

## BOOK REVIEW

J. Wertsch (ed.), *The Concept of Activity in Soviet Psychology*, M. E. Sharpe Inc., New York, 1981.

The concept of activity proposed by Alexei Leont'ev dominates contemporary Soviet psychology to an extent not achieved by any single theoretical position in the West. The term *activity* is used by Soviet psychologists to describe intellectual and other behaviour that is stimulated by a particular motive and subordinated to a particular goal.

Michael Cole, in the preface of the book, describes Leont'ev's theory as "an inclusive dynamic psychology that is one of the world's best examples of how a unified science of human-kind might be constructed".

As a reader, accustomed to the underlying philosophical assumptions of Western educational and psychological literature, one is confronted by one's ethnocentrism while reading the collection of papers presented in this book. James Wertsch has recognised this difficulty and has selected, translated and interpreted the Soviet papers in a way that provides the Western reader with essential information about the "theoretical foundations that guide contemporary Soviet psychology".

A key shift in perspective, evident in all papers, is from a focus on the individual, as a unit of analysis, and *causes* of differences in behaviour or performance, to an interactionist perspective in which functional systems of activity (either behavioural or mental) are the units of analysis.

After an introductory paper by the editor, the papers reproduced in the book are presented in groups under four headings. Brief comments about the selection of papers and some individual theorists represented in the book under each of these headings will be given below.

### *Theoretical Foundations*

In this first section there are two papers. The first is a translation of Alexei Leont'ev's paper "The Problem of Activity in Psychology", first published in *Voprosy Filosofii* in 1972. The paper touches on all major features of the theory of activity. One of the most interesting sections, from the point of view of a mathematics educator, is Leont'ev's analysis of the theoretical differences and similarities between the process of internalization as

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described by Piaget and the same process as explained within the theory of activity. Leont'ev acknowledges his debt to the work of Vygotsky, another Soviet theorist. In particular, he stresses Vygotsky's ideas about the instrumental (tool-like) structure of "higher psychological functions" and their "inclusion in a system of inter-relations with other people". The second paper in this section is by Zinchenko and Gordon and is entitled, "Methodological Problems in Analysing Activity". This paper describes the use of sophisticated technological apparatus in a study of real-time information processing in movement.

### *Vygotsky's Historical Influence*

Leont'ev's theory has been developed from Vygotsky's analysis of human higher order cortical functions. The three papers in this section are by Vygotsky and provide representative background reading. The titles of these papers are:

- The Instrumental Methods in Psychology
- The Genesis of Higher Mental Functions
- The Development of Higher Forms of Attention in Childhood.

Wertsch points out that Vygotsky's work has received recognition in the West particularly by researchers in the field of psycholinguistics. Perhaps the most interesting claim made by Vygotsky is concerned with the *social foundations of cognition*.

### *The Role of Sign Systems in the Theory of Activity*

The three papers in this section of the book deal with research investigating the use of signs (or devised representational systems) in human intellectual activity. Each of the papers stresses the function of signs as *mediators* of human intellectual activity. Also, the fact that sign systems are a subjective representation and their use introduces the possibility of misrepresentation of the relationships between objects in the external world. The two papers by A. N. Leont'ev (son of the major theorist) and Levina discuss research investigating the function of speech in intellectual activity. A third paper by Tikhomirov and entitled "The Psychological Consequences of Computerization" uses the theory of activity as the basis of a detailed analysis of the consequences for human cognition of computer technology. He suggests that computer programmes should be viewed as a new sign system that can mediate (and change) human intellectual activity.

*Empirical Studies Motivated by the Theory of Activity*

Of the three empirical studies in the last section of the book, one in particular deserves mention in this review. Zinchenko's paper, entitled "Involuntary memory and the Goal Directed Nature of Activity", uses Leont'ev's theory as the basis of an investigation of the development of mathematical problem solving processes and the conditions of incidental learning and memory. The analysis of the levels of processing of the information in mathematical problems is a field of enquiry that has received serious attention by mathematics educators. Because of this, the paper is perhaps the most informative example of the differences in perspective between Soviet and Western research in the field of educational psychology. Zinchenko's paper and the other paper by Tikhomirov and Klochko ("The Detection of a Contradiction as the Initial State of Problem Formation") both investigate memory processes. The third paper in this section, ("Criteria for Evaluating Executive Activity" by Kochurova et al.) uses the theory of activity as the basis of an investigation of the development of motor skills.

Although much of the research reported in the book is not directly related to mathematics education, the major focus of all papers is on Soviet psychological theories about the origins, development and use of higher order cognitive functions. A second major interest evident in all papers is the importance of signs (and symbols) as mediators of intellectual activity. Because of these emphases, mathematics educators who are interested in the psychology of mathematics education will find the book of interest.

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