

Vygotskij, the Work of the Teacher and the Zone of Proximal Development

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ABSTRACT – Vygotskij, the Work of The Teacher and the Zone of Proximal Development. The text shows that after 1930, Vygotskij developed the question of teaching. Vygotskij forged new concepts, involving more systematic work on the dialectical contradiction between internal and external. An analysis of teaching work from a Vygotskian perspective shows the importance of transposed knowledge as a teacher's tools. Elements of Vygotskij's theory of development, elaborated after 1930, describe how educational tools function on the side of the student, allowing, through their appropriation, the construction of new psychic systems. This requires to reflect on the relationship between education and development, two totally different processes that Vygotskij conceptualizes through the notion of zone of proximal development.

Keywords: Vygotskij. Teaching. Teacher's Tools. ZPD.

RESUMO – Vygotskij, o Trabalho do Professor e a Zona de Desenvolvimento Próximo. O texto mostra que, após 1930, Vygotskij desenvolve a questão do ensino. Vygotskij forja novos conceitos, envolvendo um trabalho mais sistemático sobre a contradição dialética entre interno e externo no desenvolvimento da criança. Uma análise do trabalho docente numa perspectiva vygotiskiana mostra a importância dos saberes traspostos como ferramentas do professor. Elementos da teoria de desenvolvimento de Vygotskij descrevem como as ferramentas de ensino funcionam, por parte do aluno, por meio de sua apropriação, permitindo a construção de novos sistemas psíquicos. Isto precisa de pensar a relação entre ensino e desenvolvimento, processos totalmente diferentes que Vygotskij conceptualiza através da noção de zona de desenvolvimento próximo.

Palavras-chave: Vygotskij. Ensino. Ferramentas do Professor. ZDP.

The present text aims at showing that, in his pedagogical period, after 1931¹ Vygotskij powerfully develops what is only a sketch in the main work of his instrumental period, *History of the Development of Higher Psychic Functions* (chapter XIII), namely the question of teaching and more generally of educational action². It is as if the new conceptual tools that he forged after 1930, in which he explored new fields, imposed a much more systematic work on the dialectical contradiction between internal and external (in particular teaching and education) in the development of the child, whether normal or handicapped. Moreover, Vygotskij's practical work in defectology was undoubtedly the main driving force behind his new orientation. The present text is programmatic³ in the sense of proposing a reading centered on the teaching of Vygotskij's work⁴ from a specific point of view, that of disciplinary didactics, a field of study developed in Europe⁵ and of which one can define two interrelated central research objects: 1. the didactic system comprising inseparably the three poles, teacher, students and knowledge (in the very broad sense including know-how); 2. The process of transposition of knowledge from its sphere of use into the didactic system, knowledge necessarily suffering transformations and forming a school culture, organized in school subjects, whose function is the development of students through the possibility of appropriating knowledge.

In our article we first demonstrate, in the initial part, that there is a kind of misunderstanding in the use that many researchers in the educational sciences are making of Vygotskij by focusing on the interactive dimension of the work of teaching while largely disregarding the disciplinary contents that are systematically taught in the context of school and other educational institutions. However, these contents represent work tools for both teachers and students, tools of self-transformation in the development process. The second part shows precisely, through an analysis of the teacher's work from a Vygotskian perspective, the importance of transposed contents as tools for teachers. This work, as shown in the third part, draws such tools from the framework of an institution, the school, organized in educational disciplines, which constitute an essential dimension in Vygotskij's educational theory. Part 4 recalls some elements of Vygotskij's developmental theory as elaborated in his pedagogical period and describes how the tools of teaching operate on the pupil's side, as tools which, through their appropriation, enable the construction of new psychic systems. It is still necessary to think the relationship between two entirely different processes, teaching and development, which Vygotskij (2021a) manages to do, as shown in part 5, through the concept of ZPD which becomes central in the Vygotskian theory. This concept will be highlighted, in particular on the basis of a text that has just been translated for the first time⁶.

