Culture, communication, and cognition: Vygotskian perspectives

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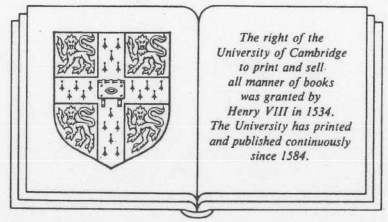

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The zone of proximal development: where culture and cognition create each other

MICHAEL COLE

I have chosen the rather unwieldy title of this chapter to highlight an aspect of current psychology that has bothered me for some time – the intellectual separation of its subfields that should, according to its own principles, be closely related. Recently published work by Soviet psychologists following in traditions established by L. S. Vygotsky hold great promise, in my estimation, for promoting reintegration of psychology and its sister science of anthropology.

In the present instance the subfields I have in mind are typically referred to as developmental, cognitive, and cross-cultural psychology and the anthropological efforts known as social, cultural, and cognitive anthropology. With a few exceptions, textbooks on cognitive and developmental psychology are written as if data on cognition and cognitive development were separable from an understanding of the cultural circumstances in which people grow up. Psychological processes are just as routinely downplayed in anthropological texts.

There are both historical precedents and contemporary intellectual justifications to support the separation of these approaches to the study of human nature. Early in the history of psychology as a discipline, Wilhelm Wundt promoted the separation of cultural factors in cognition by invoking a distinction between elementary and higher psychological functions according to individual and social levels of analysis. Elementary functions were the object of controlled, laboratory-based analysis of the introspective accounts of individual human subjects. Evidence concerning higher psychological functions had to be gleaned from data provided by ethnologists, folklorists, and philologists because they represent "mental products which are created by a community of human life and are, therefore, inexpliable in terms merely of individual consciousness, since they presuppose the reciprocal action of many" (Wundt, 1916, p. 3).

After several decades of research applying models and methods of cognitive and developmental psychology in widely different cultures, great uncertainty remains about the utility of the information obtained.

Table 1. *Psychology and anthropology: conceptual polarities*

Anthropology	Psychology
Culture	Cognition
Higher functions	Elementary functions
Products	Process
Content	Process
Group	Individual
Independent variable	Dependent variable
Observation	Experimentation
Field	Laboratory
Holistic	Analytic
Description	Explanation

Whether from the viewpoint of psychology (Jahoda, 1980) or anthropology (Edgerton, 1974) thoughtful observers have noted the severe interpretive difficulties that accompany cross-cultural comparisons. In Table 1, I have compiled two lists of terms that summarize the set of methodological/conceptual contrasts that have dominated these discussions.

Although a simplification, Table 1 faithfully represents the division of labor that has created what can fairly be called a dualistic approach to mind and society in which psychology is assigned the task of relating individual cognitive processes to group cultural products, which presumably have been described and catalogued by anthropology. In the standard formulation provided by texts on cross-cultural psychology, culture is an important source of independent variables for the study of psychological dependent variables (e.g., Brislin, Lonner, and Thorndike, 1973).

We have discussed the strengths and weaknesss of this approach to the study of culture and psychological processes at length elsewhere (Cole, 1981; Laboratory of Comparative Human Cognition, 1979; Scribner and Cole, 1981). It is not my intent to repeat such a discussion here. Rather, I would like to concentrate my attention on one of the problems posed by the division of labor schematized in Table 1: Nowhere in the table are we provided with a specification of how cultural independent variables become transformed into psychological, individual cognitive processes. How are different cultural contents transformed into cultural differences in cognitive processes? So long as the interlocking set of antinomies contained in Table 1 controls our research, this question will be difficult if not impossible to answer. We are restricted to a relatively crude black-box formulation which can correlate (anthropological) input and (psychological) output. But a direct analysis of the process of change is precluded. And without a systematic method for demonstrating the intimate mechanisms

transforming culture into cognition, there is unlikely to be any serious integration of cognitive, developmental and cross-cultural psychology with each other or with their parallel concerns in anthropology; each is trapped in its own set of phenomena, sealed off methodologically from the other.

