# Contradiction and Development: Vygotsky and Paedology

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*In Vygotsky's theory, development is conceived of as selfpropulsion creating new higher psychological functions by reorganising lower ones; at the same time, psychological functions being historical-cultural constructions based on semiotic functions, they can come only from exterior. The article shows that the concept of zone of proximal development is the theoretical attempt to bring these two apparently contradictory postulates together. It is the contradiction between internal possibilities and external needs that constitutes the driving force of development.*

## Introductory Remarks: Vygotsky – paedologist

The concept of the zone of proximal development is in vogue: it is discussed or in many cases merely cited in numerous articles on psychology and related sciences such as sociology, didactics and pedagogy (Moll, 1990; Valsiner & Van der Veer, 1992). Curiously, as we have shown elsewhere (Schneuwly, Moro, & Rodriguez, 1992), the «development» aspect is very rarely discussed in these works. Indeed, we are witnessing the disappearance of this term in the same context of usage as the concept of the zone of proximal development which is much impoverished as a result. Ultimately it merely denotes the simple fact that teaching is useful only insofar as it is adapted to the capabilities of the child (for example see Belmont, 1989) or, in more sophisticated versions, it serves to describe situations of interaction between teacher and pupil who must negotiate the meaning of the situation (Wertsch, 1991a). The problem of development is in effect reduced to one of teaching and learning.

Such a state of affairs seems all the more surprising since, for Vygotsky himself who proposed the zone of proximal development concept, the question of development was always a central issue, which he tried in his numerous works to deal with by a threefold phylogenetic, historical and ontogenetic approach. In fact, Vygotsky always considered himself to be, not so much a psychologist as he is regarded most of the time today, but a paedologist (Mecacci, 1990), especially in the period after 1928 during which he explicitly assigned himself the task, with others, of constructing paedology[1], the object of which he defined as follows: «The

development of the child is the direct and immediate object of our science» (Vygotsky quoted by Van der Veer & Valsiner, 1991, p. 303). The numerous paedological contributions, articles and books published by Vygotsky – Mecacci even says that the only publications that Vygotsky himself controlled and circulated are those in the sphere of paedology – bring him, then, to refine his concept of development incessantly. That being the case, it seemed important to recount with greater precision where the concept of the zone of proximal development fitted into his thinking on development and to see what elements can be drawn from it for our present thinking on psychology and didactics. A return, then, to the sources, an attempt to retrace some principal themes, not to ensure purity of thought but to comprehend the consistency of a theoretical model and to try, from there, to define some guidelines for conceptualising development.

The concept of development that results from the paedological work of Vygotsky can be presented in outline by distinguishing three aspects: form, driving force and development tools (sections 1, 2 and 3). Deeper study of the concept resulted in the appearance around the years 1932 to 1934 of the need to rethink the link with teaching, and more generally education, in a new way. Vygotsky clarifies this theoretical point by broadening the concept of the zone of proximal development which he had used initially in order to get a better understanding of certain problems linked with the question of diagnosis in children. This concept assumes a pivotal role for a correct understanding of development in the Vygotskian model. We shall see, in section 4, that Vygotsky is not immediately able to define the relationship between education and development coherently with his own theory. The concept of the zone of proximal development permits, finally (section 5), the requirements that Vygotsky himself defined for a theory of development to be met.


## The form of development

The Vygotskian concept of development can be summed up in the form of three laws which, on closer examination, appear as three aspects of one coherent concept:

**1.** Development, that is to say, the appearance of new forms of psychological[2] functioning, always operates by a *differentiation due to the coming together and reorganisation of already existing psychological functions*. Let us take two examples: the formation of concepts constitutes and necessitates reorganisation into a new unity, which also transforms the implicated capacities, of memory, attention, language and perception. To put it in Vygotsky's own words: «In its formation [of the concept], all the elementary intellectual functions participate in a specific combination, the central element of this operation being the functional use of words as a means of voluntarily directing the attention, of abstracting, of differentiating the isolated traits, synthesising them and symbolising them using a sign.» (Vygotsky, 1985a, p. 204). Another example: written language presupposes the construction of a new psychological function by the coming together and transformation of the unities involved: speech, the will, the relationship between vision and motricity, internal language; a transformation that Vygotsky summed up by this expression: «Written language is the algebra of language. And just as the assimilation of algebra is not a repetition of the study of arithmetic but represents a new and higher plane of the development of mathematical thinking, which reorganises and elevates to a higher level the arithmetical thinking which was worked out previously, likewise the algebra of language – written language – permits the child access to the highest abstract plane of language, thereby reorganising the previous psychological system of speech» (Vygotsky, 1985a, p. 260s).

