The encoding of distance: The concept of the 'zone of proximal development' and its interpretations

Valsiner, J.; Veer, R. van der

THE DEVELOPMENT AND MEANING OF PSYCHOLOGICAL DISTANCE

Edited by

Rodney R. Cocking
National Institute of Mental Health
K. Ann Renninger
Swarthmore College

LAWRENCE ERLBAUM ASSOCIATES, PUBLISHERS
1993 Hillsdale, New Jersey Hove and London

Contents

Preface

Research on psychological distance dates back at least to Ebbinghaus' (1885/1914) observations that there are notable differences among individuals in the way in which they engage in tasks. His use of the nonsense syllable launched a research tradition focused on eliminating the impact of such differences on whatever aspect of functioning was under study. Eradication of such differences has the advantage of permitting researchers to focus more directly on discrete elements of human functioning. They have little generalizability beyond the laboratory (c.f. Neisser, 1976), however, and as such, are of limited use to those whose focus is the developing individual, a person undergoing change.

While others such as Werner (1948), Piaget (1954), and Vygotsky (1978) drew on distance concepts, it was not until Sigel's (1970) paper that psychological distance was first postulated as a developmental construct. Specifically, Sigel has described psychological distance as the individual's emerging ability to understand that an object (task, idea, etc.) can be represented by something other than the concrete object itself. He considers psychological distance as a function, in that it evolves in relation to the others and objects that constitute the individuals' environment. He examines psychological distance as an issue of learning, in that the individual develops an ability to respond to the discrepancy that new information poses. And, he details the use of psychological distance, or distancing, as an intervention in which expert-others pose questions, or organize text, and so forth in ways that create an appropriate level of distance between what an individual knows and what he or she is still working to understand.

Central to this construct is the cognitive process of representing information to one's self and the ecology of the environment that enables an individual to rerepresent information to him or herself in the service of subsequent conceptual

3 The Encoding of Distance: The Concept of the Zone of Proximal Development and Its Interpretations

Jaan Valsiner
Developmental Psychology Program, University of North Carolina

René van der Veer
Vakgroep Algemene Pedagogiek, Rijksuniversiteit Leiden, The Netherlands

All development involves the construction of distance between the present and the past, and overcoming the distance from the present to the future. It is usually that latter process—the constant forward move from what can be known in the present to what cannot yet (but might) become known in the next moment that has been difficult for psychologists to conceptualize. This theoretical weakness seems to become increasingly widespread in contemporary psychology with its accentuated empiricistic emphasis on inductive knowledge assembly, which is not paralleled by an equal focus on rigor of deductive argumentation. In the theoretical realm of contemporary psychology the tyranny of eclecticism governs, which increases the imminent danger of psychology becoming a non-science at best, and non-sense at worst (see Cairns, 1986; Smedslund, 1979; Toulmin & Leary, 1985). Ironically, extensive proliferation of empiricism in psychology leads psychologists to worse (rather than better) possibilities to understand psychological phenomena (see Thorngate, 1990).

There are very few theoretical constructs in the active use of psychologists in the present day that can help us to conceptualize the process of development from the present to the future. It is therefore not surprising that the rather metaphoric concept that Lev Vygotsky brought into the focus of attention of psychological discourse in early 1930s, and that has become widely known in contemporary psychological discourse as "zone of proximal development" (Cole, John-Steiner, Scribner, & Souberman, 1978, p. 86) or as "zone of potential development" (Simon & Simon, 1963, p. 31), has been captivating the minds of many a contemporary researcher. Indeed, that concept gives hope for understanding the issue of development as it takes place at the intersection of the person and the social world (Laboratory of Comparative Human Cognition, 1983; Lee, 1987;

Minick, 1987; Wertsch, 1984). It seems to match well with the ever-louder voices in psychology that claim to fit under the "ecological," "interactionist," "transactionist," "constructivist," "deconstructionist," "organismic," and "systemic" labels, each of which denotes a denomination that is trying to establish its social legitimacy within the convent of science.

The concept of "zone of proximal development" poses a number of theoretical problems that need to be addressed quite separately from the ongoing social discourse that tries to fit a multitude of approaches under the somewhat mystical umbrella of that concept. First, it entails a reference to a "zone"—essentially a field-theoretical concept in an era of psychology that has largely forgotten the gargantuan efforts by Kurt Lewin to adopt topology for purposes of psychological discourse. Second, the understanding of "development" has been highly varied in contemporary psychological discourse, ranging from loosely formulated ideas about "age-group differences" (or "age effects") to narrowly definable structural transformation of organisms in irreversible time and within context (e.g., Brent, 1984; Valsiner, 1987, 1989). Finally—to complicate the matters even further—contemporary psychologists have to wrestle with the qualifier of "proximal" (or "potential", or "nearest"), as it is the connecting link between the field-theoretic "zone" and the concept of "development" in this complex term.

The goal of this chapter is to analyze the different forms that the culturally organized (constrained) reasoning of psychologists at different time periods has given to the concept of "zone of proximal development." We will start this analysis by outlining the history of the concept, from the time (1932/1933) when Vygotsky began to use it on the basis of the ideas expressed in international psychology of the time (Vygotsky, 1933/1935, p. 119). In order to contrast Vygotsky's version of the concept with its later transformations, we will use the abbreviation ZBR (from Russian: *zona blizhaishego razvitia*) throughout this chapter. As we proceed to analyze the contemporary redefinitions of the concept, we will use the favorite abbreviations of different authors who have used the concept (e.g., ZPD, Zo-ped).

THE HISTORY OF THE CONCEPT: VYGOTSKY AND PAEDOLOGY

The beginnings of Vygotsky's use of the ZBR concept constitute an interesting story in themselves. In 1931, the laboratory in Moscow at the Academy of Communist Education where Vygotsky's group had been involved in their empirical research program on cultural-historical theory was closed under increasing ideological pressure (see Joravsky, 1989; Valsiner, 1988 for analyses of the social context of psychology in the U.S.S.R. in 1931). This led to the dispersion of the group of empirical investigators, some of whom moved to Kharkov as a break-away "Kharkov School" of "activity theory" (e.g., Leontiev, Zapo-

rozhets); others found places at different other institutes in Moscow. Vygotsky, while staying mainly in Moscow, took up lecturing at the Leningrad State Pedagogical Institute (see Van der Veer & Valsiner, 1991). This lecturing was mainly associated with the discipline of paedology (known as "child study movement" in American literature), all the more so that Vygotsky had redefined that discipline for himself as that of an interdisciplinary synthetic science of development (Vygotsky, 1931a, 1931b, 1931c). His vision for paedology entailed the emergence of qualitatively new developmental science with its own methodology, on the basis of different disciplines that had been investigating issues of children. Vygotsky was actively involved in the organization of paedology in the Soviet Union. He was at the time a professor of paedology at the Moscow State Pedagogical Institute and at the Moscow Medical Institute. Vygotsky's role in the paedology in the U.S.S.R. in the early 1930s was prominent. This important position in paedology later served as the ideological pretext for blacklisting his work (e.g., Rudneva, 1937). The shadow of paedology remained as a negative ideological factor in discrediting Vygotsky's work even in the 1950s—his involvement with the discipline needed to be explained away as insignificant occasional "error" at the reintroduction of his work to Soviet psychology (Kolbanovskii, 1956).

A detailed analysis of the emergence and use of the concept of ZBR is given elsewhere (Van der Veer & Valsiner, 1991, chapter XII). Here we trace the specific ways in which Vygotsky's previous development of theory (the "cultural-historical theory") and his new concentration on theoretical paedology, together with its applications in educational contexts, gave rise to his use of the ZBR concept.

ROOTS OF ZBR IN THE "CULTURAL-HISTORICAL THEORY"

It can be argued that the logic of development of Vygotsky's cultural-historical theory led to the need to conceptualize the developmental processes that operate in the domain of present-to-future transformation of the functioning structure of the psychological system. Different investigations (Leontiev, 1932; Luria, 1928; Vygotski, 1929) within the cultural-historical framework, together with the root idea of the person "freeing" him or herself from the confines of the given situation through sign-based mediation and instrumental action, had demonstrated the possibilities of children's further progress beyond their present level of psychological functioning. However, the actual processes by which these possibilities become realities in ontogeny were not yet charted. It may be reasonable to characterize the cultural-historical focus on the role of mediation of psychological processes in 1927–1931 as primarily microgenetic in its emphasis. Most of the empirical studies that are known from that period were based on

microgenetic experimentation and involved comparisons of age groups (mostly cross-sectional in nature). Since Vygotsky's cultural-historical ideas emerged in the context of his fascination with Wolfgang Köhler's experiments on problem solving in primates and those of Jean Piaget in children (e.g., Vygotsky & Luria, 1930), it is not surprising that the microgenetic focus dominated over the ontogenetic one in the analysis of development. It was only at around the time when paedology became the dominant theme in Vygotsky's own thinking that the need for ontogenetic analysis of how different psychological processes became restructured (i.e., his emphasis on "crises in development" at different ages—Vygotsky, 1933/1984, pp. 318–339, 368–385).