Searching for common ground

The sociocultural approach

With these remarks as background, I can outline reasons why Vygotsky's work provides a rich source of ideas about ways to reconcile the study of culturally organized experience with the study of cognition and cognitive development.

As described by Luria (1979), Vygotsky set out in the middle 1920s to reconstruct psychology in a manner that would overcome the dualisms emanating from Wundtian psychology and its successors. Central to this effort was an approach that denied the strict separation of the individual and its social environment. Instead, the individual and the social were conceived of as mutually constitutive elements of a single, interacting system; cognitive development was treated as a process of acquiring culture. The normal adult cognitive processes, Wundt's higher psychological functions, were treated as internalized transformations of socially prevalent patterns of interpersonal interaction.

Vygotsky and his students called their approach a "sociocultural" or "sociohistorical" theory of psychological processes. The basic idea was expressed in the "general law of cultural development," where Vygotsky proposed that any higher psychological function appears "twice, or on two planes. First it appears on the social plane and then on the psychological plane. First it appears between people as an interpsychological category and then within the individual child as an intrapsychological category." (Vygotsky, 1978, p. 57).

The tight connection between the social organization of behavior and the individual organization of thinking is further emphasized in Vygotsky's claim that "the levels of generalization in a child correspond strictly to the levels in the development of social interaction. Any new level in the child's generalization signifies a new level in the possibility for social interaction" (Vygotsky, 1956, p. 432, cited in Wertsch, 1983, p. 26).

In the main, these ideas were tested in experiments with children, the work for which Vygotsky is best known. However, even in their early writings, Vygotsky and his students also pointed to a variety of data from the ethnological literature to substantiate the notion of cultural development as a historical process. So, for example, Vygotsky (1978) cited the Inca *quipu*, a record-keeping device, as a historically elaborated logical memory function, and Luria (1932) pointed to the use of drumming during collective work among primitive agriculturalists as a culturally mediated form of will.

In the early 1930s, Luria led two expeditions to remote parts of Central Asia to investigate the hypothetical links between socially organized modes of interaction and cognition. He sought to take advantage of the massive and rapid changes in basic modes of production that followed upon the program of mechanization and collectivization undertaken all over the Soviet Union in the late 1920s. Within a period of two to three years millions of peasants had been organized into collective farms, introduced to modern farming methods, and provided the rudiments of education built around literacy. In the Soviet republics of Central Asia, these changes meant a drastic shift in modes of social control, abandonment of a pastoral existence for sedentary farming, learning a new language, and exposure to a foreign ideology.

Although Luria and his colleagues made many interesting observations, Soviet cross-cultural research carried out within the sociohistorical tradition must be considered of very limited success. Research on perception of Gestalt figures demonstrated cultural variation where universal, biologically coded modes of perception had been hypothesized (leading the enthusiastic Luria to wire Vygotsky with the news that "Uzbekis have no illusions!"). Luria also demonstrated, in a series of clinical interviews, that Uzbekis who had changed their way of living to conform with literate, collectivized modes of production changed the way they responded to classification and reasoning tasks. Uzbekis who retained the traditional patterns of their culture responded to such problems using concrete examples based on their own experience. Uzbekis who had become collectivized (some of whom had learned to read and write) responded to syllogisms as logical puzzles; they also based their classifications of verbally presented items on taxonomic relations rather than the common functions that the objects named could fulfill (Luria, 1976).

Other parts of the research program failed to provide evidence of hypothesized shifts in the organization of mental processes. For example, a key element in analyses of the consequences of literacy was the notion that there would be a shift in the structure of remembering from direct, unmediated recall to mediated, logical remembering. This idea was tested in one study using techniques that mixed free recall and cued recall procedures that had proved useful in developmental studies of recall with children (Vygotsky, 1978). Another large study employed "pictograms" wherein people were asked to use pencil and paper to draw some graphic

representation of a to-be-remembered word or phrase. This work, too, had shown interesting age-related changes in children's memory as the graphic representation became integrated into the process of recall.

