature scholars who have demonstrated mastery over a large field of knowledge. It is intended to summarize that work in an integrative monograph. Skinner's *The Behavior of Organisms* or Hebb's *The Organization of Behavior* would probably qualify for such a degree; the most influential Soviet example of a doctoral thesis that gained prominence in the United States was E. N. Sokolov's *Perception and Conditioned Reflexes*.

LURIA'S dissertation was remarkable at the time it was written and remains a document of great interest for contemporary psychology. Yet it is by no means an intellectually accessible book; quite the opposite. Many circumstances of its production render it difficult and in places opaque, disguising the views of its author as well as the broad significance of his methods and substantive achievements.

These difficulties have many sources, of which two are paramount: First, there were dramatic changes within Soviet science and society during the period (1923-1929) in which the work summarized was carried out, sometimes leading Luria to give a distorted description of the goals of particular studies; second, there were changes in the scope of Luria's own work during this period which led to marked changes in

his interpretation of the research. His synthesis of the early and later states of the work (separated by his meeting with L. S. Vygotsky and the subsequent reorganization of his theoretical perspective) was in progress at the time the book was written, and the exposition often shows the strain of incompletely formulated positions.

A generally accepted history of Soviet psychology in the 1920s has so far eluded historians of science, although major public documents make it clear that it was a period of great creativity and exploration. Competition for the power to define the terms on which psychological research would be conducted was fierce, and the acrimoniousness of the accompanying debates is rarely found in American scientific discussions that might appear to be of similar scientific and social importance. (Perhaps the closest parallel that springs to mind is the vilification of Watson in which his personal behavior and ideas on child rearing were linked with his methodological views concerning the study of behavior.)

IN the USSR, it was (and still is) difficult to maintain a distinction between government policy, the philosophical presuppositions that justify the policy, and social programs that flow from policy and scientific work. Serious discussions among Soviet psychologists about the nature of a Marxist psychology began in 1923. Kornilov staked his claim as the spokesperson for a new, Marxist psychology built upon the principle that mind is a reflection of dynamically organized matter that could be studied objectively using the techniques that he had developed. At almost the same time, Luria suggested that psychoanalysis provided a promising approach to the study of behavior within a materialist, Marxist framework. It is important to an interpretation of *The Nature of Human Conflicts* that Luria viewed the basic techniques described in this book as a way of extending and objectifying basic ideas arising from psychoanalytic theory.

In one of his articles on psychoanalysis ("Psychoanalysis as a System of Monistic Psychology," 1924; translated

in *The Selected Writings of A. R. Luria* edited by Michael Cole, 1978), Luria summed up his views on psychoanalysis and Marxism as follows:

1. Dialectical materialism requires one "to study objectively . . . the true relationships among perceivable events; and this means to study them not abstractly, but just as they are in reality, to study them in such a way that the knowledge we acquire will help us later to exert an active influence on them" (p. 8).

2. "For Marxism, the only possible point of view is that the world is one, that it is a single system of material processes, and that the mental life of human beings is only one of its many aspects" (p. 8). This view leads to the conclusion that human beings must be explained by phenomena in the world outside themselves.

3. The *dialectical* aspect of dialectical materialism was interpreted by Luria to mean that phenomena must be studied dynamically in the process of changing; "further, the interacting influence of man on his environment and the environment on man must always be kept in view" (pp. 9-10).

Luria traces parallels between these ideas and assertions to be found in the major psychoanalytic thinkers of the first quarter of this century. He concludes that psychoanalysis succeeded in meeting the requirements of a Marxist psychology on the first two points, but failed on the third. He promised to deal with the problem of social influences on mind in later work—a promise he did not keep within the confines of his discussion of 1925, but a promise that occupied him constantly in later years.

By the time he wrote *The Nature of Human Conflicts*, neither Kornilov's reactology nor psychoanalysis was considered an acceptable viewpoint. Kornilov is barely mentioned in the book, and psychoanalysis as a system is not discussed. Rather, the ideas of Freud, Jung, and other scientists associated with psychoanalysis are mentioned in narrow contexts associated with particular experimental techniques.

Not all of these changes should be viewed as externally imposed. Once Luria began working in collaboration with Vygotsky, his own theoretical

framework changed. He began to place a much stronger emphasis on tracing the social antecedents of behavior. This shift is reflected within the book. The first two sections are devoted to the role of drives and emotions in the organization of adult behavior, while the last section is devoted to the development of organized behavior. In this last section of the book, we are introduced to new experimental paradigms that are rather loosely connected to work reported in earlier sections. These new methods formed the experimental basis for what came to be known as the socio-historical approach to the study of human psychological functions. This approach, too, was under heavy attack at the time Luria wrote *The Nature of Human Conflicts*.