The major link between cultural-historical theory and paedology was Vygotsky's manuscript, *The history of development of higher psychological functions* (Vygotsky, 1931/1983). The central issue that framed this linkage was the possibility (afforded by the "method of double stimulation"—the main contribution of the cultural-historical theory to methodology) to study the emergence of "free will" in ontogenesis (Vygotsky, 1931/1983, pp. 290–291). The issue of intentional control of psychological functions had been the central divider of the "higher" and "lower" levels of psychological organization; now Vygotsky set himself the task of tracing the synthesis of higher processes prospectively in ontogeny. Of course, in his sociogenetic perspective, the meaning of "free will" of the individual was set up in a context-bound way—emphasizing the internal reconstruction of externally given social suggestions. That internal reconstruction takes the form of the child's construction of psychological tools to be capable of volitional management. The free will (which actually is "free" only in a limited sense, as it involves the recognition of the limits of use of already developed action strategies) indicates the possibility for the child to transcend the structure of the given social setting. The developing child becomes increasingly free in the sense of going beyond the given setting in children's play, adolescents' fantasizing (Vygotsky, 1931e, p. 455), and social interaction with others (Vygotsky, 1931d, pp. 16–17).

This developing context-bound free will is socially instructed by way of the rearing efforts of the "social others" with whom the child is interdependent. These efforts are informed by the goals these other persons surrounding the child have set themselves. The crucial issue for Vygotsky in 1931 became to which psychological functions—the ones that can be observed already to be present, or the ones that are in the process of emerging—should the efforts of "will-rearing" be directed. His answer (Vygotsky, 1931/1983, p. 295) was clear—at the latter and not at the former. It is at this juncture in Vygotsky's thinking that his dialectical theoretical core of understanding of development meets his applied focus on the teaching–learning process (as it guides the child toward overcoming the present state of being, through a process of relying on presently existing psychological functions in the service of developing novel ones). Similar ideas were expressed by Vygotsky's collaborators in different contexts. Zaporozhets

(1930, p. 232) criticized IQ-testing methods for their "blindness" to study the process of further intellectual development of the child, and Luria explained the same idea through the use of neurophysiological language:

> The rearer is not compelled to wait until the maturing nervous system leads to the overcoming of the early diffuse nature of the neurodynamic processes—he is confronted with the possibility to include these neurodynamic processes in the highest psychological systems of behavior, and through that re-organize these [processes] not from "below" but from "above". (Luria, 1931, p. 28)

In order to understand the emergence of the ZBR use in Vygotsky's discourse, it is important to bear in mind the consistent emphasis on developing psychological processes that form the holistic dynamic structure of the child's personality. Vygotsky's effort to explain human ontogeny led him to bring together the developmental theory and traditions of paedology. This duality of focus—on developmental theorizing and paedological (test-based "diagnostic") applications—was obvious already in 1931. In the same manuscript where the basic idea of social rearing of not-yet-developed processes is expressed, we can trace the roots of thinking that later serve as illustrations for his ZBR concept (chapter XIV, "The problem of cultural age," Vygotsky, 1931/1983: the distance between individual and socially assisted performance).

Vygotsky argued against the "measurement of intelligence" by way of documenting the psychological (mental) functions that have already finished their course of development (1931/1983, pp. 308–309). Using the comparison with a clinician who on the basis of observable symptoms can diagnose the underlying causes of a disease, he explained the need of mental testing to go beyond mere documentation of the observable symptoms to the explication of the underlying causal system. Indeed, the traditional definition of intelligence by way of what intelligence tests measure would equal a physician's statement that the patient has influenza because the thermometer measures the body temperature to be above normal. Psychology has had a long history of semantic transformation of its measurement-based descriptive concepts into causal concepts attributed to be "behind" these measurements (latent variables or traits). Vygotsky recognized that theoretical impasse well before he started to use the ZBR concept. Ironically, as we see later, that concept itself has undergone transformation from a descriptive to a causal one since the 1930s.

To summarize: By about 1931, Vygotsky had reached the theoretical necessity to conceptualize the "making of the future" in human ontogeny. All the ideas that would later play relevant roles in the use of the ZBR concept were already in use in his thinking: the need to concentrate on the social facilitation of developing functions, the role of play and fantasy in helping the person to "go beyond the present," and the relevance of social suggestions and interaction in the internalization process. However, Vygotsky had been playing with these ideas without a

unifying concept—and it is that function that the term of ZBR seems to have performed in Vygotsky's own history of ideas.

THE BEGINNINGS OF THE ZBR CONCEPT IN VYGOTSKY'S DISCOURSE

Some time in 1932–1933, Vygotsky started to use the ZBR notion. Because most of Vygotsky's creativity in these years took the form of numerous redundant and poorly survived lecture stenograms/notes (rather than completed manuscripts), we may be never able to document the exact earliest use of the term. It is clear that he used ZBR explicitly during 1933 in his various lectures and presentations in paedology.

The earliest documented mention of ZBR can be found in a lecture given in Moscow at Epshtein Institute of Experimental Defectology on March, 17, 1933. The title of the published version of that oral speech—"On the paedological analysis of the pedagogical process" (Vygotsky, 1933/1935, pp. 116–134)—reflects the context in which the use of that concept came into being. It reinstates the major theoretical idea of timing instructional intervention in conjunction with the first mention of the concept (in conjunction with expression of indebtedness to the work of Ernst Meumann):

> Investigations led paedologists to the idea that one should determine at least a double level of child development, namely: first, the level of actual development of the child, i.e., that what already matured to the present day; and, secondly—the zone of his nearest development, i.e., those processes in the further development of these same functions which, as they are not mature today, still are on their way already, are already growing through and already tomorrow will bear fruit; already tomorrow transfer to the level of actual development. (Vygotsky, 1933/1935, p. 120)

It becomes clear from this very first verifiable mention of the ZBR concept by Vygotsky that his use of the term was a mediational device for bringing together different lines of his ideas. The botanical metaphor of "growing through" indicates his focus on the opposition of the presently observable (already formed) and presently not yet observable (not yet formed) functions.

Further crucial textual evidence for Vygotsky's synthesis of the structure of developmental processes with the issues of paedological diagnostics of the "levels of development" comes from the recently published version (Vygotsky, 1933/1984, p. 264) of his lecture at the Leningrad Pedagogical Institute on March 23, 1933. Most probably, his oral presentation on that date was turned into a written text in late 1933 or early 1934 (as the first mention of this text is dated at 1934—see Vygotsky, 1934, p. 323).

In the first part of this text, Vygotsky emphasized the qualitative structural reorganization (dialectical synthesis) nature of the developmental process. He

described the course of child development as characterized by periods of calm or uneventful advancement that are separated from one another by times of crises. The latter are the relevant periods for development, as the ontogenetic progression takes a catastrophic form and resembles "revolutionary breakthroughs" (Vygotsky, 1933/1984, p. 249). The exact beginning and end points of the crises cannot be noticed in any exact way, but the periods during which the actual transformation of the psychological structure take place can be pinpointed because of their seemingly disorganized and chaotic nature. Six crisis periods in child development were outlined by Vygotsky: those of newborn age, 1st, 3rd, 7th, 13th, and 17th year. It is during these periods that the emergence of higher levels of psychological organization take place. Vygotsky was always ready to view developmental change as a process of dialectical synthesis (see Van der Veer & Valsiner, 1991), and the crisis periods in ontogeny guided him to look for relevant developmental phenomena.

It is in his description of the dialectical synthesis process during crisis periods that Vygotsky elaborates upon the idea of unity of evolution and involution (taken from J. M. Baldwin), which he explicitly alluded to in numerous other presentations:

> The progressive development of child's personality, continuous building of the new that was so clearly expressed in all stable age periods, as if fade away or stop during crises periods. The extinction and contraction, disintegration and decomposition of the previously formed processes that characterized the child of the given age move to the frontal plane. The child during the critical periods does not so much acquire, but loses what was attained before. (Vygotsky, 1933/1984, p. 251)

The process involution dominates over that of evolution during the age periods of crises. However, each crisis has its own culmination point (*kulminatsionnaia tochka*) that is the locus at which the dialectical synthesis is accomplished. Vygotsky's idea of crisis periods in human ontogeny as expressed in 1933 is continuous with the ideas of qualitative breakthrough points in a reader's reaction to literary texts in his writings of the years 1916–1925 (see Van der Veer & Valsiner, 1991). What is clearly different from his earlier application of the idea of dialectical synthesis, however, is a consistent emphasis on the structure of processes of a psychological kind that are assumed to become linked with one another in novel ways at the crisis periods, thus leading to the emergence of a novel (qualitatively higher) structure of psychological functions. The psychological processes (which were not charted out in explicit detail by Vygotsky) were considered to form two "lines": those that "were more or less immediately linked with main novel formations" were called central lines of development, while other (particularistic) processes of development at a given age were delegated to adjunct status (Vygotsky, 1933/1984, p. 257). The same psychological function—speech, for instance—may play an adjunct role in development in infancy, become central in early childhood, and again become adjunct in the following age periods. The actual dialectical synthesis at crisis periods leads to the reorga-

nization of the structure of central and adjunct psychological functions in ways that give rise to novel functions on the basis of loss and reorganization of the previous ones. Unfortunately, Vygotsky never gave a concrete example of how this dialectical synthesis takes place, given a specific structure of psychological functions. Instead, he moved to emphasize the role of the social situation of development for each qualitative transition. If we can know the social situation of development at the beginning of a developmental period, then we can proceed to study how in that situation new psychological functions come into being (Vygotsky, 1933/1984a, pp. 258–259). Surely that emphasis opened wide the possibility of discussing the importance of social assistance in the development of the individual child. The immediate leap by Vygotsky from the issues of structural transformation of psychological functions to the emphasis (but no elaboration) of the role of the social situation of development can be viewed as the beginning of all the later confusion that the ZBR and ZPD concepts have had to be subjected to in scientific discourse.