In neither case did Luria obtain clearly interpretable data when he contrasted collectivized and traditional Uzbekis. The free recall studies produced a marked shift in remembering performance only at relatively high levels of education, and people in all groups displayed mediated patterns of recall for some items. The pictogram data were not sufficiently orderly to permit any generalizations (Luria, pers. comm.).

The resulting mixture of results posed some serious problems of interpretation. At a global level, there were performance differences on some tasks to support the hypothesis of basic shifts in cognition corresponding to differential exposure to collectivized activities. There was, as Luria put it, a shift from "functional" to "abstract" responses for some tasks. However, according to the theory, distinctive modes of thought would be associated with distinctive modes of interaction. In fact, only the contents of Uzbeki culture, in the narrow sense of Uzbeki objects and vocabulary, were represented in the clinical interview. Specifically Uzbeki modes of interaction were never studied, so that only the barest outline of the factors responsible for the differences observed in the clinical interview could be speculated upon.

If these initial observations had been followed up, the cultural–historical aspect of the theory might have undergone proper development. But history itself intervened. The initial reports of this research evoked angry criticism in Moscow where the historical–developmental parallels were taken as evidence that Luria was denigrating the peoples among whom he had worked (see Cole, 1976). His shortcuts and simplifications had made this critique plausible, and it was not until many years later that part of the research was published and new studies undertaken (Tulviste, 1979).

It is a striking fact that the tasks upon which the experimental evidence for the theory rested, tasks conducted for the most part using children as subjects, were absent from Luria's account of research conducted in Uzbekistan. His cross-cultural studies of color and object perception, classification, and logical reasoning were chosen not for their role in the cultural theory, but for the role they had played in Western European studies aimed at specifying general principles of mental function and cognitive development, just the approach he had set out to criticize! Gone were the clever studies of mediated remembering and problem solving, experiments that studied cognition as process in change.

Lacking a detailed theory of Uzbeki adult activities, Luria had fallen back upon general psychological indices of cognitive development. Having substituted indices of mental development and the clinical interview for experimental models of real activity, he compromised the essential principles upon which his theory is based.

The concept of activity

The shortcomings of the cross-cultural research and the need to provide a framework that would allow one to observe the actual processes by which culture shapes cognitive development were well known to Luria, Vygotsky, and their students. But for reasons sketched earlier, they found it more productive to attempt a solution in contexts other than the cross-cultural arena.

The seminal formulation in a Vygotskian approach of a unit of analysis that could serve as the basis for a cultural theory of cognition was provided by A. N. Leont'ev, the third founder, with Vygotsky and Luria, of the sociohistorical school. Leont'ev's ideas are beautifully summarized in a relatively recent article (Leont'ev, 1972, reprinted in Wertsch, 1981).

Leont'ev begins by reviewing the shortcomings of research carried out in a "two-part scheme" (by which he meant all manner of stimulus–response theories), because such approaches exclude "the process that active subjects use to form real connections with the world of objects." This exclusion, he says, leads to unconstrained theorizing about internal processes or denies the possibility of principled psychological analysis altogether. As I have characterized it, this criticism applies to virtually all cross-cultural psychological research, including Luria's.

Leont'ev insists on the need for a three-part scheme in which the third part, encompassing the other two, is the subject's *activity (deyatel'nost')*, including the goals, means, and constraints operating on the subject.

The centrality of *activity* to a cultural theory of cognition is reflected in Leont'ev's assertion that

> human psychology is concerned with the activity of concrete individuals, which takes place either in a collective – i.e., jointly with other people – or in a situation in which the subject deals directly with the surrounding world of objects – e.g., at the potter's wheel or the writer's desk. . . . if we removed human activity from the system of social relationships and social life, it would not exist. . . . *the human individual's activity is a system in the system of social relations. It does not exist without these relations.* (Leont'ev, 1981, pp. 46–47; emphasis added)

Following Marx, Leont'ev (as suggested by his reference to the potter's wheel and writer's desk) emphasizes that "intellectual activity is not isolated from practical activity," which he understood to include "ordinary material production" as well as activities that we count as intellectual.

