

Introducing sociocultural theory

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The chapters in the present volume all explore, in various ways, the implications for second language learning and teaching of a sociocultural theory of mind, as originally conceived of by L. S. Vygotsky, during the years immediately following the Russian Revolution. Such explorations lead to a view of learning and teaching which in many respects is very different from theories currently in favor in the mainstream SLA literature. My purpose in what follows is to outline the core statements of sociocultural theory, and then to preview their operationalization in the eleven chapters that comprise this volume. The discussion here is restricted to the central tenets of the theory. Those issues not germane to the scope of the present work, such as debates over concept formation in childhood and which modern incarnation of the theory is most faithful to Vygotsky's original ideas, I leave aside in the interest of space. Interested readers should consult the Bibliography (see, for example, Vygotsky 1978 and 1987; Luria 1979; Wertsch 1985a; Newman and Holzman 1993; Cole 1996).

Mediated mind

The most fundamental concept of sociocultural theory is that the human mind is *mediated*. In opposition to the orthodox view of mind, Vygotsky argued that just as humans do not act directly on the physical world but rely, instead, on tools and labor activity, which allows us to change the world, and with it, the circumstances under which we live in the world, we also use symbolic tools, or signs, to mediate and regulate our relationships with others and with ourselves and thus change the nature of these relationships. Physical as well as symbolic (or psychological) tools are artifacts created by human culture(s) over time and are made available to succeeding generations, which can modify these artifacts before passing them on to future generations. Included among symbolic tools are numbers and arithmetic systems, music, art, and above all language. As with physical tools, humans use symbolic artifacts to establish an indirect, or *mediated*, relationship between ourselves and the world. The task of psychology, in Vygotsky's view, is to understand how human social and mental activity is organized through culturally constructed artifacts.¹ Vygotsky conceived of the human mind as a functional

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system in which the properties of the natural, or biologically specified, brain are organized into a higher, or culturally shaped, mind through the integration of symbolic artifacts into thinking. Higher mental capacities include voluntary attention, intentional memory, planning, logical thought and problem solving, learning, and evaluation of the effectiveness of these processes.

Whether physical or symbolic, artifacts are generally modified as they are passed on from one generation to the next. Each generation reworks its cultural inheritance to meet the needs of its communities and individuals. For example, the cumbersome early computing machines which we were in awe of during the 1950s, today have become sleek and much more powerful devices that have increasingly found their way into the daily lives of communities in many parts of the world. Likewise, languages are continuously remolded by their users to serve their communicative and psychological needs.

A particularly powerful example in this regard is found in the impact of new metaphors on the way people think and behave. For instance, for nearly four decades researchers have conceived of and studied human minds as if they were computational devices, a perspective that would have been impossible until the development of computers during the middle years of the twentieth century.² As often happens throughout history, a development in one domain gives rise to a 'spin-off' in another (Wertsch 1998: 58–9). As a further example of a spin-off, consider the interesting work of David Olson on writing systems. Briefly, Olson (1994) shows how our commonly accepted view that 'writing maps onto preexisting models of language' (Wertsch 1998: 62) is misleading, since in fact, the relationship between writing and language models is the reverse. That is, the categories and structures (for example, sentences, words, phonemes) that are the focus of much linguistic theorizing are, in fact, spin-offs of alphabetic writing systems. For example, while early pictorial writing systems brought meaning into consciousness because these scripts 'provided a notion of saying the same thing each time they were scanned or recited', the graphemic or alphabetic system brought verbal form into awareness (Olson 1994: 258). Here 'saying the same thing' meant repeating the same forms. Hence linguistic categories such as 'words' were brought into awareness (Olson 1994: 259). Illich and Sanders (1988) point out that cultures which lack a writing system do not possess the concept 'word', which they claim arose only after the alphabetic system emerged in ancient Greece. The alphabetic system is also noteworthy for what it leaves out of consciousness as much as for what it brings into awareness. Graphemic writing has had a notoriously difficult time indicating such linguistic features as intonation, stress, volume, length, and other markers of the illocutionary aspects of utterances. Is it then, merely an accident that these features, until relatively recently, have not been central to linguistic theorizing? Generative theory, for instance, is a theory of possible sentences, and as it turns out, sentences are an aspect of language that alphabetic writing can easily make

explicit. Something similar can be said with respect to the sounds of speech. It is interesting to note that while syntax and phonology continue to be viewed as core areas of language and thus of linguistic analysis, pragmatics is often relegated to the margins of linguistics, if not pushed completely into other disciplines such as communication theory, philosophy, or sociology. Such is the power of (the spin-off of) *written words!*

Genetic domains

Since we inherit cultural artifacts from our ancestors, who in turn inherit these artifacts from their ancestors, Vygotsky reasoned that the only adequate approach to the study of higher mental abilities was historical. As such, he proposed four *genetic* domains for the proper study of higher mental functions: *phylogenetic* domain, concerned with how human mentation came to be distinguished from mental processes in other life forms through the integration of mediational means over the course of evolution; *sociocultural* domain, concerned with how the different types of symbolic tools developed by human cultures throughout the course of their respective histories affected the kinds of mediation favored, and with it the kinds of thinking valued, by these cultures (for example, the impact of such artifacts as numeracy, literacy, and computers on thinking); *ontogenetic* domain, where focus is on how children appropriate and integrate mediational means, primarily language, into their thinking activities as they mature; *microgenetic* domain, where interest is in the reorganization and development of mediation over a relatively short span of time (for example, being trained to criteria at the outset of a lab experiment; learning a word, sound, or grammatical feature of a language).

Although sociocultural theory recognizes four genetic domains, most of the research has been carried out in the ontogenetic domain where focus has been on exploring the ways in which abilities such as voluntary memory are formed in children through the integration of mediational means into the thinking process. In one well known experiment (see Vygotsky 1987), young children were forbidden to utter specific color terms when describing a series of objects placed before them. They were also instructed not to repeat the same color term more than once. In order to help the children, Vygotsky provided them with a set of colored cards, which, if used correctly, could cue them as to the forbidden colors as well as reminding them which terms not to repeat. He found that young children could not integrate the cards into the task and recourse to the cards only confused the children further. Older children had no difficulty integrating the colored cards and in fact were only able to avoid the forbidden colors by referring to the cards. Adolescents and adults, on the other hand, did not require the cards at all since they were able to rely on memory to avoid the forbidden color terms.

The point of the above experiment was to demonstrate the developmental nature of mediation from a stage in which any type of assistance was useless,

to a stage in which external forms of mediation would improve task performance, to a final stage in which external mediation had been internalized. The fact that the adolescents and adults in Vygotsky's experiment did not require mediation in the color naming task does not imply that this is a general property of adult consciousness in all tasks, since there are clearly tasks in which even adults require external forms of assistance. A typical example, provided by Wertsch (1998), is when an adult is asked to multiply two sets of high numbers (for example, 245×987). Most of us are unable to carry out this task internally and must rely on paper and pencil to complete the arithmetic operation. If the numbers are even higher and, say, include decimals, we might even require use of a more powerful artifact, such as a calculator.

