

Review Article

Vygotsky's Zone of Proximal Development and Krashen's *i + 1*: Incommensurable Constructs; Incommensurable Theories

William E. Dunn and James P. Lantolf
Cornell University

Second language scholars, in public research and in public discussions, have suggested that Krashen's construct of *i + 1* is similar to Vygotsky's zone of proximal development and that it might therefore be feasible to integrate the two constructs in a way that would be productive for second language acquisition (SLA) research. After surveying publications relevant to the issue, we argue that this enterprise is futile, not only because the concepts are unrelatable, but also because they are rooted in incommensurable theoretical discourses. We also propose a way in which SLA research and theory might deal with incommensurability.

William E. Dunn, and James P. Lantolf, Department of Modern Languages.

We would like to thank Merrill Swain, Helen Moore, Claire Kramersch, Richard Donato, Gordon Wells and Steve Thorne for their thoughtful comments on, and criticisms of, earlier versions of this article. We have benefited enormously from their willingness to dialogue with us about our ideas.

Correspondence concerning this article may be addressed to the authors at Department of Modern Languages, 203 Morrill Hall, Cornell University, Ithaca, NY 14850. Internet for W. E. Dunn: WED2@Cornell.Edu; Internet for J. P. Lantolf: JPL5@Cornell.Edu

The impetus for the present article stems from the increasing attention that researchers in the field of second language (L2) learning and teaching have been giving to the work of L. S. Vygotsky and his sociocultural approach to psychology and psycholinguistics (e.g., Ellis, 1997; Nyikos & Hashimoto, 1997; Oxford, 1997; Scarcella & Oxford, 1992; van Lier, 1996b; among others).¹ We have listened to and read what some people in our field have been saying about Vygotsky's ideas as they relate to SLA. They seem to have a strong inclination to associate, either directly or indirectly, Vygotsky's central developmental construct of the *zone of proximal development* (ZPD) with Krashen's well-known construct of $i + 1$. They have assumed that it should be feasible to integrate the two concepts in a way that would be productive for SLA research. We intend to argue that such an enterprise is futile, not only because the concepts are unrelatable but also because they are rooted in incommensurable theoretical discourses. This "move toward integration" has situated itself in the basic epistemological assumption that all discourses can be made commensurable if researchers give themselves sufficient time and dedicate sufficient energy to locating the points of overlap. However, our goal is not to argue for or against either of the constructs, but to bring to light their fundamental incommensurability.² To be sure, our own research (e.g., Lantolf & Appel, 1994; Lantolf & Pavlenko, 1995) has been firmly rooted in Vygotskian theory; the discerning reader will notice this theoretical preference leaking into the discussion, but we hope to keep that to a minimum.

We first consider generally the issue of theoretical incommensurability in science; then we define the two constructs under discussion, although for $i + 1$ we do not present much detail, because it is a concept probably familiar to most readers of the present journal. We then present evidence to support our contention regarding the perception that the respective constructs are comparable. Next, we consider briefly the historical roots of Vygotsky's thinking on the ZPD. We then examine the general theoretical frameworks in which the respective concepts are embedded.

Finally, we address the potential consequences of epistemology's quest for commensurability, and suggest a possible way of dealing with incommensurable theories in a discipline like SLA.

Incommensurability

The word "incommensurable," taken from a Greek mathematical term meaning "no common measure," was introduced into philosophical discussions of science by Thomas Kuhn and Paul Feyerabend in the early 1960s (Hacking, 1983, p. 67). Competing theories may be historically or contemporaneously incommensurable.³ From the historical perspective, a theory and its successor may deal with different problems or different applications; they may even work with different concepts; or a predecessor theory may be so temporally distant from its successor that it can only be understood by readers willing to dissociate themselves from current thinking in that particular domain of science. Hacking (1983) characterized the former circumstance as topic-incommensurability (pp. 68–69) and the latter as dissociation (pp. 69–72).

A third type of incommensurability, the most relevant for our purposes, is meaning-incommensurability, "the impossibility of translating from the language of one scientific theory or conceptual framework into the language of another, rival theory or framework" (Pearce, 1987, p. 3). Some have dismissed the doctrine of meaning-incommensurability as essentially vacuous, because obviously theories from different domains, say biology and geology, are incommensurable (Hacking, 1983, p. 73); others have scoffed at the possibility of radical meaning variance between theories and have argued that there must minimally be referential stability between rival theories within the same domain, thus rendering the rivals commensurable, to some degree at least (Pearce, 1987, p. 159). For example, in the physical sciences, the fact that Newtonian mechanics and the special theory of relativity both refer to "mass" allows some researchers to claim some degree of commensurability between the two theories. Hacking pointed out, however,

that “mass” does not mean the same thing in the respective theories and therefore “there will be no one proposition, the shared meaning of *r* [a sentence using the word “mass”], which is common to both Newton and Einstein.” For Hacking, this was “incommensurability with a vengeance” (1983, p. 73).

Pearce, on the other hand, argued that a meaning shift, as in the case of “mass,” did not automatically preclude the translatability of the predecessor into the successor theory (1987, p. 11). He added that the fact that some meanings change with theoretical context does not mean that two theories are necessarily incommensurable. Even if the theories lack referential stability, as in the case of Newtonian and Einsteinian mass, this lack does not in itself rule out the possibility of translation (Pearce, 1987, p. 11). For theories to be incommensurable, all their cognitive contents, including observational as well as theoretical terms, must be conceptually disparate, thus blocking any possibility of comparison (Pearce, 1987, p. 157).⁴

There is, of course, an ideological slant to the arguments of (in)commensurability. If a new discourse can be translated into the already existing discourse and thus rendered familiar, then there is no compelling reason to allot it “a place at the trough” (Rorty, 1991, p. 35), because both discourses are, for all intents and purposes, the same, only with different jargon. If it turns out that researchers cannot find acceptable mappings for all of the terms in the two discourses, standard procedure is either to dismiss residual differences as verbal rather than substantive or to allocate the resolution of the differences to future research. If the latter tactic fails, one of the discourses (usually the “new kid on the block”) will be “stigmatized as merely subjective” or “abnormal” (Rorty, 1979, p. 320).⁵

We argue that not only are the specific constructs of *i + 1* and ZPD non-translatable but also the respective theoretical frameworks in which each construct is embedded are equally non-translatable, and hence incommensurable. Although those who have suggested that the two constructs are relatable may have suffered some misunderstanding of the *i + 1* and its associated

theory, the real problem stems from a fundamental misunderstanding of the ZPD and its theoretical framework.

Defining the Constructs

Krashen's $i + 1$. In Krashen's view, "humans acquire language in only one way—by understanding messages, or by receiving 'comprehensible input' . . . that contains structures at our next 'stage'—structures that are a bit beyond our current level of competence" (Krashen, 1985, p. 2). More specifically, i is "the acquirer's current competence, the last rule acquired along the natural order" and $i + 1$ is "the next rule the acquirer is 'due to' acquire or is eligible to acquire along the natural order" (Krashen, 1985, p. 101). Thus, Krashen's construct combines a feature of the learner (or more precisely, the learner's internalized grammar), namely " i ", and a feature of the input, namely " $+ 1$ ". Krashen also states that for acquisition to happen, "input must contain $i + 1$ " (1982, p. 21) and that "if communication is successful, $i + 1$ is provided" (1982, p. 21). The learner's internal language processing mechanism (LAD) subconsciously acts upon and assimilates the received input.