Leont'ev conceived of activity as a nested system of coordinations bounded by general human motives. In contemporary ethnographic

terminology, an activity is coextensive with the broadest context relevant to ongoing behavior. Activities are composed of actions, which are systems of coordination in the service of goals, which represent intermediate steps in satisfying the motive. As he puts it, "an activity is usually carried out by some aggregate of actions subordinated to *partial goals,* which can be distinguished from the *overall goal."* (Leont'ev, 1981, p. 61; emphasis in original). Actions, in turn, are composed of operations, the means whereby an action is carried out under specified constraints.

Leont'ev's concept of activity provides the basic unit of analysis that Vygotsky and his colleagues had been using in a partially articulated way in their research. It also pinpoints the weakness of Luria's cross-cultural research (and, by extension, the work of most cross-cultural psychologists). Working in his own culture, Luria could present a psychological task (defined by Leont'ev as "the goal under certain conditions") and be relatively certain that the goal and conditions were a part of adult activities; hence it made sense to inquire into the way that children come to be guided by those goals and constraints. Knowing the structure of external activity, Luria had an empirical framework within which to interpret their internal concomitants. But he had no such knowledge of Uzbeki activities and their associated congeries of goals and means. Hence, he was on shaky grounds when he attempted to draw inference about thought (e.g., internal activity).

Contributions from Western European and American social sciences

If my account is correct, extension of the precepts of the sociocultural school to actual cognitive activities in other cultures was weakened by the failure properly to deal with real contexts of activity found in the host culture, substituting European-derived tasks for indigenous ones. Psychological research originating with Western European and American researchers can be submitted to the same criticism (e.g., Laboratory of Comparative Human Cognition, 1978). However, there has been research carried out by cultural anthropologists that strongly supports the basic proposals put forth by sociocultural theorists and that illustrates the usefulness of their conceptual framework. This research fits surprisingly well with modern ideas growing up in cognitive psychology.

Contributions from cultural anthropology

Cultural anthropology is not a highly elaborated enterprise in the USSR, but it is in Western Europe and the United States, where it has been a major

source of ideas concerning basic units of analysis for the systematic study of traditional cultures. My reading of this literature has impressed me strongly with the correspondence between the Soviet concept of activity and the anthropological notion of an event or context (e.g., Frake, 1977). Two classic formulations will illustrate my point.

In his monograph on *Foundations of Social Anthropology,* S. F. Nadel directly addresses the problem of units of analysis, arriving at a formulation quite similar to Leont'ev's notion of activity.

First, he explicitly acknowledges that it is necessary to determine if "the units we seek to isolate satisfy the condition of the whole, that is, if each bears the characteristics pertaining to that total entity, culture or society" (Nadel, 1951, p. 75). He goes on to define a basic unit that contains both culture and the individual.

> Society and culture are broken down, not to, say, individuals, nor to the "works of man" (Kroeber), but to *man-acting.* In this sense no legitimate isolate can be discovered other than that of a standardized pattern of behavior *rendered unitary and relatively self-contained by its task-like nature* and its direction upon a single aim. (Nadel, 1951, p. 75 emphasis added)

At about the same time that Luria was conducting his research in Central Asia, Meyer Fortes was engaged in a field study of the Tallensi of northern Ghana. The object of his study was, as he phrases it, "the entire society and its culture." Like Nadel, Fortes chose a unit of analysis that included both individuals and society. He called it a "social space." Relationships between children and adults were, he says, determined by the child's social space. More generally,

> An individual's social space is a product of that segment of the social structure and that segment of the habitat with which he or she is in effective contact. To put it in another way, the social space is the society in its ecological setting seen from the individual's point of view. The individual creates his social space and is in turn formed by it. On the one hand, his range of experiences and behavior are controlled by his social space, and on the other, everything he learns causes it to expand and become more differentiated. In the lifetime of the individual it changes *pari passu* with his psycho-physical and social development. . . .In the evolution of an individual's social space we have a measure of his educational development. (Fortes, 1970, pp. 27–28)

Nadel provides a basic unit of activity that is both individual *and* social. To this Fortes adds the notions that (1) the nature of activity changes over time and (2) activities are mutually constructed by participants.