Luria (1981) carried out a series of studies in which he showed how language came to function as a means for children to mediate their own physical behavior. In this research, children were instructed to press a bulb whenever they saw a green light come on in the apparatus set before them and to stop pressing the bulb when a red light came on. Very young children were not only unable to follow the instructions, but in fact, tended to press more vigorously when the red light turned on. Older children were able to perform the task appropriately but only under the verbal direction of someone else, who cued them to press or stop pressing (the same verbal regulation produced no effect in the youngest children). Still older children were able to regulate their own pressing behavior by externally telling themselves when to press and when not to. Finally, the oldest group of children participating in the experiment had internalized the mediational means afforded by language in this case and thus were able to regulate their own pressing behavior appropriately in the absence of externalized verbal utterances. In this way, Luria was able to demonstrate how language comes to play a central role in inhibiting and initiating behavior—essential aspects of planning.

Although most formational research has focused on the ontogenetic domain, there has been some work carried out in the other three domains as well. Vygotsky himself wrote about the mediational differences in the phylogenetic separation of humans and higher primates. Rather than carrying out his own research, however, he relied heavily on the work of researchers such as Yerkes and his colleagues. While Vygotsky's writings here argue for marked mediational differences between humans and apes, more recent research has shown that differences may not be as clearly defined as Vygotsky assumed. With regard to the sociocultural domain, some work has been carried out on the impact of literacy on cultural and social development (see the discussion of Olson 1994 above), but certainly a great deal more research is required in this area. With regard to microgenesis, the majority of the research in this domain, until very recently, had been represented by the work of A. R. Luria (1973, 1981). The research of McNeill (1992) and his colleagues on the link between gesture and speech clearly falls within the domain of microgenesis (see p. 76 and below).

In addition, some of the work on second language learning, as represented in the present volume, falls within this domain as well; however, in this case, the concern is more about the reformation rather than the formation of mediational means.

With regard to reformation processes, one of the most frequently cited cases within sociocultural psychology is Luria's (1976) investigation of the consequences of collectivization and schooled literacy on Uzbek peasants. Luria demonstrated that those Uzbeks who had been schooled, even for a short period of time, were able to shift from their earlier practical situationally-based thinking strategies to logical and taxonomic patterns of thinking. Thus, when presented with a task which asked participants to group objects according to some common property, unschooled Uzbek peasants argued that objects such as *hammer*, *saw*, *log*, and *hatchet* should be grouped together, roughly on the grounds that hammers, saws, and hatchets were of no use without an object on which to employ them. When shown a picture of three adults and one child and asked which one did not belong, an unschooled peasant responded that they all belonged together because 'Three men are working, you see, and if they have to keep running out to fetch things, they'll never get the job done, but the boy can do the running for them' (Luria 1976: 55). And when asked to solve the following syllogism: 'Cotton can grow only where it is hot and dry. In England it is cold and damp. Can cotton grow there?' one unschooled Uzbek responded with 'I don't know'... 'I've only been in the Kashgar country; I don't know beyond that' (Luria 1976: 108). On the other hand, Uzbeks who had spent a year or two in school had no difficulty solving the above, and similar, tasks as most educated Westerners would. As a consequence, these individuals not only grasped principles of categorical classification and deductive inferencing, but tended to use these as their chief modes of thinking. Thus, their mental system had been reformed as result of their participation in a culturally specified activity known as schooling. Learning of a second language, under certain circumstances (see the chapter by Pavlenko and Lantolf in the present volume), can lead to the reformation of one's mental system, including one's concept of self (see also Lantolf 1998).³

Since none of the chapters in the present volume addresses issues of deformation, I will only briefly consider this interesting and important aspect of sociocultural theory and research. In addition to work on the ontogenetic formation of children, sociocultural research has also been concerned with understanding the nature of mind through work with physically and mentally impaired children. This research has a practical as well as a theoretical slant. On the practical side, researchers were able to help children learn how to carry out normal physical and mental activities, but through the use of alternative mediational means (for example, tactile signs to help blind-deaf children communicate). On the theoretical side, researchers were able to test their hypotheses about how normal minds function by observing the effects

of introducing alternative forms of mediation on mental and physical activity (see Vygotsky 1993)⁴. Luria took the lead in working with individuals whose mental systems had unraveled as a result of cerebral damage arising from physical trauma, disease, or illness such as stroke (see Luria 1973, 1979). Here he was able to help cerebrally impaired adults overcome deficits through the introduction of alternative mediational means into a damaged mental system. Luria found, for example, that a patient exhibiting problems of narrative coherence was able to overcome the symptom by writing the fragments of a story on slips of paper, at which point he was able to rearrange them into a coherent narrative (Luria 1973). Through such research Vygotsky and Luria were not only able to verify the propositions of their theory but they were also able to help people recover from trauma. In many ways, then, work on deformation of mental systems is linked to research carried out on the reformation of such systems.

Yet another means of exploring the consequences of deformation of mediational means is under experimental conditions, in which the researcher sets a task for the individual and then introduces an interruption or complication. At this point the individual generally begins to explore ways of (re)mediating the activity through integration of different mediating artifacts. In second language research, the early study by Frawley and Lantolf (1985) compared the performance of intermediate and advanced ESL speakers and showed how in the face of a difficult narrative task, the performance of the intermediate speakers breaks down and they subsequently lose control, or self-regulation, over the mediational means provided by their second language and become controlled, or regulated, by the task set before them. More advanced speakers are able to control the mediational means afforded by the second language in guiding themselves through the task; in fact, to be an advanced speaker/user of a language means to be able to control one's psychological and social activity through the language. This of course also applies to a first language. As children develop they gain increasing control over the mediational means made available by their culture, including language, for interpersonal (social interaction) and intrapersonal (thinking) purposes. In both circumstances, individuals move through stages in which they are controlled first by the objects in their environment, then by others in this environment, and finally they gain control over their own social and cognitive activities. These stages are usually referred to in sociocultural theory as object-, other-, and self-regulation. The reader should recall Luria's bulb-pressing experiment in which young children were first unable to exercise any voluntary control over their pressing behaviors. These children are said to be object-regulated by the devices in the experiment. Somewhat older children were able to respond appropriately to the lights; however, only when instructed to do so by someone else; hence, these children are said to be other-regulated. Those children who were able to instruct themselves verbally when to inhibit or initiate their bulb-pressing behavior are said to be

self-regulated, although unlike in the case of adolescents or adults (who generally have no difficulty in carrying out such experiments and therefore require little or no overt verbal instruction from themselves or anyone else) they had to overtly instruct themselves in this activity.⁵

Unit of analysis

Sociocultural theory clearly rejects the notion that thinking and speaking are one and the same thing. It also rejects what some now call the communicative view of language (see Carruthers and Boucher 1998), which holds that thinking and speaking are completely independent phenomena, with speaking serving only as a means of transmitting already formed thoughts. Sociocultural theory argues that while separate, thinking and speaking are tightly inter-related in a dialectic unity in which publicly derived speech completes privately initiated thought.⁶ Thus, thought cannot be explained without taking account of how it is made manifest through linguistic means, and linguistic activities, in turn, cannot be understood fully without ‘seeing them as manifestations of thought’ (Bakhurst 1991: 60). To break the dialectic unity between speech and thought is to forego any possibility of understanding human mental capacities, much in the same way, as Vygotsky observed, that independent analysis of oxygen and hydrogen fails to generate an explanation of water’s capacity to extinguish fire. What is needed, then, is a unit of analysis that preserves the dialectic unity of the elements (thinking and speaking).

Vygotsky proposed the *word* as this unit, because, in the word, meaning, the central component of thought, and linguistic form are united. In making his argument, Vygotsky distinguishes between the stable, or conventional, meaning of a word and its *sense*, or personal, and contextualized, meaning that emerges from particular ways people deploy words in mediating their mental activity. It is in a word’s sense that the microcosm of consciousness is to be uncovered.