A Founding Thesis: the role of education and the diversity of its forms

The traditional school, says Piaget (1935), works as if the child's structures of thought were always identical. Since, according to this

conception, the child is perceived as structurally equal to the adult, the contribution of knowledge can be made element by element, the acquisition of knowledge being seen as an accumulation of knowledge that is added to each other, resulting in a complex construction. Functionally, on the other hand, the traditional school treats the child as being different from the adult since they are capable of passively receiving information, of acquiring without acting or commanding the knowledge that is transmitted to them.

For Piaget, the new methods are characterized on the one hand by the fact that the child's structures of thought are perceived as fundamentally different from those of the adult, but that, on the other hand, the child operates according to a logic that is the same for all human beings: they are active, driven by interests and needs. This Piagetian conception of functional continuity and structural discontinuity affects the understanding of teaching and of the teacher's role. Functional continuity leads to the claim that "[...] an essential part must be played by the spontaneous search of the child or adolescent by requiring that any truth to be acquired be reinvented by the student" (1948, p. 19). "Whenever a child is taught something, he is prevented from inventing it [...] or from discovering, inventing or reinventing it"⁷.

In fact, an important line of researchers claiming an approach based on the work of Vygotskij is not far from sharing this idea of the constancy of functions, claiming a *socio-constructivist* approach, close, it seems to us, to Dewey⁸ and which, in the USA in particular, often calls itself *socio-cultural*. Let us recall some of the salient features of socio-constructivism as defined, for example, by Legendre (2004), who designed the Quebec curriculum based on a socio-constructivist approach: emphasis on the preponderant role of social interactions over the influence of formal teaching; the school and the classroom as socially situated micro-cultures dominant in relation to school programs and disciplines; the role of the teacher is more that of a guide, a model and a companion than a transmitter; the development of a child follows its own logic, which is essentially followed by teaching.

In other words, what is important is the functional continuity of social interaction, of autonomous research, of spontaneous construction: the contents are relatively arbitrary, defined by structural discontinuity and teaching plays a minor role.

Vygotskij's thesis is quite different⁹. There is neither structural nor functional continuity. The school institution is based on a specific relationship between teaching, learning and development, which fundamentally transforms their mode of operation, and it is therefore a question of describing and explaining it: learning at school is carried out according to specific modalities. Vygotskij distances himself both from the conception underlying the traditional school, which propensity is towards memorization and mechanical teaching, or even training, which he often criticizes; but he also distances himself from the concept of the new education, to which he is nevertheless linked in a

certain way by emphasizing the need for reform. Nevertheless, he regularly distinguished himself from the latter by insisting on the importance of systematic teaching, and more broadly, of education within the framework of formal institutions.

If the first method studies the child without attending to the student [functional continuity of socioconstructivism and new education], the second examines the student without attending to his other characteristics [structural continuity of the traditional school]; the third studies a given child as a student (Vygotskij, 2014a, p. 574).

This implies theorizing teaching, and thus school, development and their relationship.

The Work of Teachers: to teach

It is true that Vygotskij did not develop an explicit theory of teaching. On the basis of his concept of tool or instrument¹⁰, it is possible to go back to the theoretical framework that underlies it, namely the Marxian analysis of work, in order to deduce a conception compatible with the Vygotskian perspective. As we know, Vygotskij (2014a; 2014b) explicitly refers to this framework in two of the founding texts of his instrumental approach. Let us recall some key elements of the proposed framework: “In the labor process the activity performs, with the help of means of labor, a purposeful modification of its object” (Marx, 1976, p. 138). This condensed summary of the analysis is specified elsewhere as follows: “Labor is primarily an act that takes place between man and nature. Man himself plays the role of a natural power in relation to nature. Three elements make up the process of work: “Personal activity of humans or work itself, the object on which the work acts, the means by which it acts” (p. 137). This third element is defined very precisely. “The means of labor is a thing or a complex of things, which the worker introduces between himself and the object of labor and which serves him as an effective conductor of his activity upon that object. He uses the mechanical, physical and chemical properties of things, to let him act as means of power over other things, according to the ends he seeks” (Marx, 1974, p. 208: translation B.S.). The means of labor, the tool or instrument, historical product of a given society, thus shapes labor, gives it a particular form, and also forms the person who uses it. It is a powerful mediator both between man and the object of his work and between man and others.