Vygotsky's ZPD. At this point, we provide only a summary definition of Vygotsky's concept. Later, when addressing the incommensurability question directly, we flesh out its important details. According to Vygotsky, the ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (1978, p. 86). In other words, the ZPD refers to "those functions that have not yet matured but are in the process of maturation" (1978, p. 86); the actual developmental level refers to "functions that have already matured" (1978, p. 86). Aljaafreh and Lantolf (1994) described the zone of proximal development as "the framework, par excellence, which brings all of the pieces of the learning setting together—the teacher, the learner, their social and cultural history, their goals and motives,

as well as the resources available to them, including those that are dialogically constructed together” (p. 468).⁶

Evidence Relating the ZPD and $i + 1$

In this section we present evidence that some people working in SLA research have assumed the comparability, if not equivalence, of Vygotsky’s and Krashen’s constructs. For example, our colleagues or graduate students in various venues and scholars and students attending national and international conferences have expressed to us the belief that the ZPD and $i + 1$ are somehow similar. Gordon Wells (personal communication, December 8, 1997) corroborated our observation, noting that graduate students with a background in SLA who enrolled in his courses on sociocultural theory at the Ontario Institute for Studies in Education frequently equated the $i + 1$ with the ZPD.

The earliest written attestation we found of an association between the constructs was in Richard-Amato’s (1983) report on a pilot ESL program for refugees and immigrants in Jefferson County, Colorado, based on principles of language teaching espoused by methodologies such as Total Physical Response, Suggestopedia, and Counseling-Learning. Discussing the results of the debriefing phase of an information gap activity, Richard-Amato (1983, p. 399) commented that “the debriefing phase resulted in acquisition of vocabulary and structures near the student’s ‘zone of proximal development’ (Vygotsky 1934) or ‘ $i + 1$ ’ (Krashen 1981, 1982).”⁷ Because she provided no further commentary on this issue, we cannot discern what she perceived to be the specific nature of the relationship between the two constructs.

In a paper on comprehension-based teaching and learning in institutional settings, Kramsch (1992) argued that from an interactional perspective, comprehension is about more than the decoding of utterances. According to Kramsch, the interactional perspective requires that attention be given to the specific contexts in which comprehension happens and to the ways in which the participants construct and manipulate such contexts. She

concluded that Krashen's notion of $i + 1$ did not take full account of what is entailed in the comprehension process from an interactional point of view, and proposed that Vygotsky's concept of the ZPD might help account for what she referred to as "the surplus of meaning" (*le surplus de sens*, p. 73) expressed in Krashen's construct. Thus, Kramsch considered the two constructs to be complementary rather than incommensurable.⁸

Schinke-Llano (1993), in making a case for the relevance of sociocultural theory for SLA research, suggested a potential connection between the ZPD and $i + 1$: "In certain ways, the zone of proximal development is reminiscent of Krashen's $i + 1$ construct" (p. 124). Unfortunately, she failed to say anything further about the nature of the link she envisioned. Johnson (1995), like Schinke-Llano, detected what she characterized as "striking parallels" between the ZPD and $i + 1$, although she did temper her claim by adding that "these parallels can be carried only so far" (p. 82). Again, like Schinke-Llano and Richard-Amato, she failed to say what the striking parallels were, nor did she say just how far one could carry them.

Guerra (1996) presented the most explicit statement on the comparability of $i + 1$ and the ZPD.⁹ She stated that "an important parallelism can be established between Vygotsky's notion of the zone of proximal development and the $i + 1$ component of Krashen's Input Hypothesis" (p. 7), and contended that Krashen's *Input Hypothesis* "is closely related to Vygotsky's notion of proximal development" (p. 7). She argued that Krashen's i "is what Vygotsky called the actual development of the child" and "the $i + 1$ stage is the equivalent to Vygotsky's zone of proximal development. It refers to the kind of input that is at a level of difficulty which immediately follows the i stage" (p. 7).¹⁰

Hence, there has developed a perception, at least in some corners of the SLA field, that Krashen's and Vygotsky's constructs are either comparable or complementary. But this apparent relatability is an illusion because the constructs, on theoretical grounds, are in fact incommensurable.¹¹

Historical Perspective on the ZPD

To fully appreciate how Vygotsky conceived of the ZPD requires going beyond the construct's standard definition (above) and delving briefly into its historical origins. Vygotsky's thinking on the ZPD apparently began to crystallize as he confronted issues relating to IQ and IQ testing, which during his time—and not unlike today—was controversial. Educators then assumed, and many in mainstream education continue to assume, that for teaching to be effective children had to attain a threshold level of development (see Egan, 1983), which was established by observing children as they independently performed specific types of tasks (Van der Veer & Valsiner, 1991, p. 336). Several of Vygotsky's contemporaries observed, however, that once in school, children with an initially high IQ frequently manifested a decrease in their IQ score, while those with low initial IQ scores often tended to show score gains (Van der Veer & Valsiner, 1991, p. 337).¹² Vygotsky (1978) argued that one could not fully understand children's developmental level without also determining that development's upper boundary, which was determined by the kind of tasks that children could do with someone else's assistance.¹³ In other words, two children might exhibit the same IQ score, supposedly indicating that they had achieved the same developmental level and thus readiness for instruction, but one of them might well be able to perform more complex tasks under someone else's guidance than the other could with the same assistance. Vygotsky referred to this difference between actual and potential IQ as the Zone of Proximal Development. He argued that some children might have a high IQ but a small ZPD and others might have a low IQ but a large ZPD. On the other hand, some children might have a high IQ and a large ZPD and, likewise, others might have a low IQ and a small ZPD. On the basis of empirical testing he concluded that IQ tests measure the knowledge that arises from home environments. Children who are frequently exposed to books and read to by their parents and/or others and have plenty of toys with which to play can be expected to enter school with high IQ scores and are thus

likely to have already run through a large part of their ZPD (Van der Veer & Valsiner, 1991, p. 341). Children from backgrounds with limited opportunities to engage in literacy activities are more likely to enter school with lower IQ scores but with a larger ZPD. Thus, schooling has a differential effect on the two types of children, because it tends to even out the playing field (Van der Veer & Valsiner, 1991, p. 341).¹⁴

Vygotsky's major insight regarding the ZPD was that instruction and learning do not ride on the tail of development but instead blaze the trail for development to follow. This perspective, of course, conflicts with Platonistic theories of development, which Vygotsky saw as falling into three general categories. Newman and Holzman (1993) provided a convenient summary of these positions, all of which Vygotsky ultimately rejected. The *separatist* view holds that learning (usually, though not always, occurring under intentional instruction) and development are completely independent, with development adhering to its own natural maturational schedule and learning consuming its fruits (Newman & Holzman, 1993, p. 57). According to Vygotsky (1987, p. 196), this perspective was reflected in the work of Piaget and his associates, who maintained that development inherently proceeds through specific stages whether instruction is made available or not. Krashen's position is essentially a separatist one, even though it differs from Piaget's in certain of its details.¹⁵ The *identity* position, associated with the work of William James and the early behaviorist Thorndike (Vygotsky, 1987, p. 196), claims that the two processes are fundamentally the same and both arise as a consequence of stimulus and response associations (Newman & Holzman, 1993, p. 58). In essence, children develop only to the extent that they are taught. The third position *synthesizes* the first two assumptions and proposes a dualistic quality to development; that is, some kinds of development are maturational and others depend critically on instruction. Although Vygotsky was attracted to certain aspects of the synthetic view, he felt that it did not precisely specify the nature of the mutual influence between the two processes. Nevertheless, it was out of this third perspective

that Vygotsky's own theorizing on the learning/development interface eventually emerged (Newman & Holzman, 1993, p. 60).

Vygotsky rejected the notion of development as a necessary precondition for instruction and learning, and strongly criticized positions that assumed development is impervious to instruction. He argued, for example, against the supposition that in learning how to write "nothing new emerges in the child's mental development" (Vygotsky, 1987, p. 196), because for children to learn to write in the first place, their developmental prerequisites of memory, attention and thinking must have already matured. For Vygotsky (1987, p. 203), because writing is not merely the translation of oral signs into written ones, instruction in writing moves the child's development to a more abstract level of mental functioning, creating a completely new set of motives for the child to use language, than does oral language.