Not all scholars working within sociocultural theory have agreed with Vygotsky’s designation of the word as the unit of analysis for the study of mediated mind. Wertsch (1985a: 197), for instance, suggests that it is difficult to perceive mediated processes such as memory or attention in the sense of a word. Vygotsky’s colleague, A. N. Leontiev (1978), early on rejected word sense as too psychological and thus too far removed from the concrete activity of people in their world. Zinchenko (1985), building on Leontiev’s claim, and at the same time drawing on Vygotsky’s own writings, argues that the appropriate unit of analysis is *tool-mediated goal-directed action*. This unit, according to Wertsch (1985a: 207–8), preserves the dynamic nature of intermental and intramental organization and functioning, while at the same time it encompasses those precise functional systems that for Vygotsky defined human mental ability—memory, problem solving, attention, intention,

planning, orientation, evaluation. The tool, as Wertsch (1998) points out, can be a physical artifact, as in the case of a pole for pole vaulting, or symbolic, as in the case of utterances produced during conversations with others and with the self. This perspective on the unit of analysis for the study of mind leads naturally to consideration of the overall theoretical framework which informs sociocultural research, and this is known as *activity theory*.

Activity theory

Activity theory is a unified account of Vygotsky's original proposals on the nature and development of human behavior. Specifically, it addresses the implications of his claim that human behavior results from the integration of socially and culturally constructed forms of mediation into human activity. Luria (1973, 1979) refers to the system that results from the integration of artifacts into human activity, whether that activity be psychological or social, as a *functional system*. Mind, according to Luria, is not properly speaking the activity of the biologically given brain, but is a functional system formed when the brain's electro-chemical processes come under control of our cultural artifacts: foremost among these is language. Vygotsky argued that if psychology was to understand these functional systems it had to study their formation (i.e. their history) and activity and not their structure. Vygotsky's ideas were eventually crystallized by A. N. Leontiev in his theory of activity, and while researchers since the time of Leontiev's original formulations have modified aspects of the theory, his fundamental claims continue to reside at its core. Activity in Leontiev's (1978) theory is not merely doing something, it is doing something that is motivated either by a biological need, such as hunger, or a culturally constructed need, such as the need to be literate in certain cultures. Needs become motives once they become directed at a specific object. Thus, hunger does not become a motive until people decide to seek food; similarly, literacy does not become a motive for activity until people decide to learn to read and write. Motives are only realized in specific *actions* that are goal directed (hence, intentional and meaningful) and carried out under particular spatial and temporal *conditions* (or what are also referred to as *operations*) and through appropriate *mediational means*. Thus, an activity comprises three levels: the level of motivation, the level of action, and the level of conditions. Activities then can only be directly observed, by others, at the level of conditions. However, the motives and goals of particular activities cannot be determined solely from the level of concrete doing, since the same observable activity can be linked to different goals and motives and different concrete activities can be linked to the same motives and goals. The illustrations given below should make these important points clear.

I will begin with Leontiev's informative example of the hunting practices of some tribal cultures and then consider some more recent examples taken from the education and L2 learning literature. Hunting, according to Leontiev,

has its basic motive in the biological need to satisfy hunger. The actual form the hunt takes is culturally specified. In some cultures, it is a collective activity in which some members of the community are assigned the responsibility of beating the bush mediated by such artifacts as sticks, hands (clapping), voices (shouting), and drums, in order to scare and drive the prey (the immediate goal of the hunt) toward other members of the community given the task of slaying it with the use of other artifacts, such as spears, and bows and arrows. Yet other members are given the responsibility of butchering and distributing the carcass to the general community, often according to a hierarchically specified code. The hunt then is an activity that can only be realized in the concrete actions of the hunters under specific conditions. For those participating in the hunt, their actions have meaning because they are linked to the activity's motive, satisfying hunger, and its immediate goal, slaying an animal. The beaters make sense of their actions, making noise to frighten the animal, by connecting this behavior to the motives and goals of the hunt. This is important because the beaters' actions are only indirectly linked to the primary goal, which is the slaying of an animal.

As I have stated earlier, activities are differentiated from each other by their objects and motives and not necessarily by their concrete realization as actions. Thus, the same activity can be realized through different actions and with different forms of mediation. For example, not all cultures engage in collaborative hunting. In some cultures, all aspects of the hunt are carried out by the same individuals, say through stealthfully stalking and killing the prey with a bow and arrow, spear, or rifle. In yet other cultures, the need to consume food is realized in the action of purchasing groceries at a supermarket. At the level of motive, these actions are all part of the same activity, even though they appear different in their overt manifestation. On the other hand, what appear to be the same actions can be linked to a different motive and thus constitute different activities. In the case of the beaters, it might turn out that they discover beating the bush rhythmically is fun and so they continue to engage in this action even when the community has no need for food. Thus, what was originally part of the activity of hunting now becomes an activity in its own right, because it is linked to a different motive—the motive of fun. Beating the bush now has new meaning. One might suspect that sport hunting arose under similar circumstances.

Wertsch, Minick, and Arns (1984), in a cross-cultural study, provide another example of how activity theory can inform our understanding of human mental and social behavior. In this study, the researchers compared the interactional activity that arose between rural Brazilian mothers and their children and urban school teachers and their students in a puzzle-copying task. The object of the task was for the adult-child dyads to copy a barnyard scene depicted in a model. The researchers hypothesized that given the contrasts between rural and urban cultures in Brazil there would be differences in the way the dyads carried out the copying activity. Briefly, the

researchers found that indeed clear differences emerged between the rural and urban dyads with regard to how the children were mediated by their respective caregivers. In the case of the urban dyads, the adults preferred to offer the children strategic clues by first orienting them to the model and telling the child to construct a similar scene. Along the way, the teachers suggested that the children look at the model before selecting the appropriate animal, fence, or what have you, to place in their own scene. In no case did the teachers pick up any pieces for the child, nor did they offer direct commands such as 'Pick up the duck and put it in this spot.' Instead they created a linguistic scaffold which allowed the child to figure out for him- or herself what to do at each point along the way. Thus, they would produce utterances such as 'Now look at the model.' 'Are you sure this is the correct place?' 'What comes next?' According to the researchers, there are three important features of this activity that need to be highlighted: the children made mistakes along the way, because they were offered strategic rather than directive help; the children carried out all of the actions themselves; by directing the children's attention to the model, the teachers were not just helping the children to copy the specific scene but they were instructing them in how to work with models.

The rural dyads behaved in a markedly different way. The mothers maintained responsibility for most of the moves throughout the task. They only rarely directed the children's attention to the model, opting instead to look at the model themselves. They used much more directive rather than strategic language. Thus, they tended to say things like 'Now pick up the duck and put it here.' In a sense, the rural mothers used their children as tools to construct an accurate copy of the model, without imparting to their children an understanding of what the task was about. Under such direct adult regulation, however, the rural children made significantly fewer errors in copying the model than their urban counterparts. Nevertheless, because most of the task remained under adult control, the children failed to learn much about how to orient themselves toward and copy models.