What can we say about the work of teaching from this general definition? Are we not in a very different situation? The object on which this work is carried out cannot in any way be confused with external nature. The tool cannot be a thing or a complex of things with mechanical, physical or chemical characteristics allowing it to act as a force of nature on nature, “the trick of reason” (Hegel). The result of the work can neither be consumed nor used as tool or material for the production of other objects. Work *on others*, as Tardif and Lassere (1999) say,

would teaching then retain none of the characteristics of work in general? Would it be a completely different kind of work that is analyzed according to different logics?

Based on the Vygotskian definition of education and teaching, we propose another way of looking at it. Vygotskij (2014a, p. 573) defines education as the “artificial control of natural processes of development”. Like any transformation made by human beings on nature, it is operated by tools:

Psychological tools are artificial formations: they are by nature of social essence, and do not constitute organic or individual adaptations; they are oriented towards the mastery of processes, in others as well as in oneself, as technique is towards that of the processes of nature (p. 567).

It is these psychological tools that are the means of transforming behavior, and teaching, through the use of these tools, “reorganizes in a fundamental way all functions of behavior” (p. 573). And it is the sign, “[...] artificial stimulus created by man as a means of controlling behavior - one’s own behavior or that of others” (1974, p. 135), that constitutes the psychological tool, a social artifact just as much as a technical instrument is, each sign being part of a semiotic system.

Such a basic conception has important repercussions on the way of conceiving the work of teaching. It can be analyzed by analogy with work in general, with the result that teaching no longer appears as *different work*, but rather as a particular modality of work in general with the same basic structure. Let us say it schematically: teaching consists in transforming ways of thinking, speaking, and doing with the help of semiotic tools. It has the same structure as any work. It has an object: ways of thinking, speaking, doing; it has a tool: signs or semiotic systems; it has a product: transformed ways. Semiotic systems are precisely the instruments or tools that act on the psychic functions of others (and then on one’s own) with a view to transforming them: “reason’s cunning” (Vygotskij quotes Hegel here), the latter uses for this purpose a material that, by its perceptible and significant materiality, is both external and internal and makes it possible to act on the psychism. The teacher, as a worker, is an agent of transformations that act, with the help of semiotic tools, on a particularly complex series of psychic functions to be produced, such as writing and reading, which are highly developed linguistic activities; or such as disciplinary ways of thinking manifested, for example, in scientific concepts; or even such as elaborate forms of artistic or artisanal expressions.

To achieve a better analysis and design of the teacher’s tools, we need to take a step further into what characterizes teaching. A teacher teaches: it’s a truism. But what is behind this word? To teach, says Mauduit (2003), “is to call attention by signs” (p. 23), “to invite attention to one’s words [...] to new things by means of new signs” (p. 39). We can distinguish two essential moments in the activity of teaching. First, the teacher must make present the content on which he or she wants to

direct the students' attentions. For example, the teacher will propose a small corpus of nouns with complements. However, in order for the students to direct their attention to the teaching content that the educator is seeking, these didactic situations require verbalization. Making the object of a teaching present is done through the word that accompanies the situation, that gives it meaning, that makes it explicit. Subsequently, at the second moment, the teacher accompanies, regulates, and directs the activity of pupils on particular aspects of the content proposed in a situation.

A teaching object is always and necessarily duplicated in the didactic situation: it is there, made present, by teaching techniques, materialized in various forms (texts, sheets, exercises, real objects, tasks, projects, etc.) as an object to learn. It is there, as an object to be learned, to be *semiotized*, about which new meanings can and must be elaborated by students; and it is there as an object to which the teacher guides the students' attention by means of various semiotic procedures, to which the teacher points or of which he or she shows the essential dimensions by making it an object of study, and this guidance enters into the very process of learning. The two processes - making the object present and pointing to it, showing its particular characteristic and dimensions - are indissolubly linked, defining each other: teaching constitutes a process of double semiotization.