The cross-cutting controversies in which Luria was embroiled produced a strange anomaly. While his dissertation earned him a doktorat, it was not acceptable for publication. This book has never been published in the Soviet Union, and the various studies that it summarizes are virtually unobtainable from Soviet libraries. The obituary of Luria published by the *Bulletin of Moscow University* does not list it among his publications. Only the English version, parts of which were heavily edited by Horsley Gantt in his translation, remains an accessible record of experiments that it summarized.

VIEWED against this rather extensive background, I will now turn to the substance of Luria's book, seeking those observations and ideas that continue to have relevance for psychological science.

First, it is important to note that this book contains an alternative title and subtitle, which jointly serve as a key to the book's content. *The Nature of Human Conflicts* was a title dreamed up by the publisher and reluctantly agreed to by Luria. The alternative title, *Emotion, Conflict and Will*, labels the traditional psychological categories to which the book pertains, and shows clearly Luria's concern with classical topics of psychoanalysis. The subtitle, *An Objective Study of Disorganisation and Control of Human Behaviour*, refers to the major methodological strat-

egy that Luria employed to attack his subject matter; this reformulation of the problem of will forms a central thread of his research from 1920-1977.

Luria begins his discussion with a review of basic conceptions of the organization of human behavior extant in 1930. Referring in the opening pages to the work of Lashley and Pavlov, he sides with Lashley in his belief that the organization of the nervous system cannot be explained by the mechanical combination of elementary processes of inhibition and excitation (while fully accepting the existence and importance of these basic neural processes): "The structure of the organism presupposes not an accidental mosaic, but a complex organization of separate systems . . . (which) unite as very definite parts (of) an integrated functional structure" (p. 6).

Recognizing that it is very difficult to analyze the working of a well-organized system, Luria decided that the most promising approach to discovering the underlying principles of behavioral organization was to study disruptions in the working of the system. So, he set out to study the *disorganization* of behavior. He acknowledges the precedence of others in following this route, but he is unhappy with the way they went about their task: "All attempts to study the structure of the affective disorganization of behavior without considering the alteration of the behavior itself appear to us wide of the mark" (p. 17). He was objecting to physiological reductionism.

IN the place of physiological indicators of emotion, Luria sought and found behavioral indicators. He was very clear about the properties that his observational system should possess.

We should on the one hand . . . produce the central process of the disorganization of behavior; on the other hand, we should try to reflect this process in some system accessible and suitable for examination. The motor function is such a systematic, objectively reflected structure of the neurodynamic processes concealed from immediate examination. And there lies before us the use of the motor function as a system of reflected structure of hidden psycho-

logical processes. Thus we proceed along the path which we call the combined motor method. (p. 18)

The combination Luria sought was one that included two activities, the first reflecting a central ("hidden") process, the second a motor ("visible") process. For the central component, he used the method of word associations, drawing on Jung's *Diagnostic Associationstudien*. However, early in his career, he had experimented with free associations as a measure of underlying motives and conflicts and he concluded that he needed to know more than the content and latency of verbal associates if the processes that controlled them were to become more than an enigma. For the motor component, he used a reaction-time apparatus in which the subject had only to make a movement in response to stimuli. Used by itself, this method was also inadequate as an indicator of complex mental or motivational states. But the two techniques in combination "stimulate in our subject two systems of activity which are connected with each other so closely that they are set in motion by two simultaneously occurring activities of one and the same process" (p. 23). Disruptions in the motor response associated with verbal stimuli became the key data concerning the structure of the hidden, central processes.

Luria's technique is neatly illustrated by the responses of a man known to have murdered his fiancée shortly before Luria interviewed him. At the time of testing, Luria knew that during the murder the subject had been cut on his hand, which he had wrapped in a towel. Luria presented him with two verbal stimuli to which the man had to respond with the first word that came to mind. The stimuli were "book" and "towel" to which the subject responded "white" and "cloth" respectively. The latencies of the two verbal responses were virtually identical and there was certainly no evidence of special affect or conflict in the content of the responses. But the motor responses to the two stimuli differed significantly in shape and latency. The response to "book" was shorter and fuller than the response to "towel," leading Luria to conclude that

example

the structure of the motor response points to two clashes of the reactive process, from which only one, the latter, was expressed in the speech response, the first being inhibited in the speech but revealed only in the motor reaction. (p. 30)

With this basic method in hand, Luria set out to demonstrate both the validity of the assumptions on which it was based and the substantive contributions to the study of psychological processes which applications of the technique could provide. In pursuing the validity issue, Luria constructed laboratory tasks. In one such task, subjects were read stories, one of which they were instructed to keep secret from the experimenter. They were then interrogated using the combined motor method to determine the story they had been instructed not to reveal. Borrowing explicitly from Kurt Lewin, whose work he greatly admired, Luria constructed a number of tasks based upon induced failure, experimental sets, or instructions that required subjects to respond from a limited set of permissible alternatives under circumstances where their first tendency would be to violate the instructional constraints.