Three aspects must be pointed out in relation to this first law: a) a basic function – speech or memory or classification with words – is joined up with other functions, thus giving rise to new functions which form true complex psychological systems; b) the new functions (or systems) are thus differentiations of old ones; c) the old ones remain, but are transformed by the process of development.

2. The different functions and systems of the mind *develop unequally and disproportionately*. A function which is central at a given moment of development – for example speech which on its appearance irrigates and transforms all functions – gives way to others – for example internalized language or certain forms of monologic language linked to writing – which become the central places and means for constructing new psychological functions. Of course, this does not mean that the other functions do not develop, quite the opposite, but at very different rates and in very different proportions. The systematic view of development – development of functions as the construction of new systems – implies such a concept. The changes affect the different components very unequally just as a whirlwind is felt to a greater or lesser extent at its centre or at its periphery.

3. Development is not linear, or cyclic; it is not a simple augmentation of existing capacities. Although it does comprise phases of linear evolution, it is the phases of revolution, during which new psychological functions appear, that characterise it best and define its stages. One must not ignore «these revolutionary, abrupt, intermittent changes full of the history of the development of the child which one comes across so often in the history of cultural development» (Vygotsky, 1974, p. 190).

One immediately sees that the three aspects mentioned – systematic construction and operation of the functions; unequal and disproportionate development; transformation by revolution – in fact form one and the same, they are different aspects of the same concept of the form of development. But how is it produced? What is its driving force?

## The driving force of development

Vygotsky defined development as an «unceasing process of self-propulsion» (1976, p.320) and not a process induced from the exterior by a mechanical apportionment of new elements. He thus attributes a large measure of autonomy to these processes. The question is, then, to find out the driving force of this process. Vygotsky defines it particularly clearly in a curricular text on paedology in which he writes: «The logic of the development process's selfpropulsion must be shown... To reveal the development process's self-propulsion is to understand the internal logic, the mutual conditioning, the links, the mutual cohesion of various factors in the unity and struggle of opposites involved in the process of development» (Vygotsky, 1990a, p. 317). The informed listener will have recognised here a persistent line of the dialectic since Democritus through Spinoza and Hegel to Marx, to mention the figures who undoubtedly mattered most in Vygotsky's thinking. But what does «struggle of opposites» mean here? Two quotations will help to explain how he conceived of it in the context of child development: «The very essence of such development [by evolution and revolution] is therefore the conflict between the evolved cultural forms of behaviour with which the child comes into contact and the primitive forms which characterise its own behaviour» (Vygotsky, 1974, p. 190) or: «The new stage emerges not by virtue of what is already potentially contained in what was before, but from a real conflict between organism and environment and from active adaptation to the environment» (p. 191). But what is this environment ? And what is the child's relation to it? These are two questions which Vygotsky never ceased trying to answer. Let us begin by setting out some points in response to the first.

Our starting point will be a small text entitled «Paedology and National Minorities» (Vygotsky, 1990b) in which Vygotsky strongly criticizes the use of tests that do not take the environment into consideration, i.e. that do not consider the child «as an inalienable part and a natural product of that particular milieu in which he is growing up and developing.» The task is to show «how the general laws of development are applied in a specific way under the given cultural and living conditions and how they take on a different aspect in any given historical and national way of life.» (p. 374). When Vygotsky speaks of environment he does not mean the natural environment, but the historical and cultural one, culture being defined as «the product of social life and man's activities» (Vygotsky 1974, p. 210). This product takes a

particular form, it materialises in every society in the form of signs, or sign systems, in such a way that signs can be said to be the collective organ of society, the social instrument par excellence. And therefore it is the confrontation with culture contemplated as a historical product of social life, as an ensemble of sign systems or semiotic systems that is the driving force of development.