At a high level of abstraction, we can consider as teaching tools those that allow this double semiotization of objects to be learned by students. Basically, then, these are those that ensure the student's encounter with these objects and those that ensure the guidance of attention. The former are more of the material order (texts, exercises, diagrams, real objects, etc.), the latter more of the discourse order; but discourse can also produce objects and allow their encounter, just as, inversely, the material can ensure, through specific forms, the guidance of attention. From the point of view of research, these teaching tools can and must, in interaction with the teaching profession, be the object of a precise and systematic scientific description, which we are for the moment very far from¹¹. This would allow a better transmission of the tools from one generation of professionals to the next, and thus their constant improvement.

There is a close relationship between the object to be semiotized by the student in order to grasp its meaning, and the semiotic tools that help this process of semiotization, to the point where the two become one. Any act of teaching always presupposes this double sociability: the necessarily social character of the proposed object of teaching and the social process of constructing its meaning through semiotic tools that enable not only this construction of meaning, but also its appropriation. This double semiotization in a complex process that goes hand in hand corresponds to the very foundation of the idea of triadicity at the basis of the Vygotskian conception, namely the idea that any relationship with reality and others is always mediated. This allows us to read differently than usual the famous sentence: "Each psychic function ap-

pears twice in the course of the child's development: first as a collective social activity and thus as an interpsychic function; then it intervenes a second time as an individual activity, as an inner property of the child's thought, as an intrapsychic function." (Vygotski, 1985, p. 111). Brossard (2004) shows that this passage cannot be thought of in an abstract way. The passage from the inter to the intrapsychic concerns socially constituted objects; and thus always takes place in situations where there is a double experience of semiotization, that is to say both the presence of the object and its pointing out by the one who interacts in the process of appropriation.

School and school disciplines provide the tools to teach

Teaching is defined by an institution, the school. How does Vygotskij define the school? One will probably look in vain for an answer to this question. His thinking is not very institutional in the sense of exploring the constraints, limitations and functioning of institutions. This does not prevent him from grasping the essential aspects of the processes at stake in these institutions from the point of view of the child's development. In this sense, he writes "The school process is regulated by a program and a timetable" (Vygotski, 1985b, p. 266). He thus captures in an almost aphoristic phrase two constitutive dimensions of school in general. The idea of the program already appears in the famous distinction made between preschool and school.

The child of the first age [...] learns by following their own program, the schoolchild learns according to the teacher's program, but the preschooler is capable of learning insofar as the teacher's program becomes their own program (Vygotski, 1995, p. 36).

By insisting on this dimension, Vygotski underlines the necessarily systematic character that presides over the transmission of knowledge and that constitutes the heart of what he analyses, in an emblematic way, under the term *scientific concepts*. It is even this systematicity which can be considered as the major distinguishing feature between the so-called *scientific*, or *academic* concepts and the everyday concepts². This applies of course in a more general way to all school knowledge, to all taught objects, result of multiple transpositive processes forming the school culture. In his conference of 1933 (2021) he defined more generally the function of the school: the analysis of the complex relation between teaching and developing allows:

To know to what extent the beginning of the school has not only an effect on what the child will learn but also, which is one of the main objectives of the polytechnic school, that of being a tool for the development of all the facets of the child (p. 15).

It is thus a question of developing all the facets of the child. To this end, in school in its modern form, established in the course of the

19th century, the organization of knowledge essentially takes the form of disciplines, systematically organized in a complex whole. Opposing Thorndike, who focused on the teaching of narrow and specialized knowledge (for example the learning of the multiplication table), which obviously, isolated, has no influence on the development of the higher psychic functions, he insists on the fact that such an influence can on the contrary be attributed to:

[...] to the study of arithmetic, the mother tongue, etc., that is to say of complicated subjects¹³, which concern whole and vast complexes of psychic functions. It will be readily admitted that, if the differentiation of the length of lines has no direct influence on the differentiation of angles, on the other hand the study of the mother tongue and, in connection with it, the general development of the semantic aspect of language and concepts, may have some relation to the study of arithmetic (1985b, p. 256s).