The site where learning and development come together is the ZPD. To be clear, however, the ZPD is not a place or a context, but a dialectic *unity* of learning-and-development, or more appropriately, learning-leading-development (Newman & Holzman, 1993, p. 86). In this unity, all uniquely human forms of higher mental activity, including thinking, planning, voluntary memory, voluntary attention, creativity and control of semiotic systems (especially language), arise in the interaction between children and other members of a culture during ontogenesis.

In Vygotsky's theory, language acquisition "provides the paradigm case" of learning leading development, because in this activity the "aspirant speaker must 'borrow' the knowledge and consciousness of the tutor to enter a language" (Bruner, 1986, p. 78) through the fundamentally human process of meaning making in collaborative activity with other members of the culture (Newman & Holzman, 1993, p. 87).¹⁶ Bruner's and his colleagues' work (see Wood, Bruner & Ross, 1976) illustrated how the process unfolds. The important feature of the process is that, as with novices and experts in any field, children speaking almost certainly do not mean the same thing as adults would. Children are not yet fully alienated, as are adults; consequently, meaning for

children is fully tied to the contexts in which words are used (Wertsch, 1985).¹⁷ Vygotsky's own research on concept formation in childhood (1987), and Wertsch's (1985) research on mother-child problem-solving dyads, provided experimental evidence for how words have different meanings for children and how children appropriate adult meanings as a consequence of collaborative activity with others in the ZPD.

Superficial Similarities, Profound Differences

Probably, what SLA researchers perceive as the common ground between the ZPD and $i + 1$ resides in statements by Vygotsky and Krashen about how the future figured into their respective theories. Guerra (1996, p. 7), for example, citing Vygotsky, wrote that "the notion of a zone of proximal development enables one to propound a new formula, namely that the only good learning is that which is in advance of development" (Vygotsky, 1978, p.89).¹⁸ Krashen (1982, p. 57), for his part, claimed that the only "good input" is that which contains linguistic structures slightly in advance of the learner's current level of linguistic competence. Although such comments might (mis)lead one into assuming at least some degree of commensurability between the constructs, there are, nevertheless, profound differences in how each theory conceptualizes the future and the way in which it figures specifically into development—a situation not unlike that pointed to by Hacking (1983; see above) with respect to the interpretation of "mass" in relativity theory and Newtonian mechanics.

Vygotsky (1978, p. 87), for example, stated that "the zone of proximal development permits us to delineate the child's immediate future and his dynamic developmental state, allowing not only for what has already been achieved developmentally, but also for what is in the course of maturing." Krashen's construct also refers to a learner's immediate future or stage of interlanguage competence to be internalized. Closer analysis, however, reveals that, although Vygotsky's theory focuses on features in the process of

maturing, Krashen's model assumes that a given structure either has been acquired by the LAD or has not. The $i + 1$ formula, then, represents what will be acquired next, not what is in the course of maturing. Acquisition for all intents and purposes involves moving from one actual developmental stage to the next, with no attention given to the ripening process, which plays a central role in Vygotsky's thinking (see Aljaafreh & Lantolf, 1994). Krashen saw movement from one stage of interlanguage competence to the next as ultimately a fixed and predictable process, independent of cultural and historical influences. Thus, for Krashen, an individual's linguistic future is certain; for Vygotsky, the future is open, uncertain and depends on the material and interactional (i. e., cultural and historical) circumstances in which the individual is situated.¹⁹

Moreover, Vygotsky insisted on the dialectic unity of learning-and-development—a unity in which learning lays down the pathway for development to move along and which in turn prepares ground work for further learning, and so on. The cornerstone of Krashen's theory remains his clear separatist position on learning and development (i. e., acquisition). To be sure, Krashen (1985) allowed for some degree of influence of learning on acquisition. A consciously learned rule used correctly by a learner to convey a message that the learner understands may provide comprehensible input containing a structure not yet acquired; learned knowledge may also in some way contribute to the context and thus make input comprehensible; finally, learned knowledge may help lower the affective filter (necessary for acquisition) by satisfying students' curiosity about the L2's linguistic structure and by showing them overtly how much of the target language they have acquired (Krashen, 1985, p. 42). Despite this caveat, Krashen insisted that "learned competence does not become acquired competence. The real cause of language acquisition remains comprehensible input" (Krashen, 1985, pp. 42–43). Consequently, he argued against an instructional syllabus sequenced according to the natural acquisition order. In fact, not only is such an organizational schema unnecessary, "there are reasons to suspect that it may even be harmful" (Krashen 1982, p. 22). Given the sharp

differences between Vygotsky and Krashen on the interface between learning and development, any attempt to integrate the ZPD and the input hypothesis is misguided and ultimately unproductive.

Incommensurable Theories

The theoretical frameworks underlying Vygotsky's and Krashen's constructs are themselves incommensurable. Realizing this is important and in many ways necessary, because, once either concept is stripped of its theoretical garments, virtually any type of instruction can be situated within its scope; for example, see how the education literature has appropriated the ZPD. Tudge (1990, p. 156), for instance, remarked that failure to see the connections between the ZPD and its theoretical underpinnings makes it difficult to differentiate Vygotsky's concept from any instructional technique that systematically leads children, with the help of an adult, through a number of steps in the process of learning some set of skills.²⁰ A similar phenomenon apparently is underway in the SLA literature.

However, the theoretical chasm between Vygotsky and Krashen is, to put it simply, unspannable. The core difference resides in how each theory conceives of language, the learner, and the learning process (learning here includes acquisition). In Krashen's model, the learner is fundamentally a loner who possesses a Language Acquisition Device (LAD) that does all the acquiring for the individual; provided, of course, that the device receives and comprehends input containing linguistic features at $i + 1$. Whether the person engages other individuals in linguistic interaction is more or less irrelevant; hence, according to Krashen, it is "theoretically possible to acquire language without ever talking" (1982, p. 60).

Despite his strong theoretical claim on the etiology of acquisition, Krashen acknowledged that two-way interaction in which meaning is negotiated through clarification requests, confirmation checks and the like (as proposed by, e.g., Long, 1983;

Pica, 1988) can help promote the acquisition process (Krashen, 1985, p. 34). Hence, he supported a weak form of the interaction hypothesis, because in his view the strong form fails to explain how listening to monologic speech, such as lectures, watching TV or reading, can lead to acquisition (Krashen, 1985, p. 34). Krashen also believed that speaking, or to sustain the metaphor, output, plays no direct role in acquisition, and has insisted that at best output might be beneficial in soliciting additional usable input from other individuals (Krashen, 1982, p. 60). For Krashen, then, although humans regularly engage in it, mutual linguistic interaction is not directly relevant to the task of acquiring a second language; hence, he did not incorporate social interaction into his theory of second language acquisition.

Krashen's general theoretical framework assumes the information-processing model of language and communication. This model, according to Reddy (1979), derived from the *conduit metaphor*, which—along with the affiliated input-output computational metaphor (Lantolf, 1996)—van Lier (1996a) has argued forms an essential part of the unspoken *doxa* of SLA research and pedagogical activity.²¹ Briefly, the conduit metaphor assumes that minds are containers and that language itself is also a container, into which speakers insert meanings that they transmit to listeners, who subsequently unpackage the containers, extract the meanings and insert them into their own minds.²²

The view of language reflected in Krashen's theory, and indeed much of the Western linguistic tradition, has a long and extremely interesting history with roots extending back to the Stoic philosophers of ancient Greece (Yngve, 1996). However, this view of language gained prominence following a set of theoretically strategic moves made by the figure who, more than any other, is responsible for laying the foundation for the modern science of linguistics—Ferdinand de Saussure (1916/1966).