Developmental contradictions («Entwicklungswidersprüche»), to take the concept proposed by Holzkamp (1983, p. 432), are thus thought of as contradictions between internal and external factors. Human potentialities are not realised automatically from the interior, according to the embryonic model, which would favour or hamper the concrete external conditions – this is precisely the definition that one could give of development according to Piaget; they do not pre-exist in the interior but are the result moving beyond contradictions which comprise, on one hand, a personal pole, being the degree of mastery of potentialities already developed, and, on the other hand, the social conditions of life, the situational pole, with which a child is confronted or confronts at a given moment.

Let us take stock of what we have looked at so far: a concept of the form of development as revolutionary and as self-propulsion. This self-propulsion is conceived of as being driven by the struggle of opposites, between interior and exterior, the exterior being seen as that environment defined as culture which transforms and revolutionizes internal functioning. Let us now go on to develop this idea in two directions so that it becomes more perceptible and concrete: first I will show how the external elements, the signs or sign systems fundamentally change psychological functioning by taking two examples, one very simple to show the principle, the other more complex to shed more light on the historico-cultural significance of the principle; we shall then try to understand how the driving force, the external/internal struggle, is initiated.

## Signs – an instrumental approach to development

The new questions raised could be put in this way: How can signs or semiotic systems transform psychological functioning? How are they the means enabling the creation of something new in the mind?

Our first illustration, borrowed from Wertsch (1991b), will show the basic mechanism[3]. Let us take the following situation: a child is looking for a toy; he does not find it and asks his father to help him. «Where did you see it last ?» asks the father. «I don't remember» the child responds. The father then puts a series of questions to him: did you see it in your room, outside in the sandpit, in the kitchen, etc. The child replies no. At a certain point the father says to him: «In the car?» «Ah yes!» exclaims the child.

What does this small example show: a) visibly the child recollects in a certain manner where he last saw the toy since he can answer 'yes' to the question «Did you see it in the car?» But he does not manage to remember by himself; he needs someone else to help him use his memory actively, to search his memory by a systematic procedure. This procedure is the use of language in the form of questions to actively, voluntarily explore his own memory. But note: it is the Other person (here, the father), on the exterior, who, using a powerful semiotic system, i.e. questioning, explores the interior of the child and thus actively transforms the child's way of remembering. Exploring the memory with language is not possible at first except with the help of the Other person. b) At a certain point this help is interiorized and the child is able to question himself; he acquires a new way of remembering, he controls his own memory; memory becomes voluntary. An external capacity that existed in the relation between people, i.e. remembering by questioning, becomes an internal capacity of the child. It is obvious that the process of interiorization also transforms the tool; external questioning becomes internal language, the new function profoundly transforming the form of the language, a process often described in introductions to the work of Vygotsky[4]. Referring to a development such as the one outlined, Vygotsky can at one point write: «Every function in the

child's cultural development appears twice, on two different planes, first on the social plane, then on the psychological plane, initially between people, as interpsychological categories, then inside the child, as an intrapsychological category. This applies equally to voluntary attention and logical memory, to the formation of concepts and the development of the will. [...] All the higher mental functions genetically originate in social relations, in actual relations between people» (Vygotsky, 1974, p. 201).

Let us take a more complex example[5] to show how there is historical and cultural specificity during the construction of a new psychological function: written language, or more precisely the capacity to produce written text. What are the semiotic systems at the root of this complex psychological function?

As I have shown in more detail elsewhere (Schneuwly, 1994), one can say that the genre, the form which the language activity takes in a given situation, is the tool for mastering the practices of language in a given society, and in particular the different practices of writing. However, just as a factory, i.e. a complex tool for manufacturing a product, is composed of a group of tools, themselves integrated in a vast group of tools of the same type, the genre can be considered as the synthesis of a diversified set of tools functioning at very different levels, some being very specifically linked to one genre, others common to many, still others functioning in all writing situations. Excluding from consideration technical tools for writing (from the knife for making incisions through the ball-point pen to the computer), the semiotic systems constituting the different genres of writing in our society are, at least, the following:

a) writing systems, whether pleremic or cenemic, adapted in a very complex manner to the requirements of particular languages (orthography), permit language to become visible;

b) language practices produce their own discursive forms, within speech itself: a range of language forms adapted to different functions in a given historical context and which crystallize in genres;

c) language being self-reflexive, that is to say capable of referring to itself, there develop at the same time as the genres the metalinguistic tools for speaking them, for evaluating them, for describing them, for producing them;

d) at a certain level of historical development, writing becomes its own tool, becomes necessary in order to write.