It is precisely the definition of formal disciplines, an idea he takes directly from Herbart, that is for Vygotskij at the heart of school teaching and learning, but of which he says:

It was partly its inadequate elaboration, but above all the inadequacy of its practical application to the tasks of modern bourgeois pedagogy, that led the theory of formal disciplines to theoretical and practical failure (1985b, p. 255).

We see that the disciplines as a whole constitute the means to act on students, to transform their psychic processes. The disciplines constitute the essential framework of the work of teachers, which offer them tools to proceed to this transformation that the school has to achieve with students.

Let us take an example to illustrate this by taking a school subject: grammar. "In teaching grammar, according to Herbart, we do not bring any new knowledge: since the child, before entering school, already knows how to decline, conjugate and construct syntactically correct sentences". Vygotskij (2018a, p. 389) admits. So why teach it?

When the question was asked: what new things does a child learn from learning grammar, how is grammar useful to a child, it turned out that grammar played a really important role. If I have a certain skill without knowing that I have mastered it, I use it automatically. But when I have to do voluntarily what I do involuntarily, it is very difficult to do it outside a given situation.

It is the formal function of the school discipline grammar that is essential. And more generally: "The child who has succeeded in becoming aware of cases has thereby mastered this structure, which is then transferred to other domains not directly related to cases or even to grammar as a whole" (Vygotskij, 2018a, p. 269). Grammar transforms the relationship to one's own language: this is the basic principle. And this transformation goes in the same direction as those operated by other disciplines, which is why it is potentially a formal discipline. But

more precisely: knowledge – here grammatical knowledge – does not function as an auxiliary to another action or to thought: it is not approached for its external utility. Grammatical knowledge itself is a condition for the transformation of the relationship to one's own psychic processes and to the knowledge that is already there, and that for two interconnected reasons. First, it is a knowledge that generalizes the knowledge already there and integrates it into a new, more powerful system. The latter contains the others by representing them at a higher level of generality. This gives the student greater freedom in relation to the knowledge already there and enables him or her to use it more consciously and willingly. Secondly, the entry into more general systems – which are systematic knowledge systems, derived from scientific or expert systems – requires a systematic teaching which does not follow, for the most part, the needs and motives of students, but the logic of knowledge itself.

Every discipline has a particular and concrete relationship with the course of child development. This relationship changes from one phase of development to another. These conclusions lead us to a revision of the problem of formal discipline and thus of the importance and significance of each particular teaching discipline for the intellectual development of the child. We are thus faced with a problem which is far from being solved by a single, simple formula, but which constitutes the starting point for numerous, concrete and varied investigations (1985a, p. 116).

He also writes:

We have already said that in school abstraction as such is not taught, nor is willfulness. Yet, if we could show by means of an analysis how in our children the teaching of written language gives rise to the process of development, this would inform the teacher about what is going on in the head of the child who is being taught to read and would demonstrate to the teacher that he can judge what is going on in the consciousness of the student while they are being taught language, arithmetic, or natural sciences, and this without basing themselves solely on operations that have already been completed. Therefore, the task of the pedological analysis of the pedagogical process is to show for each subject and for each degree of education, what happens in the child's head in the learning process (2018b, p. 397).

Formal discipline aims at the transformation of the relationship of the learner with his or her own psychic processes and the transformation of the relationship between different functions. The different disciplines have a common psychic basis which is the awareness and mastery of one's own psychic functions: it is in this that we can speak of *formal discipline*. This common base has the effect that learning, in each of these disciplines, has an impact that goes beyond the limits of its content¹⁴.