Saussure was not satisfied with what he perceived as the “pre-scientific complacency in the study of language” as practiced by the Indo-Europeanists of his day (Crowley, 1996, p. 16). Consequently, he set himself the task of constructing a legitimate

science of language—a science that would be on a par with the already well-established and highly-respected disciplines of physics, chemistry, and biology. Saussure realized that for linguistics to attain the status of science, it would be essential to establish an object of study given in advance of scientific investigation, in other words, a reality existing independently of its study and free from human beliefs, intentions, and feelings (see Crowley, 1996, p. 16; Yngve, 1996, p. 30). In short, Saussure determined that linguistics would be the science devoted to the study of “signs.” The only difficulty with Saussure’s strategic move—according to Yngve (1996, p. 30), Saussure recognized and worried about its ramifications for some time—is that signs are not physical objects that exist in advance of their study; rather, they are themselves created by the particular viewpoint of the linguist who sets out to investigate them.²³

In pressing for the legitimacy of linguistics as the science that studies the systematic structure of signs (i.e., sound-images and concepts), Saussure (1916/1966) insisted that the world and language do not belong to distinct ontological orders, but rather to the same one (Crowley, 1996, p. 18). This allowed him to segregate “the thing itself” (i.e., *langue*) from its uses (i.e., *parole*); crucially, in keeping with his scientific goal, Saussure (1916/1966) then assigned priority to the study of *langue*, posited as a rule-governed, closed system of signs rather than as a mediational artifact constructed by humans in history. In this way, language achieved “the privileged status of scientific object” (Crowley, 1996, p. 18).

Saussure’s conception of language eventually evolved into Bloomfield’s (1933) homogeneous speech community, in which all members ostensibly exhibit the same linguistic behavior, and into Chomsky’s ideal speaker/hearer, in which all human beings possess the same abstract linguistic knowledge or universal grammar.²⁴ Chomsky (1988, p. 16), of course, acknowledged that such idealizations are not real-world phenomena but assumptions necessary for theory construction.²⁵

The consequences of Saussure’s reification of language have had profound effects on the way scholars think about language

and how it is learned. Among other things, treating language as a natural phenomenon segregates it from the domain of human history and thus conceals, if not denies, the relevance of human activity and the role of human relations in the learning and use of language (Crowley, 1996, p. 18).²⁶ Thus, Saussure and the scientific tradition that followed him, which includes Krashen, represent a radically different perspective from that upon which Vygotsky constructed his theory of specifically human forms of mental life.

About the same time that Saussure set himself the task of constructing a scientific linguistics, Wilhem Wundt, working in Leipzig, was trying to establish a scientific approach to the study of human psychology. Like his counterpart in linguistics, Wundt sought to minimize, if not eliminate altogether, the role of human beliefs, meaning, and intentions in the scientific study of psychological behavior.²⁷ In Wundt's (1897/1969) scheme, the elementary functions, such as sensation, natural memory, involuntary attention, and perception, belong to the domain of psychology and thus are properly studied in the laboratory setting; the higher, culturally and historically constructed forms of mental functioning (what for Vygotsky were mediated forms of cognition), including voluntary memory and attention, intention, thinking, planning, sign creation and use, are the proper objects of study of anthropology, philology, and ethnology (Cole, 1985, p. 146).²⁸

Vygotsky considered Wundt's parceling of the human psyche into the biological and cultural/historical antagonistic to the task of constructing a unified psychology. In Vygotsky's view, specifically human mental activity is the consequence of the dialectic interaction between natural and cultural/historical forces. Moreover, Vygotsky insisted that it would be impossible for psychology to understand how human minds function through its reliance on the traditional methods of controlled laboratory experimentation and introspective reflection (Cole, 1985, p. 146).

The key to Vygotsky's theory and research methodology is historical analysis (Scribner, 1985, p. 120): The individual/society dualism inherent in the doxa underlying the conduit and related metaphors (including Krashen's input hypothesis) is replaced by

a monistic metaphor of *individual-in-society-in-history* (Newman & Holzman, 1993, p. 85). Orientation to this alternative metaphor implicitly, if not explicitly, rejects the primacy of the autonomous individual and the “seemingly neat distinction between social and individual processes that characterize many contemporary approaches in psychology” (Wertsch & Tulviste, 1996, p. 55). Hence, specifically human forms of mental activity are not processes that occur invisibly inside someone’s head but are instead the activity of socio-historically constituted people engaged in the historically situated activity of living.²⁹

In sociohistorical theory, language learning and use are not about “individually motivated and unconstrained activities” (Hall, 1995, p. 221) construed as instantiations (often flawed, especially in the case of L2 learners) of idealized models (p. 210). Communication, including the instructional conversation of the classroom (van Lier, 1996b) and the learning-development that emerges from it, arises in the coming-together of people with identities (which entail more than simply whether one is a native or non-native speaker), histories and linguistic resources constructed in those histories.³⁰ Newman and Holzman (1993, p. 87), following Vygotsky, argued that language is acquired through the revolutionary activity of making meaning, which in the case of children especially, entails the creation of the very tools used to make meaning. As Lantolf (1993, p. 227) pointed out, from the sociocultural perspective, *second* language learners have a *second* chance to create new tools and new ways of meaning. Thus, accents, (un)grammaticality, and pragmatic and lexical failures are not just flaws or signs of imperfect learning but ways in which learners attempt to establish (new) identities and gain self-regulation through linguistic means. In an important sense, L2 learning is about gaining the freedom to create—a freedom that native speakers have a greater difficulty achieving but to which children, up to a point, have access in learning their L1.³¹ This is a radically different view of language and language learning than that which underlies the input hypothesis. Krashen’s model clearly belongs to the classic, hard science approach to scientific investigation and

its aims of reducing complex phenomena to basic elements and constructing abstract schema to explain its object of study. On the other hand, although Vygotsky was not a romantic scientist per se, his thinking was strongly influenced by the scientific tradition represented in the writings of Vico, Humboldt, Herder, and Dilthey, to the extent that he eschewed the reductionism of the hard sciences and proposed instead an approach to psychology that aspired to preserve the richness of “living reality” and opposed the building of abstract models on the grounds that so doing would compromise the fundamental properties of the object of study (Luria, 1979, p. 174).³²

The difference between the two theories under consideration here ultimately resides in the fundamental difference between a hard-science and a romantic-science view of mental behavior. The former, essentially a reductionist approach, theorizes people as autonomous objects comprised of bundles of variables; the latter, fundamentally a monistic orientation, theorizes people as unified, self-interpreting cultural agents (see Danziger, 1997; Taylor, 1985).

Dealing with Incommensurability

The foregoing analysis clearly shows that the ZPD and $i + 1$ are not commensurable constructs, not only because the terms themselves lack shared meaning, but also because, in accordance with Pearce's (1987) criterion, the contents of the theories from which they ultimately derive their respective meanings are non-translatable. That is, the two metaphors underlying the respective constructs propose radically different conceptualizations of individuals, communication, and mental functioning. Given this, attempts at integration will not only be futile but also probably will result in a deformation of the very constructs under commensuration, as has happened when researchers have seen the ZPD as a way of getting the social environment into the act without surrendering the fundamental assumptions of the input/output metaphor.³³ Similarly, $i + 1$ has been said to “focus

on the importance of social interaction for both learning and language acquisition" (Johnson, 1995, p. 82), despite the fact that Krashen's model does not assign a central role to social interaction in the acquisition process. Hence, in their eagerness to make $i + 1$ and the ZPD commensurable, some SLA scholars have read things *into* Krashen and *out of* Vygotsky. In the case of Vygotsky's theory, co-opting it into the input/output model not only compromises the explanatory power of social interaction (Wertsch & Rogoff, 1984) but also threatens the theory's transformative capacity (van Lier, 1996a).