These systems are the (often very ancient) product of social practices which govern relationships between people. They are indeed signs in the Vygotskian sense, namely a means «to act on others, or a means which others use to act on an individual» (Vygotsky, 1974, p. 200), with, however, a range of action which largely exceeds that of the signs observed in the case above in relation to a child's memory. These are the tools of mass communication which are fundamental to and at the same time presuppose the developed psychological functions; but their development can no longer be conceived of according to the simple model of interiorization of an interpsychological relation; they require the implementation of complex social institutions (in general in the form of formalized education, teaching), systematically organising access to the different systems.

These few reflections on writing bring out new aspects and qualify the remarks on the inter- to intrapsychological transition; it is not, or at least not always, relationships as such between people that are interiorized, as one narrow interpretation of the Vygotskian quotation on the inter- to intrapsychological transition would have you believe[6]. The essence lies elsewhere; as Vygotsky said in regard to the word functioning as reorganiser for the development of the formation of concepts: «Words initially exist objectively for others, and only afterwards begin to exist for the child himself» (Vygotsky, 1974, p. 201). And he paraphrases Marx: «The psychological nature of the human being represents all social relationships transported to the interior and becoming functions of the personality and forms of its structure. [...] The collective establishes in a child higher psychological functions» (p. 202).

**Education and teaching versus development**

This last expression «the collective establishes...» seems utterly contradictory to what has been said previously here on development as self-propulsion. Expressions of this kind are numerous in Vygotsky's writings: «Education can be defined as being the artificial development of the child. It is the artificial control of the natural processes of development. Education not only influences a certain evolutionary process; it fundamentally restructures all the functions of behaviour» (Vygotsky, 1985b, p. 45). How can this thinking go hand in hand with the one of self-propulsion? How can development, presented as an independent process, be defined at the same time as completely dependent on the exterior?

For the time being let us leave these questions aside and establish that the instrumental method – the one we are coming to look at – contrary to behaviourism which analyses the pupil independently of all his other characteristics, or the Piagetian approach which examines the child independently of his pupil status, examines «a particular child as pupil» (Vygotsky, 1985b, p. 46). It examines not development in general but specific development as manifested inside a particular social structure, in the case of our society in particular the family and school. Consequently on several occasions Vygotsky discusses the importance to development of imitation and learning within the framework of education and teaching (Vygotsky, 1974, p. 207). Contrary to other theories that see these processes purely as accessories to development which are the internal and fundamental processes, he postulates that development is directly related with them, that is to say, it depends on the exterior. A formidable theoretical problem thus arises: to think of the process of development at the same time as selfpropulsion and as depending entirely, for its content and its direction, from the exterior, on processes of imitation and learning in the socio-institutional contexts of education and teaching.

Initially, notably in the key work *Development of the higher psychological functions,* Vygotsky poses the problem in simple terms, learning dependent on development, as shown by expressions such as: «...in reality, on assimilating external influences, and on assimilating a series of forms of behaviour, the organism assimilates them in relation to the level of psychological development at which it finds itself» (Vygotsky, 1974, p. 206). Or «...it happens that, when the child learns various operations at school, apparently at least, in a wholly external manner, we see effectively that the learning of each new operation is the result of a process of development» (p. 207). Consequently he defines development as an «accumulation of internal experience» (ibid). Quite obviously, the relation between teaching, education, learning and imitation on one hand and development on the other is still not presented in keeping with Vygotsky's own principles, i.e. those of a dialectical relation between interior and exterior, those of a contradiction between external elements and internal capacities. In fact, these expressions still convey an innatist concept of development, as if, although influenced by external factors, it took place according to its own independent laws. It is nothing other than self-propulsion.