Finally, Vygotsky brought the ZBR concept into his argumentation—but in conjunction with "applied issues" (1933/1984, pp. 260–268). It is here that the "diagnosis of the level of development" becomes clearly linked with an emphasis on heterochrony in the development of different psychological functions (1933/1984, p. 262). Because the time points of the final formation of different psychological functions differ, at any given moment some of these processes are nearing their respective moments of formation, while others have already become formed. The task for diagnosis of development was defined by Vygotsky here in terms similar to his lecture in Moscow the week before—as the analysis of not-yet-emerged but now-developing processes (aside from the already actualized ones). It is from the position of this methodological imperative that Vygotsky continued to talk about the ZBR, linking it with the issues of teaching–learning as a practical application of that imperative (1933/1984, p. 265).

The third relevant presentation involving the introduction of the ZBR concept took place 2 months later—when Vygotsky gave a presentation on the development of everyday and "scientific" concepts at Leningrad Paedological Institute on May 20, 1933 (Vygotsky, 1933/1935, pp. 96–115). The topics covered in that presentation parallel the ones that have been available for quite a while (Vygotsky, 1934, chapter 6; in English, Vygotsky, 1962, 1986, 1987). The main focus of the presentation was the issue of how school-learning-based "scientific concepts" are linked in their development with the "everyday" concepts (referring to the work of Shif, 1935). In that process, the "scientific" concepts that are introduced in school were claimed to run ahead of the development of everyday concepts, but at the same time be based on the latter. Hence it is important to fit the presentation of scientific concepts in school with the previous potential readiness (based on the development of everyday concepts) of the child—the scientific concepts are introduced from above to reorganize the present structure of everyday concepts that have developed previously from below—to paraphrase Luria's ideas reported before.

To summarize: Within the 2-month period (March–May 1933) Vygotsky was observed to pick up the concept of ZBR and use it actively in different contexts. In all of these uses the concept remained a descriptive one, marking the emphasis on the study of developing (as opposed to already developed) psychological functions. The need for a descriptive term to mediate that emphasis was already present in Vygotsky's cultural-historical thinking about paedology as the science of development. However, the label "paedology" was used in the Soviet Union at the time to denote a highly heterogeneous child study movement that had imported many of its methods from Europe and North America. It is in his disputes with his contemporary paedologists that the ZBR term was used extensively by Vygotsky for rhetorical purposes.

VYGOTSKY'S USES OF THE ZBR CONCEPT IN DIFFERENT CONTEXTS

If we consider Vygotsky's use of the ZBR concept as a rhetoric mediating device for his disputes with his contemporaries, it may become easier to understand why the use of this concept occurs in different contexts, and why there was never a clear effort to clarify the term in theoretical ways. In the final 15 months of his life, Vygotsky made frequent (but often passing) use of the ZBR concept. The extant texts of Vygotsky provide us with a potpourri of examples of the use of the ZBR concept. If we look back at the corpus of statements about ZBR that is available in Vygotsky's manuscripts and published work, three directions are discernible. First, ZBR was explained in the language of "difference score" between the "assisted" and "individual" achievement conditions (Vygotsky, 1933/1935; also detailed description of his examples in Van der Veer & Valsiner, 1991; Vygotsky, 1933/1984, pp. 244–268). Second (as a generalized extension of the first line), the emphasis in explaining ZBR was on the general (nonquantitative) difference between the child's capability in socially assisted contexts (Vygotsky, 1934, chapter 6; 1933/1935, pp. 3–19) and in individual ones (without the direct reference to the "difference score" notion). In both cases, however, these explanatory efforts were meant to communicate a major theoretical idea—child development is at any given time in the difficult-to-observe process of emergence, which is masked by (easily visible) intermediate outcomes (= actual level of development). It is easy to see how both the "difference score" and "social assistance" versions of the ZBR are reflections of the same process description of development that we outlined earlier. The first stems from Vygotsky's rhetorical effort to redirect paedologists' diagnostic efforts from the test-based analysis of outcomes of development to the estimation of the potentials of further development. The second is a practical issue of how to link the teaching–learning process with development in the context of schooling.

The third line in Vygotsky's use of the ZBR concept takes it out of the immediate social situation to the object-mediated world. In one of his lectures at

Leningrad Pedagogical Institute in 1933 devoted to play, Vygotsky claimed for play a status similar to teaching–learning in interdependence with development. Explicitly, he argued that play creates the ZBR:

> In play the child is always higher than his average age, higher than his usual everyday behavior; he is in play as if a head above himself. The play contains, in a condensed way, as if in the focus of a magnifying glass, all tendencies of development; the child in play as if tries to accomplish a jump above the level of his ordinary behavior.
>
> The relationship of play to development should be compared with that of teaching-learning to development. Changes of needs and consciousness of more general kind lie behind the play. Play is the resource of development and it creates the zone of nearest development. Action in the imaginary field, in imagined situation, construction of voluntary intention, the formation of the life-play, will motives—this all emerges in play and . . . makes it the nineth wave of preschool age development. (Vygotsky, 1933/1966, pp. 74–75)

The seeming discrepancy between the interpersonal nature of teaching–learning and largely individual focus of play as creators of the ZBR can be overcome simply by pointing out that Vygotsky was speaking about preschool-age children's development in the context of play, and of school-age children's development in conjunction with teaching–learning. However, this is a minor issue that may merely help us to organize the myriad of ideas that Vygotsky played with. More importantly, the equal role of play and teaching–learning in the creation of ZBR fits exactly with the general theoretical background (described earlier) on the basis of which Vygotsky moved on to the concept of ZBR. Because Vygotsky's main emphasis was on development of the structure of psychological functions, the different contextual conditions for that development come together in the domain of personal experience (*perezhivanie* in Russian—better translated as the process of experiencing and state of "living-through"). The notion of experience was suggested by Vygotsky as the unit of analysis in psychological theorizing about personality, in exact parallel to the use of word meanings as units of analysis of thinking (Vygotsky, 1933/1984, pp. 382–383). In the process of personal experience, the capability of a developing child to "raise above himself" under conditions of social assistance, and through "self-help" of rule- or role-play, become equivalent. Thus, the ZBR concept was used by Vygotsky to emphasize the process of construction of the future structure of the functions on the basis of the present experience by the child.

THE MECHANISM THAT CREATES ZBR: IMITATION

For Vygotsky, the use of the ZBR concept was descriptive rather than explanatory. Its use emphasized the need to conceptualize the causal system of development, which links the present with the future. ZBR was consistently used to

remind paedologists about the need to proceed beyond the world of appearances (documentation of results of development) to analysis of proto-functions and mechanisms that lead their development. ZBR could not function in that explanatory role. Instead, Vygotsky turned to the idea of imitation and emphasized that this is the mechanism that underlies development (Vygotsky, 1933/1984, p. 263; 1933/1935, p. 49; 1933/1935, p. 109). Vygotsky argued that only human children are capable of imitation of others (in contrast to the apes studied by Wolfgang Köhler), and that the capability for imitation made it possible for ZBR to exist. In other terms, Vygotsky perceived the process of imitation as the mechanism of development.

It should be clarified here that the meaning of the term "imitation" was taken by Vygotsky in a wide sense that is close to James Mark Baldwin's "persistent imitation" concept (Vygotsky, 1935, p. 13; cf. Baldwin, 1892). That concept implies "imitation" of the (socially given) models beyond copying them (rather than merely producing an exact copy, at best). Thus, "persistent imitation" equals constructive experimentation with the given model, and its transformation into a novel form—both in actions directed toward the model and in the resulting internalization of understanding of the model.

If persistent imitation is the basic process that operates on the functions within the ZBR at any given time, then the three different categories of explanations of ZBR that Vygotsky gave in different places become united. Processes of imitation are involved in all cases—when the "difference score" notion is used, Vygotsky makes the point of linking the diagnostic aspect of ZBR with the "ideal mental age of the class," the level of teaching-demands on learners in the class that matches the given children's ZBR (Vygotsky, 1933/1935, p. 47). Knowing a particular child's ZBR in the sense of the difference score, and that of the given class, allows the paedologist to set up optimal conditions for the work of imitation. Likewise, any social situation creates the opportunities for imitation. The child constructs these opportunities for him or herself in creating rule-based play for him or herself. In a similar vein, adolescents and adults also create these opportunities for their self-development in their fantasy worlds.

IRREVERSIBILITY OF TIME AND ZBR: SOME IMPLICATIONS

We have reached an essential point—Vygotsky's ZBR concept was used descriptively to cover different phenomena that are derived from the same underlying causal system. The causal system, however, was insufficiently specified by him. On the one hand, Vygotsky followed the lead of the sociogenetic thinking of Baldwin, Janet, and others in attributing the role of the "moving force" of development to imitation. Thus, the ZBR concept became an external description of the "field," the boundaries of which coincided with what the child at a given time can imitate. On the other hand, Vygotsky developed the idea of hetero-

chronic emergence of different psychological functions, among which some have already become formed by the present moment, and others are still in the process of formation. It is toward the latter that any goal-directed effort of guiding development must be aimed. In other words, teaching–learning runs ahead of development not in the literal sense of one process preceding the other in time, but in the sense that at this time (meaning the present) the process of teaching–learning is functionally interdependent with the developmental processes that are emerging but have yet to become established.