Comparing the relative performance of the rural and urban dyads from the perspective of activity theory, we note that the teachers made every effort to ensure that the goal of the activity (copying a model) became shared by their students. This did not happen in the rural dyads, where the mothers preferred not to share the goal. With regard to the actual conditions under which the children selected and placed pieces in their scene, the teachers consistently tried to shift responsibility for the decisions underlying this behavior to their students, while the mothers by and large determined which pieces to select and where to place them, directing their child's behavior through linguistic means.

In attempting to explain these differences, the researchers suggest that the rural and urban dyads operated from different underlying motives, which gave rise to very different objects of activity. They reasoned that in the

particular rural communities under study economic considerations are the driving motive. That is, these communities rely on the production and sale of artifacts such as pottery, clothing, and the like. In the production process, errors in performance often result in the loss of money either because materials have to be discarded when an error is made, or time is lost because a process must be undone and begun anew from the point where the error was made. Hence, the leading activity for the rural dyads was error-free performance, and the way to ensure this was for the mothers to control as much of the activity as possible and share as little as possible with their children. The goal was not simply to copy the model but to produce an *error-free* copy of the model. In the urban dyads, the motive underlying the activity was educational—i.e. that children need to learn to think independently. To realize this, the teachers had to share responsibility for decision making with their students. This of course meant that in some cases, children would make inappropriate decisions, thus leading to erroneous performance. But in this case, errors were not seen as costly but as necessary conditions for the taking on of responsibility for one's actions. The point is that while the rural and urban dyads engaged in the same task—copy the model—they were not engaged in the same activities, because even though pieces were selected and placed, the motives and goals underlying this behavior differed.

The unstable nature of activities

Activities, whether in the workplace, classrooms, or other settings, do not always unfold smoothly. What begins as one activity can reshape itself into another activity in the course of its unfolding. Cobb (1998), for example, in his studies of children learning arithmetic reports a case in which the children began a project on measuring by playing shoestore, which required that they learn how to measure feet with the appropriate template. After a time, the children shifted their attention to measuring other kinds of objects and quickly lost interest in the shoestore activity. However, in order to measure objects such as chairs, tables, blackboards, and the like, they were not able to use the foot templates and had to discover a new set of measuring tools. Hence, a shift in activity gave rise to the need to discover different mediational tools for carrying out what had now become the activity of measuring objects in the world.

Thorne (1999) considers the impact of internet mediation on foreign language learner communicative activity. Using log file records and participant reports, Thorne provides evidence that learner communicative interaction is reconfigured when it is synchronously mediated through the internet. Students report feeling 'less culpable' for their on-line utterances; moreover, they express feelings of a lack of supervision, even though they are aware that their instructor is on-line. Thus, the internet environment creates among the students a certain sense of freedom which allows them to say things they

would probably not say in face-to-face interaction. At one point, in their interactions, some students began to use what some people take to be obscene language—a clear violation of the rules of the educational setting, but apparently not a violation of the chat world, at least not according to some students, who had experience with digitized culture. The teacher then stepped out of the role of electronic eavesdropper and back into the role of teacher and confronted the students producing the illegal language face-to-face. This move clearly changed the nature of the activity because for one thing the rules mediating chat discussions are different from the rules mediating discussion in the educational setting. Thorne argues that the shift in the mediational means from verbal face-to-face interaction that might occur in the normal language classroom to electronically mediated interaction, in which the students were no longer facing each other physically, changed the activity of communicating and thus opened up a set of options not available in the other venue. To be sure, it occasionally gave rise to negative speech behavior, but by and large, this different form of mediation enhanced creative language use in which fun and wit were valued and which fostered dynamic engagement (see van Lier's chapter) with others instead of comprehensible input and information exchange.

All of this means that in any given classroom setting (or any setting for that matter), not only can activities change from one moment to the next, but different activities might be underway at any given time, despite the fact that all of the participants display the same or similar overt behaviors in a task. A student might not care if she learned the language, as long as she passed tests and received an acceptable grade for the course, which, in turn, could enhance her chances of obtaining a good job or gaining admission to a choice graduate school, while other students engaging in the same task might well be oriented to the goal of learning the language because, for example, they find it intrinsically interesting. Gillette (1994) reports that some of the students in her university French class had personal histories in which anything foreign, in this case, non-American, was devalued and therefore not worthy of knowing. Thus, the so-called learning strategies they deployed were not directed at learning the language, but at coping with the 'imposition' of having to study a foreign language. Others of Gillette's students reported histories in which the family was intently interested in different cultures and their languages. These students showed strong evidence of strategies specifically directed at learning the language. Even if students in the same class engage in the same task they may not be engaged in the same activity. Students with different motives often have different goals as the object of their actions, despite the intentions of the teacher. A person who devalues foreignness may carry through on a pedagogical task with the sole aim of complying with the immediate demand of the teacher. Again, as Gillette's (1994) work shows, under such circumstances language learning is not likely to occur. Students then play a major role in shaping the goal and ultimate outcomes of tasks set for them by their

teachers. Thus, from the perspective of activity theory, while task-based instruction could yield positive learning outcomes, there can be no guarantees, because what ultimately matters is how individual learners decided to engage with the task as an activity.

As people participate in different culturally specified activities they enter into different social relations and come into contact with, and learn how to employ and ultimately appropriate, different mediational means. One outcome of activities such as collaborative hunting is a division of labor in which people begin to think of themselves as beaters, slayers, butchers, distributors, consumers, etc. In classrooms we also observe a division of labor, not only the obvious one between teacher and students, but among students. For example, Cole (1996) discusses a study on reading activity in an afterschool cooking club in which teams of children were given the opportunity to bake a cake according to a recipe. In some teams one child took on the task of coordinating the integration of ingredients while the other had the task of reading the recipe. If both children had read and coordinated, baking the cake would have, in all likelihood, proven to be more difficult to achieve.

Among culturally motivated activities are included work, education, accumulation of wealth, play, and the like. Play is an especially important activity in Vygotsky's theory of development, because it is in play that children create, usually in collaboration with other children, a zone of proximal development (see p. 17) in which they perform beyond their current abilities (see Vygotsky 1978 and 1997). So when children play house, mommy and daddy, or some particular profession, such as a doctor, a sports figure, etc., they engage in activities that are not just about having fun, but allow children to project into the future. Thus, play is an important activity for child development. The ways in which they play house, or the kinds of jobs and professions they play at are determined by their cultures. Child language scholars have, for some time, recognized the importance of play with language in the acquisition process (see Weir 1962; Kuzcaj 1983). Second language researchers have begun to document the appearance of language play among child and adult learners (see Peck 1980; Saville-Troike 1988; Cook 1997, 2000; Lantolf 1997; Broner and Tarone 1999; and Sullivan, in this volume).

Internalization and inner speech

The convergence of thinking with culturally created mediational artifacts, above all those which are linguistically organized (for example, conversations, metaphors, narratives, poetry, writing, etc.),⁷ occurs in the process of *internalization*, or the reconstruction on the inner, psychological, plane, of socially mediated external forms of goal-directed activity. Internalization is in essence the process through which higher forms of mentation come to be. Internalization then assumes that the source of consciousness resides outside of the head and is in fact anchored in social activity. At first the activity of individuals is

organized and regulated (i.e. mediated) by others, but eventually, in normal development, we come to organize and regulate our own mental and physical activity through the appropriation of the regulatory means employed by others. At this point psychological functioning comes under the voluntary control of the person.