I will return presently to provide examples of anthropological analyses of people acting in mutually constructed activities that are also important contexts of development. First, however, I want to show how these anthropological concepts parallel important formulations in cognitive and developmental psychology.

Scripts, schemata, and events

Since the early 1970s it has become fashionable to characterize cognitive processes in terms of units variously labeled scripts (Schank and Abelson, 1977) frames (Minsky, 1975), and schemata (Rumelhart and Norman, 1980).

Consider the recent characterization of schemata by Rumelhart (1978). Condensing his discussion slightly, we can say that such theories attempt to account for the representation and application of human knowledge in terms of basic units called schemata.

When we look to the hypothetical content of schemata, the relationship to anthropological units such as "person-acting" become immediately apparent. Rumelhart tells us that there are schemata representing our knowledge of objects, situations, events, sequences of events, actions, and sequences of action. "A schema contains, as part of its specification, the network of inter-relations that is believed normally to hold among constituents of the concept in question" (Rumelhart, 1978, p. 3).

Since schemata are closely identified with the meaning of concepts, word meanings are assumed to represent the typical or normal situations and events that are instances of the schema.

Katherine Nelson (1981) discusses the mechanisms of schema acquisition in a manner that brings us directly back to Vygotsky. Schemata, she tells us, are built up from recurrent events occurring in social contexts. She terms the basic representations of event knowledge "scripts." She then points out that

> young children's scripts are initially acquired within contexts that are highly structured for them by adults. . . .one of the salient facts about the social events that they participate in is that they are most often directed by adults *and that the goals involved are the goals of others.* Thus the children's parts in the interactions are determined for them. . . .Adults provide directions for the activities, and often even supply the lines. (Nelson, 1981, p. 106; [emphasis added]).

Here several ideas come together. Nelson is reporting in script terminology on the way that children are incorporated into *adult* activities. These activities are described in terms that fit neatly Nadel's notion of man-acting and Fortes's characterization of a social space as the basic education/culture acquisition unit. Nelson adds the essential idea that children are frequently operating in someone else's scripts, subordinate to the control of others. This brings us to the final Vygotskian concept I want to consider.

The zone of proximal development

Given the strong lines of convergence toward a culturally based conception of cognition that exists in modern cognitive psychology and anthropology, as well as the sociocultural school, we can now turn to the concept that provides the title of this chapter.

When Vygotsky and his students observed the actual processes by which children came to adopt the role of adults in culturally organized activities, they emphasized, like Fortes, and Nelson, the interactional nature of the changes we call development. They found it useful to characterize the behavioral changes they observed in terms of shifts in control or responsibility. In 1934 (translated in 1978) Vygotsky coined the term "zone of proximal development" to describe this shifting control within activities. He first applied the idea in the context of instruction and testing. He said that the zone of proximal development is the difference between a child's *"actual development as determined by independent problem solving"* and the higher level of *"potential development as determined through problem solving under adult guidance or in collaboration with more capable peers"* (p. 86).

Educational applications of this concept have become well known in recent years (Brown and French, 1979; Bruner, Chapter 1, this volume; Cazden, 1981; Wertsch, 1978). This diagnostic and experimental work demonstrates the ways in which more capable participants structure interactions so that novices (children) can participate in activities that they are not themselves capable of; with repeated practice, children gradually increase their relative responsibility until they can manage the adult role.

Here, I would like to treat the idea of a zone of proximal development in terms of its general conception as the structure of joint activity in any context where there are participants who exercise differential responsibility by virtue of differential expertise. I find it significant that Vygotsky's notion of a zone of proximal development provides an excellent summary of Fortes's description of the basic mechanism of education in African Tale society. For example, Fortes tells us that

> as between adults and children in Tale society, the social sphere is differentiated only in terms of relative capacity. All participate in the same culture, the same round of life, but in varying degrees, corresponding to the stage of physical and mental development. Nothing in the universe of adult behavior is hidden from children or barred to them. They are actively and responsibly part of the social structure, of the economic system, the ritual and ideological system.
>
> . . .Education, it is clear, is regarded as a joint enterprise in which parents are as eager to lead as children to follow. . . .A child is never forced beyond its capacity. (Fortes, 1970, pp. 19, 23)

Fortes goes on to describe how, within a social sphere that strikes him as remarkable for its unity, responsibility is regulated in a process that provides for the transfer of control to children, to succeeding next generations, as its overall function.