How is a discipline to deal with theoretical differences that are not merely verbal but arise from "very different versions of the world" (Pennycook, 1994, p. 133)? In such circumstances, proponents of the respective theories at best enter a period of peaceful coexistence in which they tolerate the other theory, but are not "engaged with" it (Pennycook, 1994, p. 134); at worst, they fight in the literature and at conferences for control of the hearts and minds of the majority of those already in, or perhaps more importantly, about to enter, the particular field. According to Rorty (1979, p. 138), because the quest for universal commensuration dominates Western epistemology, such battles frequently give rise to theoretical hegemony, in which only certain kinds of sentences are sanctioned as legitimate, with all others inappropriately banished to the wasteland of subjectivity. Taylor (1985, p. 129), in analyzing the on-going struggle within contemporary psychology between the "correlators" (who espouse the natural science model) and the "interpreters" (who follow the romantic tradition), argued that coexistence "can be something more than just an arm's length toleration." Coexistence requires that both traditions, but especially the classic model with its insistence on univocal consensus, recognize the limits of their proper domains and the concomitant validity of the other tradition. Without such recognition, Taylor argued (1985, p. 137), psychology's contributions to understanding human mental activity would be severely curtailed.

Although Taylor's proposal seems a workable solution to cultural conflicts in the scientific community, particularly with

regard to metatheoretical issues of the validity of research procedures and data, it does not go far enough in dealing with theoretical incommensurabilities, such as those considered here. The discourse of the philosophy and history of science more often than not has characterized theories operating in the same domain as competing or rival theories, thus conceptualizing things in a conflictive light. Following Rorty (1979, p. 318), we propose that the pursuit of universal commensuration be abandoned in favor of universal conversation. In this regard, Habermas's (1981/1984) theory of communicative rationality and communicative action is particularly informative.

Although it is specifically directed at incommensurabilities in everyday societal discourses, Habermas's theory can include incommensurabilities in scientific discourses as well. For Habermas, rationality was not to be found in the monologic (i.e., univocal) speech typical of logical thought and syllogistic reasoning traditionally associated with scientific behavior, which assumes the world to be "immediately and identically accessible to all without intersubjective checking and collaborative interpretation" (Warnke, 1995, p. 123). On the contrary, rationality is situated in intersubjective, dialogic communicative action aimed at cooperatively attaining mutual understanding, which requires that none of the participants in the conversation "has a monopoly on correct interpretation" (Habermas, 1981/1984, p. 100). When interpretations diverge, the task is not to engage in strategic or teleological discourse in order to convince an interlocutor to see things one's own way or to gain an advantage for one's own interests (Habermas, 1981/1984, p. 95), but to "reciprocally raise validity claims that can be accepted or contested" (p. 99). In contesting and defending validity claims in communicative action, interlocutors come to reflect upon, and potentially reinterpret, their own view of things. This is a critical activity if a culture is to assure itself of its own worth, to enrich itself with what it takes to be valuable in other cultures, and to determine where it fits in among the panoply of cultures (Warnke, 1995, p. 139). Hence, peaceful coexistence, according to Habermas, is not about ignoring, dismissing, or even

tolerating perspectives that differ from our own either in the everyday world or the world of scientific cultures. It is about nothing less than active and intense *dialogic* engagement with these different discourses and world views.

A concrete and informative example of what we have in mind can be observed in a recent issue of *The Modern Language Journal*, in which appeared an article by Firth and Wagner (1997) as well as a series of responses from scholars representing different perspectives on SLA. Firth and Wagner challenged what they saw as the “predominant view of discourse and communication within second language acquisition (SLA) research” (p. 287) and proposed an alternative interactional and sociolinguistic view of second language learning. What is relevant is the nature of the responses to their claims. We consider briefly the general tenor of some of the responses in light of Habermas’s notion of intersubjectivity and dialogic engagement.

Rampton (1997) did not engage with Firth and Wagner; he stated from the outset “my views on L2 research are broadly in line with Firth & Wagner,” and thus undertook not to establish intersubjectivity with them (presumably this had already happened) but to “take up where they leave off” (p. 329). Long (1997), on the other hand, despite recognizing that Firth and Wagner might be justified “in arguing that a broader, context-sensitive, participant-sensitive, generally sociolinguistic orientation might prove beneficial for SLA research” (p. 322), dismissed the core of their proposal rather aggressively:

Aside from some strawman arguments by assertion, rather sweeping claims about the state of the field based on very limited data, and an unfortunate, irrelevant (and for their own position, misleading) endorsement of Block’s confusions about philosophy of science issues, the major problem I have with F & W’s polemic remains my skepticism as to whether greater insights into SL *use* will *necessarily* have much to say about SL *acquisition* (Long, 1997, p. 322).

This was hardly the stuff of dialogic engagement and intersubjectivity. Hall’s (1997) response to Firth and Wagner’s “call for a

reconceptualization of the field” (p. 301) also avoided dialogic engagement with their proposals, featuring instead a monologic presentation of what sociocultural theory brings to SLA research.

Finally, Kasper (1997) remarked:

Again, I share their viewpoint to some extent, as I have written in several places (e.g., Kasper 1995) and elaborated in my 1993 AILA keynote. But because I have already aligned myself in that way, I will now take a critical stance towards F & W’s positions, in celebration of the dialogic principle (p. 309).

She went on to discuss the weaknesses and strengths of Firth and Wagner’s proposals and at one point offered a self-critical commentary with regard to the “comparative fallacy” issue in interlanguage research: “I cautioned against the same problem in the context of interlanguage pragmatics (e. g., Kasper, 1992), but no one has listened much to either of us [referring also to Bley-Vroman] (including myself)” (p. 310). Unlike Long, who merely dismissed Firth and Wagner on the grounds that their proposals were about language use and not language acquisition, Kasper, though also pointing out the same problem, nevertheless proposed what she saw as a potentially fruitful way of integrating Conversational Analysis (CA) into acquisition research:

To conclude on a heretic note, if the excellent microanalytic tools of CA were incorporated into a language socialization approach to SLA, we might be able to reconstruct links between L2 discourse and the acquisition of different aspects of communicative competence that have been largely obscure thus far (p. 311).

Thus, although she expressed serious reservations about Firth and Wagner’s stance and compelled them to confront the validity of their claims, she could see how their view of things might well contribute to SLA research. In offering her challenge to Firth and Wagner, she also apparently confronted and wondered about some of her own views relating to SLA. In our view, Kasper approached, more closely than any of the other responses, Habermas’s theory of communicative action.

Theoretical discourses that differ from our own deserve to be engaged much as we engage other languages and the people who speak them. The vistas opened up by such encounters enhance immeasurably the opportunities for self-reflection and appreciation of other ways of organizing the world and of mediating peoples' relationship to it. As when interacting with speakers of other languages and different world views, the greater theoretical diversity we experience, the better understanding we achieve of our own native (to push the metaphor somewhat) theory and its place in the larger scheme of things.

Revised version accepted 23 March 1998

Notes

¹To be sure, several SLA researchers, including one of the present authors, have from the very beginning been influenced by Vygotsky's theory more than by any other theory of mind. Currently, however, a number of researchers, such as those just mentioned above, have begun to utilize some sociocultural concepts in their own work, particularly Vygotsky's Zone of Proximal Development, without necessarily adopting Vygotsky's theoretical stance on the sociocultural origins of mental processes.

²Several people who read earlier versions of this paper mentioned that some SLA researchers might view our task as somewhat of a "red herring," given that many of the theoretical claims of Krashen's input hypothesis have been discredited by such scholars as Gregg (1984) and McLaughlin (1987). However, Krashen's theory has been experiencing a renaissance of late, as evidenced in several recent publications, such as those of Schwartz (1993) and Zobl (1995), who reconsidered the learning-acquisition distinction in light of UG-based SLA research and the debate between Lightbown and Pienemann (1993) and Krashen (1993) in *TESOL Quarterly* on the effects of formal grammar teaching on acquisition. An anonymous reviewer chides us for not considering Krashen's response to Gregg, McLaughlin, and others, who have criticized his model; however, our aim is not to enter into the debates between Krashen and his critics. Regardless of the status of Krashen's general model within SLA, the *i + 1* construct continues to enjoy a good deal of support.