Hence a methodological paradox emerges: Although the teaching–learning process "creates" the ZBR (Vygotsky, 1933/1935, p. 134; 1935, p. 16) in the present, there is no way in which anybody can study that process directly, within the present. Efforts to characterize the ZBR empirically require a translation of the focus from a simultaneous coverage of developmental processes into comparison of successive outcomes of formation of these processes (see Fig. 3.1).

In Fig. 3.1 we have tried to graphically depict this translation. Different psychological functions (a–f) develop in heterochronic ways, each of them reaching the state of "recognizable final form" at different moments in ontogene-

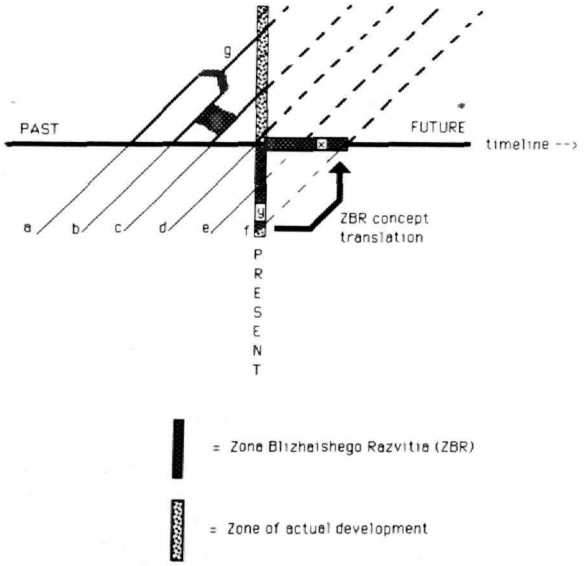

Fig. 3.1. The projection of the present to the nearest future in Vygotsky's ZBR concept.

tic time (horizontal time line). The development of these functions cannot be observed before they reach their final form, but their further development (e.g., integration of already formed functions a and b into a new one, g) can be observed subsequently.

At the PRESENT "slice" of time, it is relatively easy to observe the presence of those psychological functions that are well formed (d, c, g), but it is impossible to directly observe those (f, e) that are only in the process of approaching their recognizable final forms. While the immediate focus is the ZBR (y axis in Fig. 3.1), there is no way of accessing it. Vygotsky tried to solve this paradox by believing that in the socially aided process of trying to solve novel problems the investigator can get a glimpse of the nearest future course of the development of the psychological functions involved in that process. Following that line of reasoning, one can only know about the content of y if one guides the functions involved (e, f) toward their future final forms. Thus, the "hidden" PRESENT (y) becomes translated into "nearest" FUTURE (x) ("ZBR concept translation" in Fig. 3.1).

Here is the paradox that stands in the way of empirical use of Vygotsky's ZBR concept: It refers to the hidden processes of the present that may become explicated in reality only as the present becomes the (nearest) past, while the (nearest) future becomes the present. However, any empirical research effort (including Vygotskian "teaching experiments" using the "method of double stimulation") can take place only within the present (given the constraint of irreversibility of time). It is for that reason that the ZBR concept could not be specified by Vygotsky in any more detail than a general emphasis on the need to pay attention to the processes of development that are constructing the new "present" that is currently "future"—on the basis of the functional organization of the child in the actual present. ZBR was a powerful rhetorical device in Vygotsky's dialogue with contemporary paedology. It pointed to the need to study processes of development on-line, but provided very little opportunity for an explicit theory of the developmental process.

The second complication with the ZBR concept is that Vygotsky turned out to become a hostage to the loss of emphasis on dialectical synthesis. As emphasized earlier (and elsewhere: Van der Veer & Valsiner, 1991), the theme of dialectical synthesis is present in Vygotsky's thinking from his adolescent years until his death. This theme was clearly present in his description of the developing phenomena to which the ZBR concept was applied as well (play, social interaction and internalization, concept formation). However, in no place in Vygotsky's texts where he uses the ZBR concept is that concept made dialectical in itself. For example, when a child demonstrates the availability of a "higher" psychological function in a socially guided problem solving situation, it is known that this function is not available to the child in his individual problem-solving effort. If, from that contrast, we infer that the child in the near future becomes capable of using that function individually, then we think of the development of that func-

tion in terms of its mere transposition from the interindividual to the intraindividual domain. No dialectical construction of novelty is implied here. If it were implied, we could expect a psychological function that is evident in present-time socially aided problem solving to lead to a different individual function in the *near future* (i.e., *to emergence of novel form in psychological functions in the* process of internalization). If Vygotsky were to remain consistent with his dialectical world view and allow for this possibility in his use of the ZBR concept, then the future state of an individual's psychological functions could not be previewed through diagnostic uses of socially aided problem-solving contexts. Instead, Vygotsky would have had to confess that the nearest-future state of development cannot be predicted from the child/social context interaction, although the latter undoubtedly plays a role in the synthesis of (unpredictable) future of the psychological functions. Again, Vygotsky's use of ZBR in his dialogue with paedologists did not lead him to spell out these (quite agnostic) implications of the ZBR concept. In this sense, Vygotsky's ZBR falls out of the line with most other ideas of his theoretical heritage.

FROM ZBR TO ZPD: CONTEMPORARY TRANSFORMATIONS OF THE CONCEPT

As we showed, Vygotsky's concept of ZBR is linked with a difficult paradox that irreversibility of time sets up for any developmental theoretical construct. Since this concept has been picked up by many contemporary investigators, these theoretical problems of the concept are at times acutely felt in the literature. Some recent discussions (Paris & Cross, 1988; Valsiner, 1985; Wertsch, 1984; Winegar, 1988) bring out a number of problems that contemporary psychologists face while trying to construct their concepts along the lines of ZBR. Thus it is worthwhile to analyze how these conceptual problems are handled by many researchers whose discourse includes the use of "zone of proximal development" (ZPD, or Zo-ped) terminology.

Contemporary psychologists' persistent imitation of Vygotsky's ZBR concept has led to different parallel (and occasionally linked) lines in the development of the ZPD. Winegar (1988) has outlined three main lines in the history of ZPD uses. The first line involves the relative assessment of children's performance (assisted versus individual problem-solving). The second line concentrates on the use of ZPD in settings of interactive learning and joint actions. Finally, Winegar has outlined some uses of ZPD in the context of more theoretical efforts in developmental psychology. All of these lines emerged in the web of the respective social situations of the researchers who have set themselves varied goals in their research efforts, and hence arrived at different versions of the ZPD concept. Characteristically, many of them tend to use the umbrella label of "Vygotskian" (or "neo-Vygotskian") in the presentation of their directions of the use of the ZBR-derivate concepts.

Line 1: From ZBR to Dynamic Measurement of Abilities

Given Vygotsky's active explanations of the ZBR concept in the terminology of traditional paedological testing, it is not surprising that contemporary researchers have developed the ZPD concept further along similar lines (Brown & French, 1979; Campione & Brown, 1987). The mediator's role of Alexander Luria in the inception of this line is noteworthy (see Wozniak, 1980). The fit of ZPD with dynamic assessment of learning potential makes it possible to adopt the overwhelmingly dominant use of the interindividual reference frame and set up studies of "individual differences". At the same time, the dynamic assessment focus allows the investigators to keep in mind different facets of the child's learning process (Day, 1983). Still, the learning process is seen as a property of the child. The child, while confronted with a specified task and given hints (social suggestions) of how to solve it, moves toward a solution. After the solution, the child can be observed to transfer the strategies to new tasks, and the efficiency of the transfer is viewed as the basis for statements about wider or narrower ZPD of different children (Brown & Ferrara, 1985, p. 284). The ZPD concept becomes interpreted in terms of child's readiness, and its narrower use is that of an interindividual differences metric (Campione, Brown, Ferrara, & Bryant, 1984, pp. 78–79). It is therefore not surprising that from an interactionist theoretical perspective, the question of whether it is better or worse to have narrow or wide ZPD starts to provide ambivalent answers (see Paris & Cross, 1988).

The interest in the learning process and in the transfer of what has been learned by the child is framed within the individual–ecological frame—the experimenter's prompts in the problem-solving situation are a (social) part of the task setting, rather than an equal "third factor" that regulates the child/task environment interaction (see Valsiner, 1987; 1989). The dynamic assessment use of ZPD combines the individual–ecological and interindividual reference frames, with the latter playing the primary role in the investigators' reasoning. The individual differences focus of this line has extended the conventional paedological side of Vygotsky's ZBR notion, without further advancement of the embryonic developmental theory behind it.