Internalization is not the wholesale transfer of external mediation to a preexisting internal plane. This would indeed sustain the Cartesian dualism that Vygotsky and other materialists oppose. On the contrary, sociocultural theory argues above all that specifically human psychological processes do not preexist inside the head waiting to emerge at just the right maturational moment. This requires a bit of clarification, given what has already been said about natural mind and our biological capacities. Kozulin (1998), relying on the extensive cross-cultural research of Michael Cole, notes that as far as we know, all humans are capable of classifying objects, which may well be a biologically specified ability. However, not all humans classify objects according to the same schema. In some cultures, classification of objects is based primarily on the objects' functional role in everyday practical activity, while in others they are classified according to formal schema internalized in school.⁸ Thus, while biology provides a foundation for classification, the concrete schemata deployed by individuals to classify entities in their world is culturally constructed. Therefore, attempts to ground explanations of mental development in the isolated individual are inadequate. A materialist account holds that internalization is a process through which mental actions are formed on the basis of external, materially based, social actions. Internalization, then, is the process through which a person moves from carrying out concrete actions in conjunction with the assistance of material artifacts and of other individuals to carrying out actions mentally without any apparent external assistance. This, however, does not mean that mental activity is free of mediational support. Indeed, there is support only now it is internally situated.

Consider the difference between the expert and novice pool player, as discussed by Wertsch (1998). In order to determine what the result of a particular shot is likely to be, the novice must actually play the shot and rely therefore on the external material support of the cue stick, the balls, and the table. The expert, on the other hand, is able to determine the outcome of the shot internally before actually playing it. In fact, the expert need not even be in the presence of pool playing equipment to make such a determination. He or she can 'visualize' the shot on the psychological plane. This is so because the expert has internalized what was at one time the external material support provided by the cue stick, balls, and table.

In a revealing series of studies, Wertsch (see summary in Wertsch 1985a: Chapter 6) showed that in learning to solve certain cognitive tasks, such as reconstructing a wooden puzzle according to the specifications of a model, the behavior of young children (ages two to seven) initially was under the

mediational control of the child's parent. Gradually, control passed from the parent to the children as they appropriated the language used by the parent as a means of mediating their own mental and indeed physical activity. At this point, the children's speech also shifted from an exclusively social to a shared psychological function, but as in the case of the novice pool player, the psychological function was still linked to the specific external circumstances in which the puzzle solving occurred. The children's speaking activity, therefore, was in some respects social in that it occurred in the presence of the other person, but it was importantly psychological to the extent that it was not directed at the other person; rather it was oriented to the children themselves as they instructed themselves in selecting the appropriate piece from the pieces pile, placing the piece in the puzzle, and in evaluating the correctness of their moves.

Importantly, the self-directed language attested in Wertsch's research and numerous other studies (see Diaz and Berk 1992), takes on an elliptical quality. That is, it most often consists of utterances that are not fully syntactic. In fact, it looks like one half of a dialogue between individuals with a close personal relationship. For instance, utterances such as the following are frequently attested in self-directed speech in English: *What? Next, an orange one, Wait, No, I can't ... Done*, etc. This speech, in which we ask ourselves questions, answer these questions, tell ourselves to interrupt a particular activity, tell ourselves we are wrong or that we cannot do something, and that we have completed a task, is generally referred to as *private speech*; that is, speech that has social origins in the speech of others but that takes on a private or cognitive function. As cognitive development proceeds, private speech becomes subvocal and ultimately evolves into *inner speech*, or language that at the deepest level loses its formal properties as it condenses into pure meaning. According to Vygotsky, it is in the process of privatizing speech that higher forms of consciousness arise on the inner plane and in this way our biological capacities are organized into a culturally mediated mind.

Once mental processes grow inward and private speech evolves into inner speech, mental activities need not remain, and for most people, they do not remain, as exclusively internal mental operations. In the face of difficult tasks, and here difficulty is ultimately determined by the individual, these processes can be reexternalized as the person attempts to regain control over them in performing the task. Frawley and Lantolf (1985) refer to this process as *reaccessing* earlier stages of development.⁹ If a task is especially difficult, and if the person decides that it is important enough to persist in the task, the person has the option of seeking help from other people. In this way, psychological processes once again become social as the person seeks out other mediation. Alternatively, the person may seek assistance not in some other person, but in particular artifacts made available by the culture. Hence, the person may decide to consult a book, use a calculator or computer, or even a horoscope as a means of obtaining needed mediation.¹⁰

Inner speech and gesture

The work of David McNeill (1992) and his colleagues has been instrumental in drawing our attention to the significance of gesture not only in social interaction but also to the central role it plays in cognitive activity. Briefly, McNeill's claim is that inner speech is not only composed of a verbal aspect but has a gestural side to it as well. His work has shown that not only is gesture an indispensable part of our communicative activities with others but it is also a key feature in our communicative activities with ourselves. He has demonstrated how meaning is manifested not only verbally but also gesturally, not as a substitute for a verbal sign but as a complement to it. In other words, much of what we mean is only partially constructed through linguistic means. It is also partially constructed through gesture. Thus, when we interact with others we read not only their verbal signals but their gestural signals as well and in some cases the gestural signals may even override our verbally expressed intentions.

To illustrate, I recall an incident in which a generative-transformational linguist was engaged in dinner conversation about grammatical movement. At one point, the linguist uttered the word 'movement' and simultaneously his right hand moved through the air from right to left and with a low to high trajectory, thus tracing the grammatical form of constituent movement in the theory. The English word 'movement' specifies neither directionality nor trajectory, but this was a crucial aspect of the meaning the speaker intended to project, and he did it through the integration of his verbal and gestural signs.

Yet another incident I observed illustrates how gesture is used in its cognitive function. During a television interview, a well known owner of a professional American baseball team was talking about how one builds a winning team. In the jargon of baseball, a metaphorical expression used to refer to the field on which the game is played is 'diamond', presumably because the field is laid out in the shape of a marquis-cut diamond. At one point, in discussing the various positions for which quality players were required, the owner stopped in mid-utterance and proceeded to produce a series of filled pauses as follows, 'and uh, and uh, and uh.' He was clearly engaged in a lexical search. Eventually, he looked down at his hands which were configured in such a way as to indicate the shape of a marquis-cut diamond. At which point, he uttered 'oh, on the diamond' and continued his discourse.

Zone of proximal development

The site where social forms of mediation develop is the 'zone of proximal development.' This metaphor, originally proposed by Vygotsky as a way of capturing the process through which institutionalized schooling impacts on intelligence, as measured by IQ tests, has become perhaps the most well

known and widely adopted construct of the theory. According to Vygotsky, all higher mental abilities appear twice in the life of the individual: first on the intermental plane in which the process is distributed between the individual, and some other person(s) and/or cultural artifacts, and later on the intramental plane in which the capacity is carried out by the individual acting via psychological mediation. It must be emphasized again that the ZPD is not a physical place situated in time and space; rather it is a metaphor for observing and understanding how mediational means are appropriated and internalized.

Vygotsky's definition states that the ZPD is the difference between what a person can achieve when acting alone and what the same person can accomplish when acting with support from someone else and/or cultural artifacts. In light of our earlier discussion of internalization and appropriation, the reader should be able to appreciate the controversies that have arisen in conjunction with how the ZPD is to be construed. Some researchers have assumed that the ZPD necessarily involves interaction between an expert and a novice in which the expert eventually transmits an ability to the novice through social interaction. This view of the ZPD, in my opinion, has received substantial support from the work of Wertsch and his colleagues on parent and child joint puzzle-solving interactions. This is not to say that on theoretical grounds Wertsch himself sanctions such a perspective; however, because of the nature of his empirical research, it is not too difficult to understand how the expert/novice interpretation became the accepted interpretation. In fact, L2 research that I have participated in underpins this belief as well (see Aljaafreh and Lantolf 1994). Be that as it may, several scholars are now calling for a broader understanding of the scope of the ZPD to include more than just expert/novice interaction (see Kuutti 1996; Engestrom and Middleton 1996; Wells 1996, *in press*; Swain and Lapkin 1998).