³Descriptive terms such as "competing" and its frequent synonym, "rival" characterize a hegemonic struggle between two theories. A less conflictive way of viewing two theories might be achieved through the use of terms such as "alternative" or "different."

⁴Pearce (1987, p. 12) cautions that, given the conceptual richness and diversification of science, it is inappropriate to assume that translation in one context implies translation in other contexts.

⁵Hence, for Rorty (1979), to be subjective or abnormal is to be unfamiliar. For a discussion of the ideological aspect of questions of commensurability in linguistics, see Gardner (1985), Lantolf (1996) and Beaugrande (1997).

⁶The ZPD is a central theoretical construct in L2 research situated within sociocultural theory. Several researchers have attempted to understand how language learning occurs in the ZPD (see Aljaafreh & Lantolf, 1994; Donato, 1994; Lantolf & Aljaafreh, 1996; van Lier, 1996a, 1996b). We do not consider this literature, because it is not directly relevant to our focus. Furthermore, none of these researchers have argued for integrating Krashen's ideas with Vygotsky's.

⁷The reference to Vygotsky (1934) is to an early Russian version of *Thought and Language*.

⁸Kramsch (personal communication, January 30, 1998) now believes that the constructs are indeed incommensurable.

⁹In the same publication in which Guerra's (1996) comparison of $i + 1$ and the ZPD appeared, de Guerrero (1996) provided a brief response, in which she argued that $i + 1$ and the ZPD are very different. Her main points were that Krashen was unclear in his definition of $i + 1$ and that he did not consider social interaction and speaking to be important in SLA.

¹⁰One additional reference to the ZPD, because of its source and relatively early date, as least as far as textbooks on SLA are concerned, merits mention, even though it did not relate the concept with $i + 1$. Ellis (1985), discussing a longitudinal study of the effects of instruction on WH-questions on a group of 10- to 15-year-old L2 learners, wrote of two learners: "As these two children were gauged to be slightly below average for the group as a whole, it could be surmised that WH- interrogatives were within the subjects' 'zone of proximal development' (Vygotsky 1962); that is, the learners were developmentally 'ready' for WH- questions" (p. 227). Like Richard-Amato (1983), Ellis provided no further analysis of the ZPD.

¹¹Even though we ultimately find Vygotsky's theory more satisfying, we do not here argue against Krashen's model either on empirical or metatheoretical grounds. The L2 literature already contains a number of such critiques, foremost among them Gregg's (1984) and McLaughlin's (1987).

¹²Using an analogy with coughs, Vygotsky proposed that, just as coughs cannot always be construed as a symptom of the same disease (some point to influenza and others to tuberculosis), not all IQ scores are indicative of the same level of mental development (Van der Veer & Valsiner, 1991, p. 340).

¹³It is important to understand what Vygotsky meant by "upper boundary" of development. Because Vygotsky's theory was materialist-based, he argued that development was an open-ended process; hence, if the material circumstances in which one lives changed (for example, computers' and associated software programs' becoming readily available), the way people wrote would change as well (for example, writing a research paper with paper and pencil versus writing the same paper with the aid of a computer). On the other hand, when Vygotsky spoke of development as having an upper boundary, he was referring to the difference between what an individual can do alone (i.e.,

actual development) versus what that same individual can do with assistance (i.e., potential development) within a specific task domain. The upper boundary of the person's actual level of development would be revealed in the person's assisted performance. However, the upper boundary is not absolute, given that material circumstances (including the types of social interactions one has access to) can potentially change. We would like to thank an anonymous reviewer for reminding us of this crucial aspect of Vygotsky's way of conceptualizing development.

¹⁴Van der Veer and Valsiner (1991, p. 341) pointed out that current research seems to show that schooling tends to increase individual differences. According to Van der Veer and Valsiner (1991, p. 343), another problem with the way Vygotsky conceived of the background environment, at least in his writings on IQ, is that he saw it as static and unchanging. If this were indeed the case, these authors contended, it would be difficult to explain how children could ever surpass their adult partners in performance or IQ, because the child's autonomous performance would have a ceiling determined by joint performance; hence, it is difficult to imagine how one generation could ever surpass the previous one. However, not all interpreters of Vygotsky's writing have concurred with Van der Veer and Valsiner on this point. Newman and Holzman (1993), for example, argued strongly that it is precisely in the ZPD that children's creativity emerges as they undertake to imitate their collaborative partners, who may or may not be adults and may entail entire groups of other individuals.

¹⁵As is well known in the SLA field, Krashen has insisted on a clear distinction between conscious learning, which results from instruction, and unconscious acquisition, which arises from the comprehension of input containing linguistic features at the individual's $i + 1$. Piaget apparently did not conceive of the distinction between learning and development as reflecting conscious and unconscious processes.

¹⁶Bruner (1986, pp. 77–78) pointed out that even though there are marked differences between language acquisition and the acquisition of other forms of knowledge, the common denominator among all forms of knowledge acquisition is the presence of a ZPD.

¹⁷Hence, when children and say adults communicate, they do not mean the same thing; they do not understand each other as two adults might. This perspective seems counterintuitive; in fact, Chomsky (1988) adopted the opposite view, claiming that concepts (e.g., person) must be innately specified and arguing that there is no other way to explain, among other things, how adults and children can communicate with each other. As research by Wertsch (1985) and others has shown, however, children and adults do not have the same concepts in mind when they communicate. Because the adult assumes, and acts as if, the child does have the same concept, the child in fact comes to acquire that adult concept—an instance of learning leading development in language acquisition.

¹⁸However, for Vygotsky, the relationship between learning and development was not so straightforward; not every instance of learning is followed closely

by development. The relationship is revolutionary rather than evolutionary, as Vygotsky made quite clear: “development in children never follows school learning the way a shadow follows the object that casts it. In actuality, there are highly complex dynamic relations between developmental and learning processes that cannot be encompassed by an unchanging hypothetical formulation” (1978, p. 91). For a discussion of the revolutionary nature of development in L2 learning, see Lantolf and Aljaafreh (1996).

¹⁹We thank an anonymous reviewer for this important observation.

²⁰As an example of how the ZPD can be misunderstood when removed from its larger theoretical framework, Moll (1990) pointed out that even instruction by rote drills could be viewed as working within the ZPD if one focused solely on the sequential acquisition of skills or knowledge provided by the teacher. Similarly, van Lier (1996b, p. 152) observed that some language educators mistakenly believed that following the rigid Initiation-Response-Feedback pedagogy encountered in traditional classroom indeed entailed interaction in the ZPD.

²¹According to Frawley (1987, p. 52), doxa “requires the apotheosis of one system of knowledge over other systems, and consequently, the suppression of the other systems” and “is naturally connected with games of power.”

²²The conduit metaphor itself originated in the Cartesian *mirror metaphor*, which assumed mind and language to reflect, and therefore represent, reality in a direct way, much as mirrors directly reflect images (Rorty, 1979).

²³According to Yngve (1996, p. 30), linguists have continued to maintain “that the objects of language exist in nature and are thus given in advance and appropriate candidates for scientific study. But Saussure was right. It is an illusion.” In Yngve’s view, the only things that physically exist are acoustic waves, people that produce these waves, and contexts in which the people producing these acoustic waves reside. Hence, for Yngve, these are the only legitimate objects of study, if linguistics is to be a science. Grammar, phonemes, morphemes, parts of speech, etc. are philosophical constructs that pertain to the domain of logic and not to the domain of nature. In fact, Yngve (1996, p. 75) argued that the mystery that Chomsky has often posed when considering the supposed relationship between competence and performance is no mystery at all, but merely a matter of domain confusion, because competence belongs in the logical domain but performance pertains to the physical. The mystery arises when “trying to press a logical-domain grammatical theory into duty as a theory of physical-domain phenomena—how people speak and understand” (p. 75).