From the point of view of teachers, a discipline can be considered as providing them with a panoply of tools to work on his object of interest, namely the psychic processes of pupils transformed by the contents of each of the school disciplines. Vygotskij (2006, p. 345) insists on two dimensions that are precisely those that characterize disciplines: “So what is required of the teacher is an enriched knowledge of the subject matter, and an enriched knowledge of the methodology of his profession”.

We can in fact distinguish two sets of knowledge in the disciplines that constitute teacher’s tools. On the one hand, there is the systematic organization of knowledge with a view to its teaching: it is cut up, elementalized, to enable a progression (Vygotskij, 2018a) which constitutes the school program: the result of the incessant process of didactic transposition. But the discipline always contains also, at the same time, the crystallization of means to teach to students: study plan, exercises, manuals, speeches, etc. A discipline is both things at the same time: the organization of knowledge and the set of means to teach it. It constitutes tools that allows it to put under tension knowledge that is already there and knowledge to be transmitted in order to set learning in motion. A difficult task:

Once we have in mind the incredible immensity of this path, it becomes entirely understandable that the child will have to enter into a brutal struggle with the world, and that in this struggle, the teacher must have the last word. It is when we understand the idea that teaching is like fighting a war (2006, p. 348).

Teaching aims, therefore, as we said above, at transforming the ways of thinking, speaking and doing of the students, thanks to tools organized in school disciplines. But, as Vygotskij very pertinently notes state:

The existence of a perfect correspondence between the one [teaching: BS] and the other process [development] would be like a miracle. Investigation shows the opposite: the two processes are in a certain sense incommensurable in the proper meaning of the word. In fact, the child is not taught the decimal system as such. They are taught to write down numbers, to add, to multiply, to solve exercises and problems, and the result of all this is the development in the child of a certain general concept of the decimal system (Vygotskij, 1985b, p. 267).

The objects of teaching in the various disciplines, made present, broken down, commented on, made explicit, concretized in tasks and exercises, are the teacher’s tools. These same objects, learning objects on the side of students, are for them tools allowing their own development, tools, as Vygotskij says in the preceding quote, which have effects well beyond their immediate meaning: they are the tools for the construction of new possibilities, new functions or systems. But what exactly is development in the Vygotskian conception?

The development of psychic systems and semiotic tools

The question of the development of children is always central in the work of Vygotskij. It is also central from the point of view of his institutional insertion since he is a professor of pedology, a science that he defines as that of child development¹⁵. Starting from a separate vision of development of different functions, at the beginning of his scientific work, he proposes, from the 30s, a much more unitary and complex definition:

In the process of development, it is not so much the functions that develop, but the relations, the multiple relations between the functions. [...] Such new, mobile relations between functions constitute 'psychic systems' (Vygotskij, 1985c, p. 321s).

Functions also develop, of course. But the whole heart of development is the fact that, through the internalization and mastery of new, historically constituted tools, functions transform themselves, come into contact with others, and form what Vygotskij calls *neoformations*, thereby marking their artificial, historically and socially constituted nature. Here is how Vygotskij synthetically describes such a system:

To its [the concept] formation participate all the elementary intellectual functions in a specific combination, the central element of this operation being the functional use of the word as a means of voluntarily directing attention, abstracting, differentiating isolated features, synthesizing and symbolizing them by means of a sign (Vygotskij, 1985b, p. 204).

This sentence perfectly illustrates the developmental conception that Vygotski proposes: the construction of new systems by transforming functions and relating them on the basis of the functional use of semiotic tools, or even systems of semiotic tools. In the case of formation of the concept that Vygotskij discusses in the quoted extract, the tool is the meaning of the word. It allows the transformation of elementary intellectual functions: attention becomes voluntary, perception becomes differentiated, the capacities of abstraction and synthesis are built, all of which form a specific combination that is both a condition and a result of these processes.