Line 2: From ZBR to Interactive Learning—Scaffolding and Beyond

Historically the emphasis on scaffolding (Wood, 1980; Wood, Bruner, & Ross, 1976) has accentuated the external–interactional nature of children's guided learning. As Griffin and Cole (1984, p. 47) have pointed out, the scaffolding metaphor "leaves open questions of children's creativity." The emphasis is on the way in which children go beyond the constraints specified by the scaffolding. Instead, it is the adult's relinquishing of control over aspects of joint activity that becomes relevant:

> Adult and child together were achieving success on a task, but the nature of their individual contributions varied with the child's level of ability. Once the child could be lured into some form of task-relevant activity, however low level, the tutor could build around him a supporting structure which held in place whatever he could manage. That supporting activity served to connect the child's activity into the overall construction and to provide a framework within which the child's actions could lead to and mean something more general than he may have foreseen. As the child mastered components of the task, he was freed to consider the wider context of what he could do, to take over more of the complementary activity. (Wood, 1980, pp. 281–282)

Here it is clear that the central notion of Vygotsky's ZBR—that of the child's persistent imitation that develops the emerging psychological functions—is not captured in the scaffolding metaphor. The tutor does not "work at" creating any new functions in the "depth" of the child's mind, but merely makes sure that the heterochrony in the maturation of functions is overcome in particular task solution settings. If a given task can be accomplished by action sequence X–Y–Z, and the ability to perform Y is not yet matured, the tutor helps the child to accomplish Y, thus making it possible for the child to solve the task. Once the ability for Y matures, the tutor withdraws the support for Y, as the child can now accomplish the whole task individually.

Scaffolding assumes maturational emergence of abilities heterochronically—those abilities that are not yet matured cannot participate in the problem solving, and therefore the tutor must scaffold these aspects of action that rely upon these abilities. Here the teaching–learning does not proceed "ahead of development" (in Vygotsky's favorite words), but rather tries to fit in with the maturational schedule of established abilities. Indeed, in the explicit elaboration of the ZPD concept, scaffolding links it with the "child's hypotheses" in a task situation as well as the "adult's discovery of child's mastery" (Wood, 1980, p. 284), without any notion of the presently emerging psychological functions. An equally clear indication of this is evident in Bruner's (1985) coverage of the similarity between scaffolding and ZPD:

> If the child is enabled to advance by being under the tutelage of an adult or a more competent peer, then the tutor or the aiding peer serves the learner as a vicarious form of consciousness *until such time as the learner is able* to master his own action through his own consciousness and control. When the child achieves that conscious control over a new function or conceptual system, it is then that he is able to use it as a tool. Up to that point, the tutor in effect performs the critical function of "scaffolding" the learning task to make it possible for the child, in Vygotsky's word, to internalize external knowledge and convert it into a tool for conscious control. (Bruner, 1985, pp. 24–25, italics added)

In sum, the scaffolding version of ZPD follows the individual–ecological reference frame—because (from the child's perspective) the social scaffolds that

the tutor builds around the child's task-oriented actions are merely human additions to the task. These social additions—like the prompts given by the tester in a dynamic assessment situation—make the execution of the child's presently available capabilities possible under complex task conditions (e.g., Greenfield, 1984, p. 119; Cazden, 1983, p. 42; Zukow, 1986). It does not concentrate on having impact on those psychological functions that are not yet presently available, but might come into being in the near future. Even if the actual prompting or scaffolding by the more experienced partner may have some impact on the development of latently emerging psychological functions, the theoretical use of the ZPD terminology is not set up to capture the process of such impact. In sum, both the dynamic assessment (line 1) and scaffolding (line 2) perspectives on the ZPD have restored the social context around the individual child's development in its manifest forms. However, these perspectives have not specified the interdependence of the context and the developmental processes.

Line 3: ZPD as a Component in Theoretical Systems

Contemporary psychology seems to be in a crisis—on the one hand, its theoretical repertoire is static and common-sensical, but the need for construction of developmental (dynamic) theoretical systems to account for complex psychological phenomena is growing. Emphasis on structure and dynamic processes has become rare in contemporary psychology. As was observed in the description of the first two lines of interpretation of the ZPD concept, the concept has been used either in rather general ways, or in conjunction with the structure of action on some highly specific task. Very few efforts have been made to construct theoretical frameworks that locate ZPD in a structured theoretical context. Furthermore, sometimes theoretical efforts in present-day psychology serve as convenient umbrella systems to allow the investigators to carry out a myriad of empirical studies without much innovation in the theoretical sphere.

Sometimes Vygotsky's role in the history of ZPD notions in psychology is attributed to his supposed "activity-theoretic" orientation. As we have shown elsewhere (Van der Veer & Valsiner, 1991), the representation of Vygotsky as one of the originators of Soviet "activity theory" constitutes a historically recent exaggeration of the realities in Soviet psychology in early 1930s. The actual roots of the activity-theoretic perspectives in Russian psychology go back to the work of Aleksandr Lazurskii (e.g., Lazurskii, 1906, chapter 5; 1916) and his disciple Mikhail Basov (Basov, 1929; Basov & Kazanskii, 1931). Vygotsky's role in the advent of Soviet activity theory was certainly of secondary nature, and fitted poorly with his emphasis on the primacy of semiotic mediation of human psychological processes. Hence it is accurate to view contemporary researchers who have set up their versions of the ZPD or Zo-ped concepts as advancing beyond the limits of a "Vygotskian" approach toward a potentially new synthesis of ideas.

THE FIRST ADVANCEMENT: WERTSCH'S SEMIOTIC VIEW OF ACTIVITIES IN ZPD

Wertsch takes his ZPD notion beyond Vygotsky's ZBR in two directions—toward an activity-theoretic domain (largely Leontievian) and toward semiotic (Bakhtinian) domains. In the first domain, the link of the ZPD concept with the notion of situation definition and goal structures of partners in the asymmetric caregiver–child interaction sets up contexts for empirical investigations and takes the concept to novel domains (Wertsch, 1984, 1985). His first elaborations of the ZPD concept took the form of analysis of adult–child joint actions (McLane, 1987; Saxe, Gearhart & Guberman, 1984; Wertsch & Hickmann, 1987; Wertsch, Minick, & Arns, 1984). However, at the same time, the recognition of Vygotsky's original emphasis on semiotic mediation and internalization has led to the focus on intrapersonal processes that retain their cultural roots in internalized versions—as internal dialogic processes (Wertsch, 1985; Wertsch & Stone, 1985). The internalization process proceeds through points of intersubjectivity that are present within the ZPD. These points allow the child to experience the joint action situation definition, and carry it over (appropriate it) into the internal sphere (Wertsch, 1985, pp. 162–163).

To summarize, Wertsch has accomplished what Vygotsky himself failed to accomplish—the synthesis of the ZPD concept with the idea of semiotic mediation of higher psychological functions (see especially Wertsch & Minick, 1990). By rejecting Vygotsky's strong emphasis on word meaning as the unit of analysis, and extending it toward text-semiotic mediation through Bakhtin's ideas (see Wertsch & Bivens, this volume), the ZPD concept is substantively enhanced.

SECOND ADVANCEMENT: ACTIVITY-CONTEXTUAL APPROACH

The emphasis on the "mutual construction of culture and person" (Cole, 1985) that has for many years been unifying the work of the Laboratory of Comparative Human Cognition (LCHC) (see LCHC, 1982) becomes encoded in the concept of Zo-ped (Griffin & Cole, 1984; LCHC, 1983). Cole extends the ZPD concept to the domain of collectively organized activity—it becomes viewed in general as the "structure of joint activity in any context where there are participants who exercise differential responsibility by virtue of differential expertise" (Cole, 1985, p. 155). In that joint activity, an individual person indeed develops from present to future on the basis of ideal models of the future, and of the past (as the ideas of Nikolai Bernshtein are brought together with the Zo-ped concept—Griffin & Cole, 1984, pp. 48–49). However, the emphasis on collective shared activities leads Cole into the theoretically central adoption of the Soviet focus on activity theory in general terms, and of the concept of leading activity in particu-

lar. This extension of Vygotsky's ideas to the domain of activity theory leads to the establishment of a hybrid theory. Cole's emphasis on development concentrates on the ongoing activity that is transformed in ontogeny:

> . . . as an alternative to internal, individual stage approaches to the study of development, leading activities provide for a notion of societally provided progressions, the sort of context-selection mechanisms . . . . Second, the "leading" notion provides a framework for uniting several important aspects of development: Variations in the frequency of experiences can be related to changes in kind of psychological activity. Changes in leading activities can be related to the reorganization of constituent actions and operations internally and interpsychologically. The appearance of new leading activities provides for the emergence of new functional systems. As a new leading activity appears, it provides for the reorganization and internalization of prior stages by transforming them into the everyday, in contrast to the new leading activity. (Griffin & Cole, 1984, p. 51)

Although an explicit emphasis here is made upon internal operations and internalization, the major focus remains on the different kinds of activities in which the child is embedded. This is in line with the functional (or cultural) practice perspective on specific cognitive processes (LCHC, 1982), a standpoint that avoids the problems of mental generalization. This is accomplished by concentrating upon the person–social world fusion. Any society, for example, provides guidance in that it provides an age-graded sequence of activities through which an individual moves. Moreover, the child is always a participant in a myriad of culturally organized activities, and the latter guide the child's development of individual activity patterns. The Zo-ped is "dynamically achieved by the *child and others in a social environment*", (LCHC, 1983, p. 335, original italics); it belongs to the interaction between the child and the "social others," rather than to the child him or herself.