If we do not lose sight of the key ingredient—mediation—I believe that a more robust and useful way of thinking about the ZPD can be sustained. It seems clear that people working jointly are able to co-construct contexts in which expertise emerges as a feature of the group. This is important, since without such a possibility it is difficult to imagine how expertise of any kind could ever arise; unless of course we were to assume an *a priori* biological endowment that specified the precise properties of the ability in question. But are we willing to accept that biology alone is responsible for the rise of literacy, numeracy, the invention of computers, legal systems, etc.? The ZPD then is more appropriately conceived of as the collaborative construction of opportunities (in his chapter van Lier discusses these as *affordances*; Swain and Lapkin 1998 call them 'occasions for learning') for individuals to develop their mental abilities.

Even in those cases in which experts and novices do come together, as in a teaching situation, novices do not merely copy the experts' capabilities; rather they transform what the experts offer them as they appropriate it. The key to transformation resides in *imitation*, which along with collaboration in the

ZPD, 'is the source of all the specifically human characteristics' of development (Vygotsky 1987: 210). Imitation in the ZPD, unlike copying (the verbatim mimicking of what the expert appears to do), is a complex activity in which the novice is treated not as a repeater but as a communicative being (Newman and Holzman 1993: 151–2). As an example of imitation, consider the following interaction between an adult and a child taken from a study by Bloom, Hood, and Lightbown as presented in Newman and Holzman:

Child: (opening cover of tape recorder) open, open, open

Adult: Did you open it?

Child: (watching tape recorder) open it

Adult: Did you open the tape recorder?

Child: (watching tape recorder) tape recorder

(Newman and Holzman 1993: 151)

The child creates something new (open > open it; tape recorder) as a result of imitating portions of the adult's utterances. Notice that the child does not produce an exact copy of the adult's speech and importantly the exchange is both communicative and instructional.

As often happens in traditional school settings, however, the expert (for example, language teacher) may well insist that the novice (for example, student) produce an exact copy of what is offered. In such circumstances, little if any account is taken of the student's ZPD, and while the novice with sufficient effort may succeed in accurately reproducing the expert's model, imitation, in Vygotsky's sense, is not operative. Moreover, the expert/novice interface in such a situation is rarely if ever communicative.¹¹ The reader will encounter several examples of genuine imitative interactions in the chapters that follow; importantly, many of these occur between and among learners with only marginal intervention from the teacher.

The present volume

Because sociocultural research seeks to study mediated mind in the various sites where people engage in the normal activities affiliated with living, it undertakes to maintain the richness and complexity of 'living reality' rather than distilling it 'into its elementary components' for the purpose of constructing 'abstract models that lose the properties of the phenomena themselves' (Luria 1979: 174). On this account, explanation of human activities is about observation, description, and interpretation guided by a theory that is careful not to compromise 'the manifold richness of the subject' (*ibid.*: 178). As Bruner, in his introduction to Luria (1987), puts it,

Explanation of any human condition is so bound to context, so complexly interpretive at so many levels, that it cannot be achieved by considering

isolated segments of life in vitro, and it can never be, even at its best, brought to a final conclusion beyond the shadow of human doubt.

(Luria 1987: xii)

While the eleven chapters included in the present volume are squarely situated within the research tradition discussed by Luria and Bruner—theory-guided observation and interpretation of people engaged in the activity of teaching, learning (in educational or other settings), and using second and foreign languages—each chapter foregrounds specific features of sociocultural theory and backgrounds others. The nine empirically grounded chapters mesh nicely with previous work carried out by sociocultural scholars in such ordinary venues as an after-school cooking club in New York (Cole and Traupmann 1981), a milk processing plant in New York (Scribner 1985), village shops in rural Nepal (Beach 1995), Russian immigrant communities in Israel (Kozulin and Venger 1994), tailor shops in Liberia and butcher departments in American supermarkets (Lave and Wenger 1991), a gas turbine manufacturing company in Japan (Engestrom 1999), airliner cockpits (Hutchins and Klausen 1996), and of course, classrooms.

All of the chapters in the present volume deal in some way with the fundamental concepts of mediation and activity theory. Moreover, several of the chapters work with the constructs of inner speech and private speech (Donato, Pavlenko and Lantolf, Verity, and McCafferty and Ahmed), the zone of proximal development and scaffolding (Donato, Swain, Ohta, Verity, and van Lier), and regulation and control (Verity, Ohta, Thorne, van Lier). Nine of the chapters present empirically-based studies and two are theoretical discussions of the potential benefits derived from relating socio-cultural theory to other theoretical perspectives. Seven of the empirically-based chapters (Donato, Kramsch, Ohta, Roebuck, Sullivan, Swain, and Verity) focus on language learning and teaching in classroom settings, and two (Pavlenko and Lantolf, McCafferty and Ahmed) investigate the processes and consequences of learning other languages in domains beyond the classroom.

The first chapter, by Donato, deals with four major themes: private speech, mediation, scaffolded learning in the zone of proximal development, and activity theory. As part of an introductory graduate course on sociocultural theory, Donato apprenticed his students into the theory by asking them to carry out a series of small-scale classroom research projects. Several of these projects are discussed and commented on in the chapter. The first is on the appearance of private speech during grammar instruction in an ESL class. According to Donato, it is important for teachers to recognize that students frequently need the opportunity to mediate their own learning privately; additionally, students often make their appeals for assistance through private speech, which, because it is not fully social, may not be fully appreciated for what it is by the teacher.

The second set of studies looks at mediational processes between teachers and students in a college-level elementary French class and a third-year high school Spanish class in the US. These studies bring to light important differences between purely instructional talk on the part of the teacher and instructional conversations between teachers and students in which students have the opportunity to regulate the conversation in ways they cannot when teachers engage in instructional talk. As it turns out, however, only a small portion of teacher/student talk was found to entail instructional conversations.

The study on scaffolding analyzed videotapes made in an elementary school Japanese class in which the students move from single-word responses to teacher-initiated interactions to more complex language which allows them to scaffold each other's learning. The study spans three different class levels. All three studies, according to Donato, provide evidence of a shift away from what Sfard (1998) calls the 'acquisition' metaphor to a new 'participation' metaphor. The chapters by Pavenko and Lantolf, and van Lier, respectively, introduced on pp. 23–5, also consider language learning from the perspective of the participation metaphor.

The final study examined in Donato's chapter involves an overt application of activity theory to classroom language learning. The focus is on small-group work carried out in an ESL setting in which the researcher shows how the same task is interpreted differently by different groups and thus becomes in each case a different activity, with a different goal and different mediational strategies. Donato argues that it is important for teachers to concern themselves more with students' orientation to tasks than to task outcomes and that consequently, tasks need to be seen as 'emergent interactions' rather than as recipes for ensuring specific kinds of language performance.