Vygotskij analyzes other systems in the same work *Thought and Speech*, admittedly in less detail, for example that of writing, foreign languages, mathematics (especially algebra) or reading in the text *Pedagogical Process Analysis* (Vygotskij, 2018). Written language as a psychic system implies the transformation of functions (oral language is profoundly modified thanks to the conscious relationship to one's own language that the writing system allows) and the integration of many systems into a new one (vision, motor skills etc.). The objects of teaching constitute such socially elaborated systems within the framework of the social system that is the school and its organization in disciplines.

More generally, Vygotskij (2018b) proposes four laws that define child development:

1. Development is cyclical, with cycles characterized by specific rhythms and contents, very different from those of chronological time;
2. Each aspect of the child develops at its own pace, resulting in a continual reconfiguration of the relationships between them, in other words, development is disproportionate;
3. Any evolution of an aspect implies involution, regression, partial disappearance and transformation of other;
4. The forms of the different functions and aspects suffer a continuous metamorphosis: the development of the child is thus much more than a simple linear programming, due to growth.

In addition to the cyclical character implying acceleration and slowing down, which is opposed to a linear time, and the continuous metamorphosis of the functions, let us underline two important aspects, less often discussed. To a vision of development as a continuous upward march, Vygotskij opposes another, more dialectical one, which combines evolution and involution in the same movement: one is not possible without the other; one is even the condition of the other. All development is always also the choice of a path in relation to other possibilities that shrink, atrophy, disappear.

Development is disproportional. This notion of disproportionality often appears in the Marxist theory as one of the motors of transformations of a system. Vygotskij thus puts in evidence that the psychic system comprises its own internal engine - the contradictions between unequally developed domains. Disproportionality is another way of defining the self-movement that is one of the essential bases of development.

Let us take precisely this idea of self-movement. For Vygotski (2018c, p. 320) "The process of development in the child obeys its own internal rules. It proceeds as a dialectical process of self-movement" and not a process induced from outside by a mechanical input of new elements. He thus attributes to this process a large portion of autonomy. The question that arises from then on is to know what the driving force of this process is. Vygotskij defines it most clearly in a programmatic text on pedagogy, in which he writes:

It is a matter of showing the logic of self-movement of the developmental process [...] To reveal the self-movement of the developmental process is to understand the internal logic, the mutual conditioning, the links, the mutual cohesion of different factors in the unity and struggle of the opposites involved in the developmental process (Vygotskij, 1990, p. 317).

The informed reader will have recognized here a persistent topos of the dialectics of Hegel and Marx, to quote the figures who have undoubtedly counted most from this point of view in Vygotskij's thought.

But what does “unity and struggle of opposites” mean here? Two quotations will help to understand how he conceives it in the context of the child’s development: “The conflict between the developed forms, the cultural forms of behavior, with which the child is confronted, and the primitive forms that characterize his or her own behavior is the essence of his or her cultural development” (Vygotskij, 2014b, p. 273-274); or, “The new stage arises not from the unfolding of potentialities contained in the previous stage, but from a real conflict between the organism and the environment and from its living adaptation to the environment” (p. 275). But what is the environment? And what is the relationship of the child with the environment? These are two questions that Vygotskij has constantly tried to answer. Let us begin by giving some elements of an answer to the first one.

When Vygotskij speaks about environment, it does not refer to the natural environment, but to the historical-cultural environment, culture being defined as “the product of the social life and the social activity of the human being” (p. 286). This product takes a particular form and is materialized in any society by signs or systems of signs so that one can say that signs are the collective organ of society, the social instrument par excellence. And it is thus the confrontation with the culture, understood as historical product of the social life, as set of systems of signs or semiotic systems, which is the engine of development.

The developmental contradictions (*Entwicklungswidersprüche*), to take the concept proposed by Holzkamp (1983, p. 432), are thus thought as contradictions between internal and external factors. The human potentialities do not realize themselves automatically, from the inside, according to the embryonic model and that would favour or prevent the external concrete conditions - it is rather precisely the definition that one could give to development, according to the conception of Piaget; they do not pre-exist inside, but are the result of movements of overcoming contradictions, which include on the one hand a personal side, namely the degree of mastery of potentialities, already developed and already fruit of the appropriation of certain aspects of the environment, and on the other hand the social conditions of life, the culture, the situational side, with which a child is confronted or confronts him or herself with at a given moment.