Vygotsky could not leave it with such an unsatisfactory definition. And it is here that the concept of the zone of proximal development theoretically lies: trying to think theoretically of the relationship between teaching and development. It is, if you like, a question of putting under tension the internal/external system, the two poles of the contradiction that creates the movement of development.

**The zone of proximal development, or how to create the conditions for contradictions to appear**

Let us quickly set out the context in which this concept is introduced and developed (we shall not go into the complex problem of the concept's origin in the sphere of the evaluation of pupils' capabilities, but take it up at a more developed level; for that problem see Van der Veer and Valsiner, 1991, p. 336ss). Following Vygotsky, the relationship between teaching[7]

and development (not development of the capacity to type or ride a bicycle, but to construct the decimal system, written language, the formation of concepts or algebra) is regarded in the psychological literature in three ways:

- «Those holding the first theory assert that the course of development precedes that of learning; the educational process can only *follow* the formation of the psychological processes» (Vygotsky, 1985c, p. 98). Piaget is undoubtedly its most famous representative.

- In the second theory, «learning is development» (p. 97). For James, for example, «the individual is simply a living complex of habits» (ibid). «Development relates to learning as a shadow does to the object projecting it» (p. 98). There is complete coincidence.

- The third theory, developed notably in the context of the theories of Gestalt, postulates that all learning has an effect which exceeds the individual field considered. «In taking a step forward in the field of learning, the child consequently takes two in the field of development» (104). In other words: the influence of learning is never specific.

Opposing these three theoretical expressions, Vygotsky in a first approach proposes the following expression of the teaching/development relationship: «Teaching is useful only when it moves ahead of development» (Vygotsky 1985c, p. 110). But evidently, it cannot move ahead of it without taking account of the development of the child, otherwise development becomes sterile; it also becomes sterile if teaching is directed «at the basis of development which has already taken place, the stage already passed through» (p. 109). There is in fact a stage of actual development, where the child knows what to do without the adult, and the zone of proximal[8] development determined by what the child is capable of doing with the help of adults or in collaboration with his most capable peers (Vygotsky, 1978, p. 86).

This initial idea is developed as follows: a) «... the fundamental trait in teaching consists of the formation of a zone of proximal development. Teaching thus brings into existence, awakens and nourishes in the child a whole series of processes of internal development which, at any given moment, are only accessible to it in the context of communication with an adult and interaction with companions, but which, once interiorized, will become the child's own conquest» (Vygotsky, 1985c, p. 112). b) «...the essential point consists of the assertion that the development processes are not the same as those of teaching/learning but are led by them in creating what we have defined as the zone of proximal development» (ibid). These two quotations placed one after the other show that what is essential is the creation of a tension between exterior and interior, the creation of a contradiction which is the basis of all movement. The two movements are necessary: there is on one hand teaching that leads development, that gives the child new tools, that provides him with new contents, that puts him in unfamiliar situations which he is not able to resolve by himself. On the other hand and at the same time, there is the fact that this teaching, while defining the direction of development, does not determine it mechanically, step by step, but leaves a zone of freedom. To state it from a didactic point of view, there is on one hand a fictitious time of teaching, that in which it is as though the pupil followed step by step a teaching that breaks down the complex psychological systems into different capacities to make them accessible. This fiction is necessary for giving access to, for constructing these systems with pupils. The pupils, when following this fiction, using the ingredients given, immersing themselves in the situations proposed, learning them quickly, themselves build their new psychological systems according to a logic which, contrary to that of step by step teaching, proceeds by abruptly restructuring at certain moments whole planes of their functioning. They have to do what they do not (yet) know how to do; the requirements are beyond their present capabilities and therefore they can respond to them, at least partly, because of the didactic setting: breakdown of systems, simplification and grading of situations, regulation of learning by various forms of formative evaluation (Schneuwly & Bain, 1993). There are therefore two rates, two chronologies which come together, which are mutually productive but never merge.