Continuing Donato's theme of scaffolding and learning in the zone of proximal development, Ohta's chapter presents a close analysis of two college-level students of Japanese who co-construct a zone of proximal development which allows them to scaffold their performance as they carry out an eleven-item translation task. In analyzing the videotaped interaction between the students, Ohta shows how each student either bids for or offers assistance. The bids can be manifested as explicit requests for help, or they can be rather subtly deployed through such markers as vowel lengthening and changes in intonation. Importantly, the assistance offered, according to Ohta, is developmentally sensitive to the requester's growing ability to use the language required to carry out a specific task. She also documents the grammatical learning that the students achieve as a consequence of their interactions, which is evidenced, among other things, by shifts from other-regulated to self-regulated error correction. The learners develop increasing independence in the use of a difficult sentence structure through activities that move from a focus on form to a focus on meaning.

Roebuck, in her chapter, addresses the relevance of activity theory not only for language pedagogy, as does Donato, but also considers its importance for

research. She extends the earlier work of Coughlan and Duff (1994) on the fluid nature of cognitive activity among university-level classroom L2 learners of Spanish as they undertake to complete a classroom task. Roebuck argues that it is important for teachers and researchers to distinguish between *tasks* and *activities* (explained above). Specifically, she discusses the processes through which learners position themselves as individuals in carrying out a written recall of a newspaper article in the second language, and contends that neither teachers nor researchers can assume that their particular orientation to a task is the one that learners (or participants) will adopt. Moreover, learners' orientation, that is, what they think the task is about, and what counts as its successful completion, can change as the activity of carrying out the task unfolds. This is because learners, and in fact, non-learners as well, often reinterpret the meaning and intent of a task and, importantly, their abilities relative to the task on-line rather than prior to engaging with it. For instance Roebuck reports that some learners oriented themselves to the goal of writing a recall of the newspaper article, while others used the writing activity as a means not of telling someone about the contents of the article, but of comprehending what the article was about. Roebuck further shows how shifts in orientation, as well as the externalization of cognitive strategies for completing the task (for example, lexical search) often unfold on the page in a form of private speech known as *private writing*.

In her chapter, Swain examines mediation from the perspective of collaborative dialogue in a French immersion and an adult ESL classroom. She argues that collaborative dialogue is a key form of mediated learning. The French immersion study demonstrates how young learners, through collaborative dialogue, are able to organize and mediate their own learning without the intervention of the expert teacher. Thus, she argues that through their dialogic interaction, the students do not negotiate meaning; rather they negotiate learning (see also the chapter by Sullivan). The ESL study extends to language learning the work that Talyzina (1981) and her colleagues carried out in the former Soviet Union which focused on the positive effects of learners verbalizing strategies for doing geometry problems. Specifically, the study Swain reports on shows that overt collaborative verbalization of metacognitive strategies such as predicting, planning, and monitoring can be a more effective means of mediating learning than just instruction in learning strategies alone.

Sullivan's chapter considers the way in which communicative language teaching (CLT) is implemented in a non-Western setting. In particular, she focuses on the role of playful behavior in mediating the interaction that unfolds in an adult English as a foreign language classroom setting in Vietnam. This is especially important from a sociocultural perspective, since as we have seen, Vygotsky argued that play fulfills an important role in mental development. Sullivan also challenges some common Western assumptions about effective language teaching: decenter the teacher in favor of individual learners;

communication is primarily about information exchange and meaning negotiation; incorporate authentic materials into pedagogical practices; and learning is 'work,' as evidenced in notions of small-group and pair work. Her chapter is also relevant to activity theory, since, as the theory maintains, different actions, linked to the same goal, can give rise to similar outcomes. In this case, CLT is linked to play between teacher and learners and among learners rather than to work among the members of small groups or pairs of students. The goal, however, is invariant—to learn the language.

Continuing the theme of mediation, the chapter by Kramersch discusses the ways in which second language learners explore the reformation of identity through the mediational means of a new language. Unlike in Sullivan's study, however, Kramersch's is situated in a Western communicatively-based classroom setting. Kramersch integrates Vygotsky's approach to semiotic mediation with C. S. Peirce's theory of signs and Bakhtin's concept of dialogism with the aim of bringing to light the ways in which learners, to some degree at least, experience new identities as authors, narrators, interpreters, and critics through their second language. Briefly, signs are about more than just meaning and reference; that is they are not just *symbols*, the usual understanding of a sign in linguistics, but they are also *indexes*. A symbol is a sign that derives its meaning from the system which supports it and must be agreed upon by its users. Thus, the English word *table* has meaning to the extent that it is part of a system of other symbols, such as *dog*, *house*, *chair*, and the like, and speakers of this language have agreed to use the term to designate a specific kind of object in the world and no other. An index, on the other hand, is a sign which has a 'real' link to its object. The fact that smoke indexes, or points to, fire is a well known example of indexing. When the fire disappears, so does its index, smoke. Linguistically, *I* used in a dialogue is an example of an index, since it points to the person speaking. When the person is no longer speaking, in a sense, she/he disappears, and the *I* also ceases to function as an index, or it may index some other speaker. *Dialogism* not only highlights the importance of interaction and context, but crucially, proposes that structure cannot be separated from language use. Language use does not just press structural properties into service; it reconstitutes them through communicative and cognitive activities. In other words structure and practice 'co-determine one another' (Linell 1998: 36). Kramersch proposes that learning a second language is not about simply learning new linguistic forms, but it is about learning how to construct, exchange, and interpret signs that have been created by someone else. She shows how ESL students, both through writing and in dialogic interaction about writing, (co-)construct new mediational means (symbols and indexes) through a second language that impacts on their identities.

The next two chapters, by Pavlenko and Lantolf and by Verity, share a common interest in identity reformation, and in this respect are linked to Kramersch's chapter. Similarly to Kramersch's, both chapters focus on people

who enter into and must find ways of engaging with unfamiliar cultural surrounds. Both chapters also examine the ways in which individuals in such circumstances undertake to reconstruct their identities. In Verity's case it is an identity as an expert language teacher, while in Pavlenko and Lantolf's study, it is an identity as a member of a new culture.

Pavlenko and Lantolf consider the powerful role that personal narratives play as mediating artifacts as people undertake to reform an identity. The documentation for their study is provided by the written narratives of individuals, largely academics, who have abandoned their original cultural surround and have struggled to take on a new surround along with its new mediational artifacts. They show how the process, at least for the people considered in their study, moves through stages of loss to stages of recovery. The former is marked by such phenomena as the weakening of one's linguistic system as a tool not only for social interaction, but as a tool for mediating one's own thinking processes, including above all one's inner voice. The latter is characterized by the appropriation of a new voice, and along with it, a new sense of identity, from the voices of those encountered in the new cultural circumstances. As the authors discuss, one of the major problems confronted by those passing through such a reformation process in a second culture relates to the need to construct a new history, or a new narrative, which can be relied upon as a mediational means to make sense of the events in the new circumstance.

Verity's study is based on a series of self-reflections contained in a daily journal in which the author documents her sense of loss and recovery of self-regulation as an expert language teacher upon entering Japanese educational culture. The journal evidences the author's struggle to construct a zone of proximal development which would allow her to scaffold herself, rather than seek external other-regulation, into a new identity as an expert teacher in accordance with a new set of cultural norms. For Verity, it was crucial for her to hear her own voice rather than the voice of others, because the problem she was confronting was not so much one of taking in new information as it was of restructuring her current knowledge. Much of the writing contained in Verity's journal can be considered private writing, and while similar in function to the strategic writing of writers, scholars, composers, etc. explored by John-Steiner (1985), it also served as self-acknowledgment, in a concrete form, of the author's sense of lost expertise. It also enabled her to overcome this sense of loss and ultimately to restructure her professional identity as an expert language teacher.