THIRD ADVANCEMENT: ROGOFF'S THEORY OF "FUSION" OF PERSON AND CULTURE

Barbara Rogoff's consistent emphasis (Rogoff, 1982, 1986, 1987, 1990) on the cultural guidance of children's participation in social settings that guides their cognitive development has led to an interesting development of the ZPD concept. Starting from an interest in neo-Gibsonian "ecological psychology" on the one hand, and Leontiev version of Vygotsky's perspective on the other (see Rogoff, 1982), she has moved to view ZPD as a framework in which the "stretching" of the child's skill and understanding takes place (see Rogoff, 1986, pp. 27 and 31). The "event" (interactive setting) that is constructed jointly by the active (goal-oriented) child and the other person who is more knowledgeable about the cultural ways of acting than the child (but equally goal-oriented) becomes the

"unit of analysis" of the guided participation process as the context for human development. The use of "event" (activity) as a "unit" leads to a clear recognition of variability as being central for development (Rogoff, 1990, p. 30), as it necessarily emerges in the asymmetric (in roles, linked with knowledge and skills) but is simultaneously a joint action process where "challenges" (e.g., "comfortable-yet-challenging" tasks; Ellis & Rogoff, 1986, p. 315), "constraints," and "support" are constructed. This joint action process is guided by meanings and purpose (Rogoff, 1990, p. 29), and can be studied adequately only in the dynamic form of processes that lead to the unfolding of events. This emphasis on the developing child as an active "cultural apprentice" who actively develops mental and instrumental means is linked with the ZPD:

> Children enlist involvement of caregivers in their own activities and attempt to enter into caregivers' activities according to their interests. Such interaction is likely to fit the characteristics of guided participation for pragmatic reasons—the adult limits the amount of responsibility according to the child's skill, and the child insists on a role that *is interesting and, hence, within the child's zone of proximal development*. (Rogoff, 1990, p. 100, italics added)

In other terms, Rogoff's ZPD is a dynamic region of sensitivity to learning experiences in participation contexts where the participants have actively set up their roles (see also Rogoff, 1987). On the side of the adults, the responsibility for performing aspects of tasks comes to the adjustment of social support to the range of ZPD (Rogoff, 1990, p. 109). Rogoff's emphasis on the children's active seeking of assistance and structure from adults is fully in line with Vygotsky's original emphasis (in the cultural-historical theory). At the same time, Rogoff avoids clear structured elaboration of internal psychological functions in the child (and actively denies the need of the internalization concept—a key to Vygotsky's theoretical heritage; see Rogoff, 1990, pp. 195–197). This leads Rogoff's theory to be very close to the reduction of any psychological processes to the undifferentiated notion of situated activity (e.g., Lave, 1988). However, closeness to the fusional reductionism of person to cultural activity settings is not absolute in Rogoff's theory. Her emphasis is on role- and meaning-based actions by the child in environments where the "social other" need not be immediately present (Rogoff, 1990, pp. 186–187). This return to Vygotsky's idea that play creates the ZBR allows her to escape the theoretical trap of all-encompassing contextual determinism.

Rogoff's theoretical orientation has emerged in conjunction with a program of explicit microgenetic research on dynamic joint problem-solving settings where both the child and the "more experienced social other" pursue their goals (Ellis & Rogoff, 1986; Rogoff & Gardner, 1984). Rogoff has also been emphasizing the shift in the structure of social guidance in ontogeny (Gardner & Rogoff, 1982; Rogoff, Malkin, & Gilbride, 1984), and the internalized bases for the use of cultural skills such as memorization devices (Rogoff & Mistry, 1985) and plan-

ning strategies (Rogoff, Gauvain, & Gardner, 1987). All this leads Rogoff's perspective to stand out as a unique conceptual system that unites the activity-theoretic tradition of LCHC on the one hand, and the psychological processes orientation of Vygotsky's cultural-historical emphasis on the other.

FOURTH ADVANCEMENT: INTERACTIVE CONTEXT FOR THE "SYMBOLIC ANIMAL"

Within the European intellectual framework, the Yugoslav research tradition (Ivic, 1978) has emphasized the symbol-constructive nature of the human development process. This semiotic advancement of Vygotsky's ideas is somewhat parallel to that of Wertsch, but moves in its own productively unique direction as it sets up the study of semiotic analysis of iconic systems (figural, nonverbal phenomena that occur in symbolic play and dreaming) in their own right (Ivic, 1988, 1989). This line of advancement of Vygotsky's ideas takes the intrapsychological functions as the internalized experiences and sets those up for specific investigation. The social nature of the psychological world of the person is extended from the verbally encoded semiotic systems to the nonverbal (figurative) codes. Socially shared joint activity is important as the domain within which developmentally relevant novel intrapsychological phenomena are constructed. ZPD emerges here as a concept to describe the mechanisms of internalization—construction of intrapsychological novelty (Ivic, 1989, pp. 5–7).

The notion of ZPD in the work of the Institute of Psychology of Belgrade University is set up not only theoretically. It has been used to analyze early ontogeny of interaction in ways that utilize dyadic units of measurement (Ignjatovic-Savic, Kovac-Cerovic, Plut, & Pesikan, 1988). The main aim for this empirical elaboration is to retain the complementarity of the adult–child joint action in different contexts defined in respect to the child's process of development. The latter aim leads the researchers to view the ZPD in relation to other domains (or zones) of experience: Zone of Actual Development, Zone of Future Development, and Zone of Past Development (see Ignjatovic-Savic et al., 1988, p. 110). The developmental process proceeds by "moving" some aspects of joint activity from the Zone of Future Development to ZPD, and subsequently to Zone of Past Development. Phenomena from these different zones can be observed in microgenetic task settings intermittently—reminding otherwise all too enthusiastic "Vygotskians" that not every aspect of joint action is actually productive for further development. Along similar lines, different parallel processes involving the dynamic coordination of these zones create the possibility for a wide range of developmental courses, because the child's social environment is necessarily heterogeneous. This undermines the use of the ZPD concept as a means for predicting a child's future (a pervasive pastime of child psychologists) and calls for the investigation of the child's representative social "resources":

> The conceptualization of the ZPD as an interactive phenomenon implies changes in the practice of using ZPD as a diagnostic tool for the assessment of the child's development. If we assess the child in the interaction with a competent adult this does not necessarily have to be a good basis for the prediction of his future development if his everyday interactions are not of that kind. On the other hand, when the child is with an incompetent adult, we can underestimate his developmental potential. Of course, if the child is growing only with this person his developmental future would be very close to what was predicted on the basis of the assessment. Fortunately, children enter in interaction with more than one person. So the best way to assess the child's present state and his future is to find a representative sample of his learning environment. The clue to prediction would be typical, predominant interaction. (Ignjatovic-Savic, 1989, p. 7)

This spatially (as seen in the focus on representative range of environments) and temporally (different zones operating intermittently and in mutual coordination) organized perspective on ZPD extends Vygotsky's original ideas in a productive way. It is the strong emphasis on the study of processes of development (both onto- and microgenetic) that this perspective implies. As such, it is antithetical to the assessment orientation (line 1 as given above) and subsumes the scaffolding traditions as special cases within a general theoretical field.

FIFTH ADVANCEMENT: COCONSTRUCTION OF FUTURE THROUGH BOUNDED INDETERMINACY

Developmentalists are usually theoretically confused about the issue of determinacy versus indeterminacy in the processes of ontogeny. In an effort to bypass that impasse, Valsiner (1987) has proposed a general theoretical perspective that views development as organized by "bounded indeterminacy." The psychological processes are viewed as developing by sets of interpersonal (and subsequently intrapersonal, semiotic) constraint systems that determine the direction of the nearest future development. These constraint systems are constantly reorganized by the coconstructive efforts of the developing person and his or her social others in particular environmental settings. The constraint systems are viewed as containing two kinds of zones at every time moment of the present—the Zone of Freedom of Movement (ZFM), which defines the set of possibilities that can be actualized at the given time, and the Zone of Promoted Actions (ZPA), which includes the set of possibilities that actualization of which is promoted at the time by the persons involved in the interaction. It is obvious that the ZFM notion continues the field-theoretic traditions of Kurt Lewin (see Valsiner, 1984, 1985, 1987).

Valsiner has also made an attempt to integrate the ZPD concept into the field-theoretic system of explaining social-cognitive development. ZPD becomes a zone that denotes the range of possible nearest-future transformations of present

psychological processes, conditional on the present organization of the ZFM/ZPA structure (Valsiner, 1987, chapter 4). It is obvious that ZPD in that system becomes subservient to the present-state field-theoretic explanation and is oriented toward explaining the social roots of individuals' experiences (see criticism by Van Oers, 1988). Furthermore, ZPD in Valsiner's (1985) theoretical construction is presented as empirically unaccessible:

> The ZPD is a concept pertaining to the realm of what kinds of further developmental accomplishments are possible for the given child at the given time in ontogeny, under condition of others' assistance. Therefore it is impossible to determine the empirical boundaries of ZPD in actuality. If the boundaries of ZPD are determined inductively, on the basis of empirical observations, the result of such study is the actualization of some subset of the ZPD, from which it is not possible to determine the full set of ZPD that was existing before the given sub-set was studied (and actualized by the study). Once the child has learned to read with grandmother's help (proving that reading under the conditions of instruction that the grandmother used while testing the child, was indeed in ZPD when the teaching started), it would be impossible to find out whether the same function (reading) could have been within the ZPD set with the help of somebody else, using different methods of teaching (e.g., mother, father, teacher). For the purposes of the study of the boundaries of ZPD, the child will not re-learn the important function (reading) with the help of another instructor. What has been learned with the help of an instructor in a certain way, cannot be learned again as a totally novel function, with the help of another instructor. This basic nature of development renders the full extent of ZPD in principle empirically unverifiable. (Valsiner, 1985, p. 31)

Valsiner's limitation of the ZPD concept to a status conditional of his other zone terms constitutes an effort to clarify the otherwise largely metaphoric (umbrella-type) use of the term in contemporary developmental psychology. His application of the ZPD concept encounters difficulties similar to those that Vygotsky faced (and that were depicted in Fig. 3.1).