²⁴Bloomfield, following Saussure’s lead, also removed real people from his linguistics, and assigned them to the domain of psychology and anthropology in an effort to establish and sustain the discipline’s scientific legitimacy (Yngve, 1996, p. 32). For an enlightening discussion of the consequences of the endeavor to create a scientific linguistics from the perspective of cognitive anthropology, see Shore (1996).

²⁵Yngve (1996), however, argued that, by abstracting from the real world of human linguistic activity in order to achieve theoretical purity, Saussure and

Chomsky both ended up situating linguistics in the logico-philosophical rather than the scientific domain.

²⁶Saussure partitioned the study of language into a synchronic and a diachronic dimension. Although some might argue that he therefore recognized the importance of history in shaping language, Saussure's diachrony was in fact empty time rather than time filled with the ebb and flow of human historical forces (Crowley, 1996).

²⁷Danziger (1990, 1997) traced psychology's attempt to construct a scientific discipline on the model of the hard sciences. He convincingly showed how psychology ultimately ended up constructing its objects of study through its discursive practices rather than discovering objects that existed independently of these practices. It remains to be seen to what extent similar circumstances might hold in the case of SLA, especially if Yngve, Shore and Danziger were correct in their views on linguistics and psychology, the two principal research and theoretical traditions on which SLA, as a field of study, is based.

²⁸Wundt's bifurcation continues to dominate orthodox cognitive and developmental psychology, where research by psychologists and psycholinguists such as Wertsch (1985), Cole (1985), John-Steiner (1995), among others, still meets with a good deal of resistance and skepticism. Interestingly, however, anthropologists working from a cognitive and process-oriented perspective, such as Shore (1996), have recently begun to reconsider the benefits of reuniting the two strands of human mental activity. Not surprisingly, they have discovered the relevance of Vygotsky's theory to their enterprise.

²⁹For analysis of the force of history's role in the second language learning process, see Gillette (1994) and Pavlenko and Lantolf (1997).

³⁰Kasper (1997, p. 309) has suggested that although people surely have identities that are richer than language learner and non-native speaker, these particular features are the most relevant to the SLA enterprise and for this reason, other aspects of individual identities (e.g., gender, age, social class) are generally, though not always, less salient and of less interest to researchers. People such as Hall (1995), Peirce (1995), and Siegal (1996) have argued, however, that, unless they take account of a person's identity beyond that of learner or non-native speaker, researchers cannot understand the full nature of language learning. This perspective is quite sympathetic with Vygotsky's.

³¹Slobin (1996) provided several interesting examples from cross-cultural research on child language acquisition, illustrating how children as early as 3 years of age struggle to overcome the grammatical constraints imposed by their language as they construct narratives. Slobin's study showed early cases of some modest successes, but ultimately the adult grammar succeeded in imposing itself on the children. Lantolf and Ahmed (1989) presented a somewhat similar situation in the case of a single ESL learner who found creative ways of performing a speaking task in which he had a special interest. Finally, Siegal (1996) presented a series of case studies of women

learners of L2 Japanese who overcame the constraints of Japanese language and culture in order to construct a comfortable identity in their L2.

³²For this reason, Vygotsky proposed investigating consciousness, the object of study for psychology, using a valid unit of analysis that would preserve all consciousness's essential properties rather than segmenting it into smaller elements (Vygotsky, 1978, especially chapter 5). The unit of analysis Vygotsky proposed was the "word"; this decision has not been without its controversies and challenges. For a full discussion of this central issue of sociocultural theory, see Wertsch (1985). For informative discussions on the hard-science versus romantic-science approaches to research, see Taylor (1985) and Bird (1976).

³³According to Dot Robbins (personal communication, March 1996) some L2 researchers have characterized, and subsequently dismissed, the ZPD as a mere relic of the behaviorist era in psychology. Such researchers understand the ZPD as nothing more than a new kind of jargon for talking about input/output processes, and they argue that the field of SLA already has perfectly suitable ways of doing this.

References

- Aljaafreh, A., & Lantolf, J.P. (1994). Negative feedback as regulation and second language learning in the zone of proximal development. *Modern Language Journal*, 78, 465–483.
- de Beaugrande, R. (1997). Theory and practice in applied linguistics: Disconnection, conflict, or dialectic? *Applied Linguistics*, 18, 279–313.
- Bird, O. (1976). *Cultures in conflict: An essay in the philosophy of the humanities*. Notre Dame, IN: University of Notre Dame Press.
- Bloomfield, L. (1933). *Language*. New York: Holt, Rinehart and Winston.
- Bruner, J. (1986). Play, thought and language. *Prospects*, 16, 77–83.
- Chomsky, N. (1988). *Language and problems of knowledge: The Managua lectures*. Cambridge, MA: MIT Press.
- Cole, M. (1985). The zone of proximal development: Where culture and cognition create each other. In J. V. Wertsch (Ed.), *Culture, communication and cognition: Vygotskian perspectives* (pp. 146–151). Cambridge, MA: Harvard University Press.
- Crowley, T. (1996). *Language in history: Theories and texts*. London: Routledge.
- Danziger, K. (1990). *Constructing the subject: Historical origins of psychological research*. Cambridge: Cambridge University Press.
- Danziger, K. (1997). *Naming the mind: How psychology found its language*. London: Sage.
- de Guerrero, M.C.M. (1996). Krashen's $i + 1$ and Vygotsky's ZPD: Really two very different notions. *TESOL-GRAM (The Official Newsletter of Puerto Rico TESOL)*, 23, 9.

- Donato, R. (1994). Collective scaffolding in second language learning. In J. P. Lantolf & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 33–56). Norwood, NJ: Ablex.
- Egan, K. (1983). *Education and psychology: Plato, Piaget, and scientific psychology*. New York: Teachers College Press.
- Ellis, R. (1985). *Understanding second language acquisition*. Oxford: Oxford University Press.
- Ellis, R. (1997). *SLA research and language teaching*. Oxford: Oxford University Press.
- Firth, A., & Wagner, J. (1997). On discourse, communication, and (some) fundamental concepts in SLA research. *Modern Language Journal*, 81, 285–300.
- Frawley, W. (1987). *Text and epistemology*. Norwood, NJ: Ablex.
- Gardner, H. (1985). *The mind's new science: A history of the cognitive revolution*. New York: Basic Books.
- Gillette, B. (1994). The role of learner goals in L2 success. In J. P. Lantolf & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 195–214). Norwood, NJ: Ablex.
- Gregg, K. (1984). Krashen's monitor and Occam's razor. *Applied Linguistics*, 5, 79–100.
- Guerra, C. (1996). Krashen's *i + 1* issue revisited from a Vygotskian perspective. *TESOL-GRAM (The Official Newsletter of Puerto Rico TESOL)*, 23, 7–8.
- Habermas, J. (1981/1984). *The theory of communicative action: Vol. 1. Reason and the rationalization of society*. T. McCarthy, Trans. Boston: Beacon Press (Original work published 1981).
- Hacking, I. (1983). *Representing and intervening*. Cambridge: Cambridge University Press.
- Hall, J.K. (1995). (Re)creating our worlds with words: A sociohistorical perspective of face-to-face interaction. *Applied Linguistics*, 16, 206–232.
- Hall, J.K. (1997). A consideration of SLA as a theory of practice. *Modern Language Journal*, 81, 301–306.
- John-Steiner, V. (1995). Cognitive pluralism: A sociocultural approach. *Mind, Culture and Activity*, 2, 2–11.
- Johnson, K.E. (1995). *Understanding communication in second language classrooms*. Cambridge: Cambridge University Press.
- Kasper, G. (1997). "A" stands for acquisition: A response to Firth and Wagner. *Modern Language Journal*, 81, 307–312.
- Kramsch, C. (1992). Contextes de comprehension. In R. J. Courchene, J. I. Glidden, J. St. John, & C. Therien (Eds.), *Comprehension-based second language teaching* (pp. 63–76). Ottawa: University of Ottawa Press.
- Krashen, S. D. (1982). *Principles and practice in second language acquisition*. Oxford: Pergamon Press.