This also means that the zone of proximal development is not a sphere that would exist given the development of a child, to which one could link up, as it is conceived of by far too many investigations that claim to be based on this concept. It is a relational concept: the zone is the result of the intersection between two logics or between two human enterprises: one education, the other development. The zone can or cannot appear upon intersection of the two fields. There is contained, then, in the concept of the zone of proximal development the notion of the failure of the enterprise of teaching (and of learning and development). Considered in a context such as this, it is far from being an operational tool, easily applied to teaching or education, establishing a process of the type: the zone of proximal development must be found to permit the pupil to pass from one level to another. It rather contains the idea that fictitiously the teacher or educator defines a zone which could be that of next development and teaches as if he were going automatically in pursuit of his teaching. And it is this teaching that creates the zone (or does not create it). It is only in the process of teaching, in the joint activity between teacher and learner that the zone can be ascertained, a zone whose setting up is the presupposition of the success of teaching. Development, on the other hand, is effectively dependent on this fiction which precedes teaching, however it does not take place according to the laws which this fiction proposes, but according to the learner's own laws. Teaching does not implant new psychological functions in the child. It makes the tools available and creates the conditions necessary for the child to build them. «Considered from this point of view, teaching is not the same as development, rather it activates the mental development of the child, awakening the evolutive processes that could not be actualised without it. It thus becomes an essential constitutive moment of the development of non-natural human characteristics, acquired during the course of historical development» (ibid). Or elsewhere: «To implant [something] in the child... is impossible... it is only possible to train him for some external activity like, for example, writing on a typewriter. To create the zone of proximal development, that is, to engender a series of processes of internal development we need the correctly constructed process of school teaching» (Vygotsky, 1933 quoted from Van der Veer, et al., 1991, p. 331).

Teaching – and more generally education – creates tension between the present and the future, between what the child is already capable of and what he should be capable of and towards which he is orientated and orientates himself, by taking as a reference point what Vygotsky sometimes called ideal forms of the final product of development. These can only come from the adult environment. «Investigations show that deaf-mute children develop their own kind of speech, mime, mime language which is very rich in its development. The child develops an alternative language. But can we compare the development of that mime language with the development of the language that takes place in interaction with the ideal forms? Of course not. It means that if we have a case where the ideal form is absent from the environment, and we only have the case where the initial forms interact with one another, then the development has an extremely limited, compressed and impoverished nature» (Vygotsky 1935; quoted from Van der Veer, et al., 1991, p. 318). The driving mechanism of development breaks down and the movement stops; the tension between exterior and interior abates very quickly.

Although teaching and education are the preferred means for creating the contradiction that represents the zone of proximal development and that allows the child to progress, play, which imitates the ideal forms, is another that Vygotsky mentions explicitly as a possibility when he says: «Play creates a zone of proximal development of the child. In play, the child always behaves beyond his average age, above his normal daily behaviour; in play, it is as if he were a head taller than himself [...] Action in an imaginative sphere, in an imaginary situation, the creation of voluntary intentions, the formation of real-life plans, of volitional motives, all appear in play and make it the highest level of preschool development» (Vygotsky, 1983, p. 250). Starting from real external situations in which he only masters part of the meaning, the child takes in certain rules and follows them, enriches and develops them in imaginary situations which he creates for himself. The starting point is always a complex social situation, an unmastered «ideal form», which the child tries to grasp by creating,

undoubtedly on the basis of semiotic elements and tools that are supplied to him by the protagonists of real situations, a space in which he plays a role that largely extends beyond the one he has in the real situation, but which is nevertheless encompassed by the real starting situation. Like teaching or other educational situations, play thus has an intermediate role, it creates that tension which permits the transition beyond the present level to more complex forms of behaviour and thought. The driving mechanism, however, is the same: the contradictions between the internal individual pole and the external situational pole.