GENERAL CONCLUSIONS: THEORETICAL DEVELOPMENT BEYOND ZPD?

We have overviewed the history of Vygotsky's ZBR concept, as well as that of its derivates under the label of ZPD. Recent concerns about the status of the concept (Paris & Cross, 1988; Shotter, 1989; Winegar, 1988) may begin to make better sense in the light of the mindscape covered here. Indeed, the ZBR/ZPD concept has been widely used as a metaphor, and its operationalization has been complicated when attempted. But of course not every theoretical concept in psychology needs operationalization and measurement, and arguments against turning ZPD into another measured characteristic have substance (Valsiner, 1987; Winegar, 1988). Of course, metaphors can be as confusing as they can be helpful. It seems

that a wide and indiscriminate use of the ZPD concept, without a clear explication of its meaning, allows contemporary psychology to be more globally fascinated by sociogenetic ideas than by developing specific notions that could explain the social nature of individual psychological development. Still, locating that social nature to be exemplified by the ZPD without further specifying its nature can be a theoretical impasse that creates another "black box" type of explanation in a science that historically has been plagued by a myriad of such explanations.

Starting with Vygotsky, the ZBR/ZPD concepts have helped investigators to concentrate their attention on the social-developmental aspect of psychological functions, not permitting them to forget that in the most general sense development moves from present to future through the child's interdependence with the social world. At the same time, the concept has generated an additional conceptual difficulty—it has translated issues of presently emerging psychological functions into empirically observable forms that could emerge in the near future. However, the ZPD concept remains unconnected with the actual processes that underlie the emergence of novelty. In this respect, both Vygotsky's ZBR and the different versions of its advancement as ZPD remain inconclusive. The use of the ZPD concept has provided an easy alternative to tackling the complicated issues of how the child's encounter with the external world becomes functional in bringing new psychological functions into being. The interactive process of creating and comprehending novelty is not explained by a mere reference to a function "being in" the ZPD at the given moment or "coming into" it in the future. The actual mechanisms of the process by which the culture and individual meet in the novelty-constructing process of development remain uncharted, while our fascination with the "zone of proximal development" remains a widely used cliche that yet has to lead to theoretical innovation in contemporary psychology.

ACKNOWLEDGMENTS

The editorial suggestions of Ann Renninger were very helpful in bringing this chapter into its final form. The authors are also grateful to Terry Winegar, Jeanette Lawrence (and other colleagues and students at Melbourne University), and Michael Cole for their input in the writing of this manuscript.

REFERENCES

Baldwin, J. M. (1892). Origin of volition in childhood. *Science, 20,* 286–287.

Basov, M. I. (1929). Ocherednyie problemy psikhologii. *Estestvoznanie i marksizm, 3,* 55–82.

Basov, M. I. & Kazanskii, N. G. (Eds.). (1931). *Deti u stanka.* Moscow-Leningrad: Gosuchpediztat.

Brent, S. (1984). *Psychological and social structures*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Brown, A. L., & French, L. A. (1979). The zone of potential development: implications for intelligence testing in the year 2000. *Intelligence, 3*, 255–273.

Brown, A. L., & Ferrara, R. A. (1985). Diagnosing zones of proximal development. In J. V. Wertsch (Ed.), *Culture, communication, and cognition: Vygotskian perspectives* (pp. 273–305). Cambridge, England: Cambridge University Press.

Bruner, J. S. (1985). Vygotsky: A historical and conceptual perspective. In J. V. Wertsch (Ed.), *Culture, communication, and cognition: Vygotskian perspectives* (pp. 21–34). Cambridge, England: Cambridge University Press.

Cairns, R. B. (1986). Phenomena lost: Issues in the study of development. In J. Valsiner (Ed.), *The individual subject and scientific psychology* (pp. 97–111). New York: Plenum.

Campione, J. C., Brown, A. L., Ferrara, R. A., & Bryant, N. R. (1984). The zone of proximal development: Implications for individual differences and learning. *New Directions for Child Development, 23*, 77–91.

Campione, J. C., & Brown, A. L. (1987). Linking dynamic assessment with school achievement. In C. S. Lidz (Ed.), *Dynamic assessment: An interactional approach to evaluating learning potential* (pp. 82–115). New York: Guilford Press.

Cazden, C. B. (1983). Peekaboo as an instructional model: Discourse development at home and at school. In B. Bain (Ed.), *The sociogenesis of language and human conduct* (pp. 33–58). New York: Plenum.

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. 146–161). Cambridge, England: Cambridge University Press.

Cole, M., John-Steiner, V., Scribner, S., & Souberman, E. (Eds.). (1978). *L. S. Vygotsky: Mind in society*. Cambridge, MA: Harvard University Press.

Day, J. D. (1983). The zone of proximal development. In M. Pressley & J. R. Levin (Eds.), *Cognitive strategy research* (pp. 155–175). New York: Springer.

Ellis, S., & Rogoff, B. (1986). Problem solving in children's management of instruction. In E. Mueller & C. Cooper (Eds.), *Process and outcome in peer relationships* (pp. 301–325). Orlando, FL: Academic Press.

Gardner, W., & Rogoff, B. (1982). The role of instruction in memory development. *Quarterly Newsletter of the Laboratory of Comparative Human Cognition, 4*, 1, 6–12.

Greenfield, P. (1984). A theory of the teacher in the learning activities of everyday life. In B. Rogoff & J. Lave (Eds.), *Everyday cognition* (pp. 117–138). Cambridge, MA: Harvard University Press.

Griffin, P., & Cole, M. (1984). Current activity for the future: The Zo-ped. *New Directions for Child Development, 23*, 45–63.

Ignjatovic-Savic, N. (1989, August). *Problems of operationalization of Vygotsky's theory*. Paper presented at the 12th International School Psychology Colloquium, Ljubljana.

Ignjatovic-Savic, N., Kovac-Cerovic, T., Plut, D., & Pesikan, A. (1988). Social interaction in early childhood and its developmental effects. In J. Valsiner (Ed.), *Child development within culturally structured environments. Vol. 1. Parental cognition and adult-child interaction* (pp. 89–158). Norwood, NJ: Ablex.

Ivic, I. (1978). *Covek kao animal symbolicum*. Beograd: Nolit.

Ivic, I. (1988, June). *Semiotic systems and their role in ontogenetic mental development*. Paper presented at the 3rd European Conference on Developmental Psychology, Budapest.

Ivic, I. (1989, September). *Social interaction: Social or interpersonal relationship*. Paper presented at the Annual Conference of the Italian Psychological Society, Trieste.

Joravsky, D. (1989). *Russian psychology: A critical history*. Oxford: Basil Blackwell.

Kolbanovskii, V. N. (1956). On the psychological views of L. S. Vygotsky (on the occasion of 60 years from his birth). *Voprosy psikhologii, 5*, 104–113.

Laboratory of Comparative Human Cognition. (1982). Culture and intelligence. In R. J. Sternberg (Ed.), *Handbook of human intelligence* (pp. 642–719). Cambridge, England: Cambridge University Press.

Laboratory of Comparative Human Cognition. (1983). Culture and cognitive development. In W. Kessen (Ed.), *Handbook of child psychology. Vol. 1. History, theory and methods* (pp. 295–356). New York: Wiley.

Lave, J. (1988). *Cognition in practice*. Cambridge, England: Cambridge University Press.

Lazurskii, A. F. (1906). *Ocherk nauki o kharakterakh*. St. Petersburg: I. N. Skorokhodov.

Lazurskii, A. F. (1916). Lichnost' i vospitanie. *Vestnik Psikhologii, Kriminal'noi Antropologii i Pedologii, 12*(2–3), 4–13.

Lee, B. (1987). Recontextualizing Vygotsky. In M. Hickmann (Ed.), *Social and functional approaches to language and thought* (pp. 87–104). Orlando, FL: Academic Press.

Leontiev, A. N. (1932). The development of voluntary attention in the child. *Pedagogical Seminary and Journal of Genetic Psychology, 40*, 52–83.

Luria, A. R. (1928). The problem of the cultural behavior of the child. *Pedagogical Seminary and Journal of Genetic Psychology, 35*, 493–506.

Luria, A. R. (1931). K probleme nevrodinamicheskogo razvitia rebenka. *Pedologia, 2*, 18–29.

McLane, J. B. (1987). Interaction, context, and the zone of proximal development. In M. Hickmann (Ed.), *Social and functional approaches to language and thought* (pp. 267–285). Orlando, FL: Academic Press.

Minick, N. (1987). Implications of Vygotsky's theories for dynamic assessment. In C. S. Lidz (Ed.), *Dynamic assessment: An interactional approach to evaluating learning potential* (pp. 116–140). New York: Guilford Press.

Paris, S. G., & Cross, D. R. (1988). The zone of proximal development: virtues and pitfalls of a metaphorical representation of children's learning. *Genetic Epistemologist, 16*, 1, 27–37.

Rogoff, B. (1982). Integrating context and cognitive development. In M. E. Lamb & A. L. Brown (Eds.), *Advances in developmental psychology* (Vol. 2, pp. 125–170). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rogoff, B. (1986). Adult assistance of children's learning. In T. E. Raphael (Ed.), *The contexts of school-based literacy* (pp. 27–40). New York: Random House.