- Krashen, S.D. (1985). *The input hypothesis: Issues and implications*. London: Longman.
- Krashen, S.D. (1993). The effect of formal grammar teaching: Still peripheral. *TESOL Quarterly*, 27, 722–725.
- Lantolf, J.P. (1993). Sociocultural theory and the second-language classroom: The lesson of strategic interaction. In J. A. Alatis (Ed.), *Strategic interaction and language acquisition: Theory, practice, and research* (pp. 220–233). Washington: Georgetown University Press.
- Lantolf, J.P. (1996). Second language acquisition theory building: “Letting all the flowers bloom!” *Language Learning*, 46, 713–749.
- Lantolf, J.P., & Ahmed, M.K. (1989). Psycholinguistic perspectives on interlanguage variation: A Vygotskian analysis. In S. Gass, C. Madden, D. Preston, & L. Selinker (Eds.), *Variation in second language acquisition: Vol. II. Psycholinguistic perspectives* (pp. 93–108). Clevedon, UK: Multilingual Matters.
- Lantolf, J.P., & Aljaafreh, A. (1995). Second language learning in the zone of proximal development: A revolutionary experience. *International Journal of Educational Research*, 23, 619–632.
- Lantolf, J.P., & Appel, G. (Eds.). (1994). *Vygotskian approaches to second language research*. Norwood, NJ: Ablex.
- Lantolf, J.P., & Pavlenko, A. (1995). Sociocultural theory and second language acquisition. *Annual Review of Applied Linguistics*, 15, 108–124.
- Lightbown, P.M., & Pienemann, M. (1993). Comments on Stephen D. Krashen’s “Teaching issues: Formal grammar instruction.” *TESOL Quarterly*, 27, 717–722.
- Long, M.H. (1983). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics*, 4, 126–141.
- Long, M.H. (1997). Construct validity in SLA research: A response to Firth and Wagner. *Modern Language Journal*, 81, 318–323.
- Luria, A.R. (1979). *The making of mind: A personal account of Soviet psychology*. Cambridge, MA: Harvard University Press.
- McLaughlin, B. (1987). *Theories of second-language learning*. London: Edward Arnold.
- Moll, L.C. (1990). Introduction. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 1–27). Cambridge: Cambridge University Press.
- Newman, F., & Holzman, L. (1993). *Lev Vygotsky: Revolutionary scientist*. London: Routledge.
- Nyikos, M., & Hashimoto, R. (1997). Constructivist theory applied to collaborative learning in teacher education: In search of ZPD. *Modern Language Journal*, 81, 506–517.

- Oxford, R. (1997). Cooperative learning, collaborative learning, and interaction: Three communicative strands in the language classroom. *Modern Language Journal*, 81, 443–456.
- Pavlenko, A., & Lantolf, J. P. (1997, March). Voices from the margins: SLA as a (re)construction of self. In J. P. Lantolf (Chair), *Sociocultural theory and second language learning: Confronting the margins*. Colloquium conducted at the annual meeting of the American Association for Applied Linguistics, Orlando, FL.
- Pearce, D. (1987). *Roads to commensurability*. Dordrecht: Reidel.
- Peirce, B. N. (1995). Social identity, investment, and language learning. *TESOL Quarterly*, 29, 9–31.
- Pennycook, A. (1994). Incommensurable discourses? *Applied Linguistics*, 15, 115–138.
- Pica, T. (1988). Interlanguage adjustments as an outcome of NS-NNS negotiated interaction. *Language Learning*, 38, 45–73.
- Rampton, B. (1997). Second language research in late modernity. *Modern Language Journal*, 81, 329–333.
- Richard-Amato, P. A. (1983). ESL in Colorado's Jefferson County schools. In J. Oller, Jr. & P. Richard-Amato (Eds.), *Methods that work* (pp. 393–413). Rowley, MA: Newbury House.
- Reddy, M. (1979). The conduit metaphor. In Ortony, A. (Ed.), *Metaphor and thought* (pp. 284–324). Cambridge: Cambridge University Press.
- Rorty, R. (1979). *Philosophy and the mirror of nature*. Princeton: Princeton University Press.
- Rorty, R. (1991). *Objectivity, relativism, and truth: Philosophical papers* (Vol. 1). Cambridge: Cambridge University Press.
- de Saussure, F. (1916/1966). *Course in general linguistics*. (W. Baskin, Trans.). New York: McGraw-Hill (Original work published in 1916)
- Scarcella, R.C., & Oxford, R. L. (1992). *The tapestry of language learning: The individual in the communicative classroom*. Boston: Heinle and Heinle.
- Schinke-Llano, L. (1993). On the value of a Vygotskian framework for SLA theory and research. *Language Learning*, 43, 121–129.
- Schwartz, B.D. 1993. On explicit and negative data effecting and affecting competence and linguistic behavior. *Studies in Second Language Acquisition*, 15, 147–164.
- Scribner, S. (1985). Vygotsky's use of history. In J. V. Wertsch (Ed.), *Culture, communication and cognition: Vygotskian perspectives* (pp. 119–145). Cambridge, MA: Harvard University Press.
- Shore, B. (1996). *Culture in mind*. Oxford: Oxford University Press.
- Siegel, M. (1996). The role of learner subjectivity in second language sociolinguistic competency: Western women learning Japanese. *Applied Linguistics*, 17, 356–382.

- Slobin, D. I. (1996). From "thought and language" to "thinking for speaking." In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 70–96). Cambridge: Cambridge University Press.
- Taylor, C. (1985). *Human agency and language*. Cambridge: Cambridge University Press.
- Tudge, J. (1990). Vygotsky, the zone of proximal development, and peer collaboration: Implications for classroom practice. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 155–172). Cambridge: Cambridge University Press.
- Van der Veer, R., & Valsiner, J. (1991). *Understanding Vygotsky: A quest for synthesis*. London: Blackwell.
- van Lier, L. (1996a, August). From input to affordance: Social-interactive learning from an ecological perspective. In J. P. Lantolf (Chair), *Symposium in honor of L. S. Vygotsky's 100th anniversary*. Symposium conducted at the AILA World Congress, Jyväskylä, Finland.
- van Lier, L. (1996b). *Interaction in the language curriculum: Awareness, autonomy and authenticity*. London: Longman.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1987). *The collected works: Vol. 1. Problems in general psychology*. New York: Plenum.
- Warnke, G. (1995). Communicative rationality and cultural values. In S. K. White (Ed.), *The Cambridge companion to Habermas* (pp. 120–142). Cambridge: Cambridge University Press.
- Wertsch, J. V. (1985). *Vygotsky and the social formation of mind*. Cambridge, MA: Harvard University Press.
- Wertsch, J. V., & Rogoff, B. (1984). Editors' notes. In B. Rogoff & J. V. Wertsch (Eds.), *Children's learning in the "Zone of Proximal Development"* (pp. 1–6). San Francisco: Jossey-Bass.
- Wertsch, J. V., & Tulviste, P. (1996). L. S. Vygotsky and contemporary developmental psychology. In H. Daniels (Ed.), *Introduction to Vygotsky* (pp. 53–74). London: Routledge.
- Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem-solving. *Journal of Child Psychology and Psychiatry*, 17, 89–100.
- Wundt, W. (1897/1969). *Outlines of psychology*. (C. H. Judd, Trans.). Clair Shores, MI: Scholarly Press. (Original work published 1897)
- Yngve, V. (1996). *From grammar to science: New foundations for general linguistics*. Amsterdam: John Benjamins.
- Zobl, H. (1995). Converging evidence for the "acquisition-learning" distinction. *Applied Linguistics*, 16, 35–56.