## Conclusions: Return to development – some paths of reflection

What then is the zone of proximal development for? We have looked at the theoretical problem posed by two basic postulates contained in the Vygotskian theory on development: the development of the higher psychological functions is, on one hand, conceived of as selfpropulsion proceeding by reorganisation, revolutionization of the lower functions; at the same time the concept of the psychological functions as historical-cultural constructions, based on semiotic systems, implies that they can only come from the exterior; development therefore depends entirely on education and teaching, and more generally on ideal forms with which the child is confronted during his development. The concept of the zone of proximal development is the theoretical attempt to bring these two apparently contradictory postulates together: – it springs from the meeting point between external needs and internal possibilities; it is the tension created by this intersection – it constitutes the meeting point between two kinds of processes: one relatively systematic, functioning step by step in a regular progression, going into different aspects of a system one after the other; the other proceeding abruptly, by reorganisation of various elements of the mind, creating entirely new systems and modifying the old ones; – development is dependent on the exterior, through the processes of teaching and education, learning and imitation, in that the latter define the contents, direction and means of development; development is constrained; – development is self-propulsion, it determines its own rate, its own form, including non-development, by appropriation, according to its own logic, of external elements; new processes cannot be implanted; development is choice and freedom.

Here we have an entirely different, unexpected facet of the contradictory movement of development.

## Notes

[1]   The culminating period of this science came in the years 1900 to 1925 in Western countries, and it continued to have a considerable influence in the USSR until 1936. In a decree dated the 4th of July, the Central Committee of the Communist Party in the USSR prohibited paedology on the pretext of the widespread use of tests by many paedologists. Fradkin (1990, p. 99) talks of the death of a science, the first in a long list which included genetics, cybernetics and semiotics. This decree is the direct cause of the disappearance of Vygotsky's works until 1956 and, thereafter, of all reference to paedology and tests, even in the 1986 version of Vygotsky's key work «Thought and Language» (Fradkin, 1990; see also remarks by Mecacci, 1983 and 1990).

[2]   We do not use the term «cognitive», as do for example, without explicit justification moreover, Van der Veer and Valsiner (1991). Although in many places what Vygotsky speaks of could indeed be designated by this term in its current meaning, other texts show the inextricable unity formed by affective and cognitive aspects in the new psychological forms. As proof, these two quotations: «An essential character of play is therefore rules, becoming affection. «Idea, becoming affection, concept transformed into passion» is the prototype of this ideal of Spinoza in play, the realm of spontaneity, of freedom.» (Vygotsky, 1983, p. 245). «Specialised studies show that the degree of development of concepts coincides with the degree to which the dynamics of the affective states, the dynamics of real action, are transformed into the dynamics of thought». (Vygotsky, 1973; p. 200).

[3]   The example is actually so simple that it skips over the cultural dimension; that is why we shall contemplate a more complex but incomplete one; we shall go back over the Wertschian example.

[4]   See chapter 7 of Thought and Language, and the introductions by Wertsch, 1985; Vila, 1987; Rivière, 1990.

[5]   or rather an example that we shall examine at a more complicated level; memory could obviously give rise to much

more profound developments than those mentioned here briefly to show the basic principle, i.e. how a semiotic system can intervene in an existing function and transform it into something else, so that remembering is no longer the same thing. For work on the memory in a historical-cultural perspective, see for example Middleton and Edwards, 1990.

6  Such a narrow reading seems to us to be detectable in Wertsch (1985) and in numerous works inspired by his concept of the zone of proximal development as a negotiation of sense. For a more exhaustive discussion see Schneuwly, Moro and Rodriguez, 1992.

7  It is important to emphasise here that the concept of the zone of proximal development was about the relationship between development and what in Russia is called obuchenie. This word does not mean learning but teaching. Yet it is translated as learning in the majority of editions of Vygotsky's works in Italian, German, English (here notably in the most frequently quoted work Mind and Society, 1978). Van der Veer and Valsiner (1992) also draw attention to this problem of translation and conventionally use teaching (p.330). Therefore, after checking the Russian text, we have taken the liberty of changing the words obuchenie and obuchat in most contexts to teaching and teach respectively. It is worthwhile reflecting on the ideological reasons that have brought about this significant transformation of Vygotskian concepts in translation, in certain places resulting in his theory actually being misinterpreted (see Schneuwly, in press). Those who learn and those who teach are not in fact the same persons; the meaning of the two words results in the external/internal relationship being interpreted in very different ways.

8  or next or potential development: blizhaishego razvitiya means roughly «the nearest» or «imminent» or «immediate development»; we use the term zone of proximal development following the Englisch use; see for instance the translation in French: «zone de proche développement»: zone of near development.

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