Rogoff, B. (1987). Joint socialization of development by young children and adults. In M. Lewis & S. Feinman (Eds.), *Social influences and socialization in infancy* New York: Plenum.

Rogoff, B. (1990). *Apprenticeship in thinking*. New York: Oxford University Press.

Rogoff, B., Malkin, C., & Gilbride, K. (1984). Interaction with babies as guidance in development. *New Directions for Child Development, 23*, 31–44.

Rogoff, B., & Gardner, W. (1984). Adult guidance of cognitive development. In B. Rogoff & J. Lave (Eds.), *Everyday cognition* (pp. 95–116). Cambridge, MA: Harvard University Press.

Rogoff, B., Gauvain, M., & Gardner, W. (1987). The development of children's skills in adjusting plans to circumstances. In S. Friedman, E. Scholnick, & R. Cocking (Eds.), *Blueprints for thinking: The role of planning in cognitive development* (pp. 303–320). Cambridge, England: Cambridge University Press.

Rogoff, B., & Mistry, J. (1985). Memory development in cultural context. In M. Pressley & C. Brainerd (Eds.), *Cognitive learning and memory in children* (pp. 117–142). New York: Springer.

Rudneva, E. I. (1937). *Pedologicheskie izvrashchenia Vygotskogo*. Moscow: Gosuchpedizdatel'stvo.

Saxe, G. B., Gearhart, M., & Guberman, S. R. (1984). The social organization of early number development. *New Directions for Child Development, 23*, 19–30.

Shif, Z. I. (1935). *Razvitie nauchnykh poniatii u shkol'nika*. Moscow-Leningrad: Gosuchpedizdat.

Shotter, J. (1989). Vygotsky's psychology: Joint activity in a developmental zone. *New Ideas in Psychology, 7*(3), 1–20.

Simon, B., & Simon, J. (Eds.). (1963). *Educational psychology in the USSR*. London: Routledge & Kegan Paul.

Smedslund, J. (1979). Between the analytic and the arbitrary: A case study of psychological research. *Scandinavian Journal of Psychology, 20,* 129–140.

Thorngate, W. (1990). The economy of attention and the development of psychology. *Canadian Psychology, 31,* 262–271.

Toulmin, S., & Leary, D. E. (1985). The cult of empiricism in psychology, and beyond. In S. Koch & D. E. Leary (Eds.), *A century of psychology as science* (pp. 594–616). New York: McGraw-Hill.

Valsiner, J. (1984). Construction of the zone of proximal development in adult-child joint action. *New Directions for Child Development, 23,* 65–76.

Valsiner, J. (1985). Theoretical issues of child development and the problem of accident prevention. In T. Gärling and J. Valsiner (Eds.), *Children within environments: Toward a psychology of accident prevention* (pp. 13–36). New York: Plenum.

Valsiner, J. (1987). *Culture and the development of children's action.* Chichester: Wiley.

Valsiner, J. (1988). *Developmental psychology in the Soviet Union.* Brighton, England: Harvester Press.

Valsiner, J. (1989). *Human development and culture.* Lexington, MA: D. C. Heath.

Van der Veer, R., & Valsiner, J. (1991). *Understanding Vygotsky: A quest for synthesis.* Oxford: Basil Blackwell.

Van Oers, B. (1988). Activity, semiotics and the development of children. *Comenius, 32,* 398–406.

Vygotsky, L. S. (1929). The problem of the cultural development of the child. *Pedagogical Seminary and Journal of Genetic Psychology, 36,* 415–434.

Vygotsky, L. S. (1931a). K voprosu o pedologii i smezhnykh s neju naukakh. *Pedologia, 3,* 52–58.

Vygotsky, L. S. (1931b). Pedologia i smezhnyie s neiu nauki. *Pedologia, 7–8,* 12–22.

Vygotsky, L. S. (1931c). Psikhotekhnika i pedologia. *Psikhotekhnika i psikhofiziologia truda, 2–3,* 173–184.

Vygotsky, L. S. (1931d). Kollektiv kak faktor razvitia anomal'nogo rebenka. *Voprosy Defektologii, 1–2,* 8–17.

Vygotsky, L. S. (1931e). *Pedologia podrostka.* Moscow-Leningrad: Gosuchpediztatel'stvo.

Vygotsky, L. S. (1934). *Myshlenie i rech.* Moscow-Leningrad: GIZ.

Vygotsky, L. S. (1933/1935). *Umstvennoie razvitie detei v protsesse obuchenia.* Moscow-Leningrad: Gosudarstvennoie Uchebno-pedagogicheskoie Izdatel'stvo.

Vygotsky, L. S. (1933/1966). Igra i ee rol' v psikhicheskom razvitii rebenka. *Voprosy Psikhologii, 12*(6), 62–76.

Vygotsky, L. S. (1931/1983). *Sobranie sochinenii. Vol. 3. Problemy razvitia psikhiki.* Moscow: Pedagogika.

Vygotsky, L. S. (1933/1984). *Sobranie sochinenii. Vol. 4. Detskaia psikhologia.* Moscow: Pedagogika.

Vygotsky, L. S. (1962). *Thought and language.* Cambridge, MA: MIT Press.

Vygotsky, L. S. (1986). *Thought and language* (2nd ed.). Cambridge, MA: MIT Press.

Vygotsky, L. S. (1987). Thinking and speech. In R. W. Rieber and A. S. Carton (Eds.), *The collected works of L. S. Vygotsky. Vol. 1. Problems of general psychology* (pp. 39–285). New York: Plenum.

Vygotsky, L. S., & Luria, A. R. (1930). *Etiudy po istorii povedenia.* Moscow-Leningrad: Gosudarstvennoie izdatel'stvo.

Wertsch, J. V. (1984). The zone of proximal development: Some conceptual issues. *New Directions for Child Development, 23* (pp. 7–18). San Francisco: Jossey-Bass.

Wertsch, J. V. (1985). *Vygotsky and the social formation of mind.* Cambridge, MA: Harvard University Press.

Wertsch, J. V., Minick, N., & Arns, F. (1984). The creation of context in joint problem solving. In B. Rogoff & J. Lave (Eds.), *Everyday cognition* (pp. 151–171). Cambridge, MA: Harvard University Press.

Wertsch, J. V., & Stone, C. A. (1985). The concept of internalization in Vygotsky's account of the

genesis of higher mental functions. In J. V. Wertsch (Ed.), *Culture, communication and cognition: Vygotskian perspectives* (pp. 162–179). Cambridge, England: Cambridge University Press.

Wertsch, J. V., & Hickmann, M. (1987). Problem solving in social interaction: A microgenetic analysis. In M. Hickmann (Ed.), *Social and functional approaches to language and thought* (pp. 251–266). Orlando, FL: Academic Press.

Wertsch, J. V., & Minick, N. (1990). Negotiating sense in the zone of proximal development. In M. Schwebel, C. A. Maher, & N. S. Fagley (Eds.), *Promoting cognitive growth over the life span* (pp. 71–88). Hillsdale, NJ: Lawrence Erlbaum Associates.

Winegar, L. T. (1988). Child as cultural apprentice: An alternative perspective for understanding Zone of Proximal Development. *Genetic Epistemologist, 16*(3), 31–38.

Wood, D. J. (1980). Teaching the young child: Some relationships between social interaction, language, and thought. In D. R. Olson (Ed.), *The social foundation of language and thought* (pp. 280–296). New York: Norton.

Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry, 17*, 2, 89–100.

Wozniak, R. H. (1980). Theory, practice and the "zone of proximal development" in Soviet psychoeducational research. *Contemporary Educational Psychology, 5*, 175–183.

Zaporozhets, A. V. (1930). Umstennoie razvitie i psikhicheskie osobennosti oirotskikh detei. *Pedologia, 2*, 222–234.

Zukow, P. G. (1986). The relationship between interaction with the caregiver and the emergence of play activities during the one-word period. *British Journal of Developmental Psychology, 4*, 223–234.

4 Distancing Theory From a Distance

Urie Bronfenbrenner
Cornell University

As the title implies, this author came to distancing theory from a distance. Over a decade ago, when I first began to evolve an ecological paradigm for human development, I knowingly took what turned out to be a long, albeit adventurous, detour. Having defined the process of development as a joint function of organism–environment interaction, I chose, in further explication of the model, to begin with what I saw as a necessary prior task of conceptualizing the environmental terms in the ecological equation, deferring, as I put it, "for the time being" a corresponding formulation on the side of the human organism (Bronfenbrenner, 1979). Alas, "for the time being" turned out to be almost a decade. Moreover, once I began to give substance to the formless figure of the person, the effort had an unanticipated result; it led to a reformulation and elaboration of earlier conceptions regarding the structure of the environment and its role in the developmental process (Bronfenbrenner, 1989a, 1989b, 1990a, in press).

A DEVELOPING ECOLOGICAL PARADIGM

This reflective change came about in the following way. I had begun by asking the question: "What characteristics of the person are most likely to influence the subsequent course and outcomes of development?" Interrelating theoretical considerations with empirical evidence led to the formulation of the concept of what I called *developmentally instigative characteristics,* defined as personal qualities that "set in motion, sustain, and enhance processes of progressively more complex interaction with persons, objects, or symbolic elements present in the imme-