More recent psychoanthropological research describes zones of proximal development within culturally organized activities in some detail.

Alfred Kulah (1973) analyzed an unusual kind of zone of proximal development in his study of the use of proverbs in the formal and informal rhetorical discussions of the Kpelle elders of Liberia. He was interested in the way that young Kpelle children come to learn the meaning of the proverbs. His investigation showed that in a very important sense, proverb content and interpretation are not taught, they are "arranged for." The arranging starts long before any child is expected to know or use proverbs. All Kpelle children engage in a variety of verbal games, including riddling and storytelling. One genre of this game requires teams of children to pose riddles to each other. The riddles consist of two parts roughly akin to a "question" or an "answer". Both questions and answers are part of the traditional lore of the group. They must be learned as pairs. The children line up in two rows ordered by the age of the participants from youngest to oldest. They sequentially challenge each other with riddles. The team that answers the most riddles correctly is the winner.

The teams of children are age-graded. Children of a wide span of ages (say, from 5 to 12) may play, with the oldest on each team taking the first turn, then the next oldest, down to the youngest. In this way, even the youngest member of a team is important, and even the youngest is around to learn many new riddles.

This activity is related to adult proverb use in the following way. The question and answer halves of the riddles that the children learn are key phrases that appear in adult proverbs. It is as if the riddle learning serves to teach children the "alphabet" along the way to learning to "read words." For example, a "question" might be something like "rolling stone" and the answer, "gathers no moss."

Kulah's research shows that the potential meaning in combining "rolling stone" and "gathers no moss" is not well understood by young children, even if they know a lot of riddle question–answer pairs. In a task designed to see if the children would group different riddles by the common meaning that the adult interpretation specifies, young children did not respond as if one riddle was related in any way to another. But as the children grew older, they came more and more to approximate adult groupings of riddles according to their "message." By the time they are old enough to participate in the adult discussions where these proverbs are a rhetorical resource, they show the adult pattern of proverb interpretation. They are ready to learn how to use their now-organized "alphabet" in a new context, as a component in new, adult tasks.

An even closer parallel to the context that Fortes and Vygotsky had in mind is provided by Childs and Greenfield's (1982) description of learning

to weave among Zinacantecan weavers of south-central Mexico. Zinacantecan women weave using backstrap looms on which they fashion a variety of basic garments. The role of social guidance in this process is very clear.

The process of weaving can be divided into six basic steps, beginning with setting up the loom to finishing off the woven product. The first time a novice reaches any step the adult or adults in attendance can be found to intervene heavily; after practice they intervene seldom or not at all. On the child's first garment, the adults observed by Childs and Greenfield spent 93% of the time weaving with the child. If a girl had completed one garment, adult participation was reduced to about 50%. After as many as four garments, adults were still involved directly in weaving about 40% of the time.

Childs and Greenfield showed that adult talk is also tied to the level of the child's skill and the specific task at issue. Early in learning, their talk is dominated by commands of the sort "Do *x*." In later stages of learning, when novice weavers' actions are more skillful, adult talk shifts to comments on salient aspects of the work in progress.

A second important feature of Zinacantecan weaving as an instructional zone of proximal development is that the successive steps toward mastery are experienced by the novice as part of the overall adult activity. From an early age, long before they might notice that they are learning to weave, girls are witness to the whole process. Before they actually take responsibility for any of the six steps described by Childs and Greenfield, they have been witness to the entire process countless times. In an important sense, at the point where Childs and Greenfield begin their analysis, girls are beginning to "practice what they already know."