In a series of applications of the method, he investigated various pathological states that could be expected to induce conflict (his earliest studies of aphasia were conducted as part of an analysis of patients suffering from so-called semantic aphasia who, according to Luria, were placed in conflict as they searched for the meanings of words), or in which conflict should *not* be reflected in motor behavior (cases of pathologically reduced emotional states). From the very beginning, Luria viewed variations in the organization of human behavior as a treasure trove of data about basic behavioral mechanisms, and the book is filled with interesting examples of his comparative approach; children, mental patients, the mentally retarded, the criminal, and the alcoholic were all important resources for analysis as well as important subjects for study in their own right.

FROM the many ideas underlying the detailed studies, I think that Luria's concept of the role of experimentation

deserves special mention. It is easy to be seduced by the inherent interest in his experimental materials, thereby forgetting his very specific motives for including them. Criminal cases, aphasias, neuroses, and hypnotic states all hold their own fascination for us. But for Luria, these states were always clearly means to his overall theoretical goals. In an era when the relevance of psychological experimentation is under renewed scrutiny from friends and foes alike, Luria's clear views concerning the advantages and shortcomings of experiments on complex psychological states are especially informative.

For Luria, the combined motor method represented a *model system*, and he was unusually clear about the implications of the term.

On the positive side:

The ideal for the psychological experimenter has become the possibility to reconstruct artificially the phenomenon under examination, because only this allows one to keep it entirely under control. The psychologist's ideal became a method by which it would be possible to produce in a laboratory a model of the phenomenon analysed. (p. 129)

This strategy had its difficulties and its shortcomings. The experimental creation of affective states too often involved stimuli that, while acutely unpleasant, did not serve as appropriate models of affective states in everyday life. He adapted a number of procedures from Kurt Lewin, whose importance he repeatedly emphasized, as a means of gaining verisimilitude in his experiments. Still, he was usually cautious about generalizing his results. His reasons for using hypnosis grew directly out of these concerns. He

decided to follow the course of artificially creating some affective complexes or rather their short-term models, feelings which provoke a natural emotional reaction of the person under test, and leave conspicuous traces for a certain period of time. We had to create feelings of important intensity and stability, and for that end we used hypnosis. (p. 130)

The one area of research where his caution about generalizations from experiments seemed to leave him was when he began applying the combined motor

method to young children. This work began in a systematic way in the later half of the 1920s and was a major preoccupation at the time *The Nature of Human Conflicts* was written. Those interested in Luria's developmental research, especially his studies of the role of speech in the development of self-directed behavior, will find the last third of this monograph especially interesting. In it, Luria formulates a number of hypotheses using the combined motor method that became the backbone of his research in the late 1940s and early 1950s, when he was preoccupied with the problem of mental retardation, and shifts in Soviet psychology had produced a very Pavlovian flavor in his theorizing. In this section, he formulates the concept of the *functional barrier*, a term that refers to a hypothetical central mechanism enabling the subject to delay responding initiated by some external stimulus. Luria believed that the capacity for delay represents the primitive mechanisms underlying self-control or (in classical terminology) will. It was an important idea that has still not received the attention it deserves. Unfortunately, his developmental research using the combined motor method began using the laboratory techniques he had evolved for other purposes, not observations of real-life behavior of young children. As a consequence, the later part of *The Nature of Human Conflicts* contains some serious overgeneralizations about young children's ineptness. It was not until the late 1960s and early 1970s that he started to develop experimental models based on real-life situations.

THESE flaws serve only to highlight Luria's extraordinary grasp of the problems he set out to solve. He was 28 years old when he completed the manuscript of this book. In 1929, at the end of an era of research, he saw before him the outlines of a new set of problems which he struggled, with limited success, to describe as he set out to explore them in the 1930s and succeeding decades. Serious study of *The Nature of Human Conflicts* was described by an early reviewer as "a sort of hand-to-hand combat with every page, to be

constructed line by line. But if you
battle through to the end, your headache
will clear into genuine enlightenment”

(Stolberg, B. *New York Evening Post*,
September 24, 1932, p. 7).

I couldn't agree more.