The chapter by McCafferty and Ahmed is also about private speech, not in its verbal but in its gestural manifestation. Speakers not only use gestures to repeat meanings that they externalize verbally, but they also use gestures to manifest meaning that is not verbally expressed. The authors report on one aspect of a larger and on-going cross-linguistic study of Japanese and English L2 learners. Informed by the research of David McNeill and his colleagues,

the chapter discusses the appropriation of American metaphoric gestures that emerged in discussions of the concept of marriage by Japanese L2 naturalistic and classroom learners of English.

The topic of marriage is an especially appropriate one, given the marked differences in the way Japanese and American cultures construct this social institution. Metaphorics are one type of gesture in the taxonomy developed by McNeill. They represent abstract concepts, such as knowledge, language, narratives, questions, and the like. For instance, in American culture the cupping of the hand with the palm facing upward is a metaphorical gesture for a question. In comparing the gestural behaviors of classroom and naturalistic learners of English, McCafferty and Ahmed reveal that the naturalistic learners develop culturally appropriate metaphorics and other gestures of the abstract, which their classroom counterparts do not. The authors suggest that the appropriation of American metaphoric gestures by Japanese naturalistic learners implies that these individuals must also have shifted their conceptualization of marriage at the inner speech level, given the connections between inner speech and thought proposed in sociocultural theory. They also acknowledge another potential explanation to account for the performance of the naturalistic learners—appropriation of metaphorics is merely a way for the Japanese learners to signal their attempt to fit in to the American milieu on some surface level, without necessarily modifying their conceptual understanding of marriage. As the authors suggest, however, it is entirely possible that in attempting to do nothing more than ‘fit in’ the naturalistic Japanese learners eventually end up changing their concept as well.

The volume concludes with two chapters that consider ways in which sociocultural theory links up with other theories of language learning and language teaching. In his chapter, Thorne discusses the relevance of sociocultural theory for a general theory of second language learning. To carry out his project, he brings Vygotsky into contact with the writings of his contemporary, Mikhail Bakhtin as well as with the late twentieth century work of social philosophers, Pierre Bourdieu and Jurgen Habermas and the cognitive psychologist, Ragnar Rommetveit, among others. He argues for the need to build a pluralistic approach to second language acquisition, which integrates historically situated, and thus contingent, understandings of human activity with universalist oriented neurobiological research.

Van Lier, for his part, focuses on the development of an ecological perspective on language learning and teaching grounded in the principles of sociocultural theory and constructivist models of human activity. He brings Vygotsky’s ideas on mediation into close contact with the work of psychologists such as J. J. Gibson, Gregory Bateson, and Uri Bronfenbrenner. This leads him to develop an ecological metaphor of language learning and teaching which he proposes as an alternative to the familiar input–output metaphor. An ecological perspective compels us to reconceptualize learning as always and

everywhere contextualized. Thus, not only do language and learner matter, but so do place, time, others, goals, and motives. In an ecological approach, because everything is connected to everything else, one cannot look at any single entity in isolation from the others, without compromising the integrity of the very processes one is trying to understand and foment. Similarly to Kramsch, van Lier also finds the integration of Peirce's notions of icon, index, and symbol a useful way of expanding Vygotsky's notion of language as a psychological tool.

Van Lier also argues for the need to consider new research and teaching methodologies which are appropriate for dealing with ecosystems and cautions against transferring the methodologies developed within the input–output metaphor in which teaching is seen as providing input and learning as taking in input, negotiated or otherwise. To this end, he considers the zone of proximal development as an especially promising way of organizing teaching/learning activities in the classroom ecosystem, because learning, under the new metaphor, is about developing an ability to engage with, and participate in, a particular environment, whether it be the classroom or another cultural setting. For van Lier, this means that the learners, with support from the teacher and other learners, must assume control of their own participatory activities. Teaching must become much more flexible than it currently is. It must break from the notion of ready-made lessons that are rigidly adhered to in favor of improvisation. This does not mean an 'anything goes' approach, since teaching in the ZPD means developing a sensitivity to students' current abilities and their potential development.

Notes

- 1 Some sociocultural theorists have posited that changing tools, either physical or symbolic, will lead to a change in an activity. As will become clear in the discussion of activity theory below, an activity has a complex structure and merely changing the means (without altering its motive and goal) through which it is realized will not in itself give rise to a change in the activity. To be sure, changing tools may change the appearance of an activity, but this does not mean that its fundamental structure is altered.
- 2 Somewhat earlier, the dominant metaphor for the mind had been the telephone switchboard and going still further back to the time of Descartes, the mind was frequently thought of as the inner workings of a clock.
- 3 See Scinto (1987) for a study of the role of schooled literacy on cognitive development during ontogenesis.
- 4 Originally Vygotsky viewed the gestures of deaf children as arising from the natural, or biological mind and thus considered them to be a detriment to the development of higher, culturally mediated, mental systems. Later, however, he realized that deaf individuals did not merely gesture but relied

- on a sophisticated and culturally constructed sign system to mediate their communicative and psychological activities.
- 5 For an interesting set of studies on the regulation of mediational means during ontogenesis, see the research of Wertsch (1985a: Chapter 6) and Wertsch and Hickman (1987). Also, see Wertsch, Minick, and Arns (1984) for a study on intercultural differences in the development of regulation.
 - 6 It is interesting to note that recent work in mainstream cognitive science by people such as Carruthers and Clark supports a (meta)cognitive of speech—a viewpoint that is not radically different from that proposed by Vygotsky and his colleagues nearly a century ago. See Carruthers and Boucher (1998) for an informative collection of papers on this topic.
 - 7 For an interesting and detailed discussion of the role of symbolic artifacts in thinking from a cross-cultural perspective, see Shore (1996).
 - 8 Kozulin (1998: 113) reports on a study in which a young Ethiopian immigrant to Israel was asked to group familiar musical instruments. The young man could not conceive of any way of grouping them other than on the basis of which instruments were played together and on which social occasions they were played. Grouping them as a schooled Westerner might on the basis of the sound source (for example, wind instruments, strings, percussion, etc.) was not relevant in the context of Ethiopian culture. According to Kozulin, if the Ethiopians were to function appropriately in modern Israeli culture, they would have to learn how to classify according to a different scheme that was appropriate for their new context.
 - 9 On the development of expertise and the differences between novice and expert performance see Dreyfus and Dreyfus (1986).
 - 10 Wertsch (1998) has recently proposed the concept of *mastery*, or knowing how to do something, as an alternative to internalization. According to Wertsch, mastery, unlike internalization, recognizes that most mediated activity does not occur solely on the internal plain, but is almost always partially external. Although Wertsch's proposal is attractive to some degree, it does not explain the link between inner speech and mediation. Space does not permit me to pursue this interesting issue further here. For a fuller discussion of some of the problems associated with internalization and ways of dealing with them that differ from Wertsch's, see Newman, Griffen, and Cole (1989).
 - 11 For a summary of an interesting series of studies on the relative successes of the US and Soviet educational systems in compelling their students to appropriate the official story of the 'colonization' or 'liberation' of their respective countries, see Wertsch (1998).