This manner of arranging instruction provides powerful facilatory constraints on the physical process of learning. In the parlance of contemporary cognitive psychology, the girls are provided powerful "top-down" constraints on learning.

These same points are reinforced in Lave's (1978) study of tailoring in Liberia. Lave carefully analyzed the organization of tailoring practice in shops where several masters and their apprentices produced a variety of men's garments. Like Childs and Greenfield, Lave found that tailors had evolved a systematic ordering of instruction. From time to time, she observed explicit instruction; for example, a master might demonstrate how to sew a button or mend a zipper, or a young apprentice would be asked to practice sewing on a discarded scrap of material. Far more important was the way in which apprentices were kept busy in productive activities while getting exposure to – and practice in – subsequent steps in the tailoring process.

Lave emphasizes the economic importance of the tailor's methods, where instruction of apprentices was a part of the larger system of adult activities aimed at wresting a living under competitive, economically marginal conditions. Virtually *never* is a novice permitted to engage in a task where costly failure is likely. At the same time, apprentices are eager to take over as much of the production process as possible both as a measure of their manhood and a necessary step toward economic independence.

Summary of common ground achieved

From my remarks so far I hope I have established the following points:

1. There is a basic unit common to the analysis of both cultures' and individuals' psychological processes.
2. This unit consists of an individual engaged in goal-directed activity under conventionalized constraints. This unit is variously designated an "activity," a "task," an "event."
3. In the main, particularly where children are concerned, these activities are peopled by others, adults in particular.
4. The acquisition of culturally appropriate behavior is a process of *interaction* between children and adults, in which adults guide children's behavior as an essential element in concept acquisition/acculturation/education.

From this common starting point, different analysts move in different directions according to their special interests. Anthropologists, in general, eschew the implications of activities as the basis for internal activity (e.g., cognition), looking instead to the social structure of which it is the basic unit. Psychologists, in general, eschew analysis of links between activities (e.g., social structure) in their attempts to discern laws of internal (mental) organization and the emergence of more abstract categories of knowledge.

These separate lines of analysis are, of course, but a recapitulation of the division of labor that I described at the opening of this chapter. What I hope has been added is the realization that in circumstances where we do *not* want to take the cultural content of activity as given, we now have common ground that can serve as the basis for a culturally grounded theory of cognition.

Culture and cognition as the object of study

In circumstances where we do *not* want to take the cultural context as given, but seek rather to study the role of culture in organizing systematic differences between people, the sociocultural approach in combination with concepts developed in Anglo-American cultural anthropology and cognitive psychology offers a very fruitful framework because of its militant insistence on linking individual and social activity. "Man-acting" and "schema" may be the "inside" and "outside" versions of the same sphere of activity, as I have suggested. But the mutual indifference of psychologists and anthropologists to the phenomena that they study quickly induces mutual indifference and robs the social sciences of the benefits that might result from the interactions that a common unit of analysis might provide.

A sociocultural approach militates against this separation because of the two-sided nature of *activity* as a basic concept. As Leont'ev states,

> In activity the object is transformed into its subjective form or image. At the same time, activity is converted into objective results and products. Viewed from this perspective, activity emerges as a process of reciprocal transformations between the subject and object poles. (Leont'ev, 1981, p. 46)

When we add to this Leont'ev's insistence that activities are systems in the system of social relations it is clear that the study of culture and cognition must incorporate the study of *both the systems of social relations and of internal (cognitive) activity.*

In my opinion, American scholars are in a particularly advantageous position to exploit the insights of the sociocultural theorists. In recent years there has been a great deal of interest among scholars of many disciplines in the "real activities of real people," the necessary starting point of analysis. There has also been an increasingly heavy emphasis on human activity as mutually constituted in interaction.

For reasons that go beyond the confines of this chapter, our Soviet colleagues have not pursued the techniques necessary to fulfill their own theoretical prescriptions [however, see Wertsch (1981) for some interesting beginnings]. Using insights gathered in disparate areas of the social sciences within a sociocultural framework, I foresee the opportunity to solve some of those fundamental problems in the analysis of human nature that Vygotsky confronted a half-century ago and we continue to confront today.

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