The internal and external contradiction and the zone of proximal development

The school is a privileged environment that promotes development through teaching, an activity that we have defined as a double semiotization: to make knowledge present and at the same time to “elementalize” it, to highlight the essential elements, to show them. Discussing several forms of the relationship between teaching and development - a discussion that is well known in the literature, Vygotskij proposes, as a first approximation, the following formulation of the relationship between teaching and development: “The only good teaching

is that which precedes development” (p. 110). But obviously, it cannot precede it without taking into account the child’s development, otherwise it would become sterile. It would also become sterile if teaching were based on current development, something a child can do without an adult. This is where the famous concept of the zone of proximal development comes in, which defines the complex relationship between teaching and development:

The fundamental feature of teaching consists in the formation of a zone of proximal development. Teaching thus gives birth to, awakens and animates in the child a whole series of internal developmental processes, which, at a given moment, are only accessible to them within the framework of communication with the adult and of collaboration with peers, but which, once internalized, will become the child’s own conquest (Vygotskij, 1985a, p. 112).

This starting idea is specified as follows:

The essential point consists in the assertion that the processes of development do not coincide with those of teaching and learning, but follow the latter in giving rise to what we have defined as the zone of proximal development (p. 112).

The essential thing, then, is the creation of a tension between outside and inside, the creation of a contradiction that is the basis of all movement. The two movements are necessary: there is on the one hand the teaching which precedes the development, which offers to the child new tools, which brings to them new contents, which places them in front of unknown problems which they do not manage to solve yet alone. 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 space of freedom. To put it from a didactic point of view, there is a fictitious time of teaching, the one in which one makes as if the student was following step by step a teaching that breaks down the complex psychic systems into various capacities in order to make them accessible. This fiction is necessary to give access, to build these systems with the students. Students, while following this fiction, by using the given ingredients, by immersing themselves in the proposed situations, in short by learning, builds themselves their new psychic systems according to a logic which is certainly not that of the step by step teaching, but which proceeds by sudden restructuring of whole sections of their functioning at certain moments. They have to do what they don’t know how to do (yet): the demands are beyond their current possibilities and yet they can answer them, at least partially, thanks to the didactic staging: decomposition of the systems, simplification and graduation of the situations, regulation of the learning by various forms of evaluation. There are thus two rhythms, two chronologies which meet, which fructify each other, without ever merging.

This means that the zone of proximal development is not a field that would exist due to a child's development and to which one could refer, as many studies that claim to be based on this concept conceive. On the contrary, it is a relational concept. The zone is the result of the intersection between two logics or between two human initiatives: one of teaching, the other of development. The zone may or may not be created at the intersection of the two fields. There is therefore in the concept of zone of proximal development contained the possibility of failure of the teaching venture (of learning and development). This means that this concept is far from being understood as an operational tool, easily applicable to teaching or education, based on an approach of the type: the zone of proximal development must be found in order to allow the student to pass from one level to another. Rather, it contains the idea that the teacher or educator fictitiously defines an area that could be the next development and teaches as if this development will automatically be the effect of his teaching. And it is precisely this teaching that creates the zone (or does not create it)¹⁶. The development on the other hand is indeed dependent on this fiction which precedes the teaching, but according to laws which are proper to the student. Teaching does not mechanically implant new psychic functions in the child, but provides the tools and creates the conditions necessary for the child or student to build them.

Seen from this point of view, teaching does not coincide with development, but activates the child's mental development, awakening the evolutionary processes that could not be actualized without it. It thus becomes an essential constitutive moment of the development of the human characteristics, not natural, acquired during the historical development (Vygotskij, 1985a, p. 112).

Or elsewhere:

To inculcate new ideas in children, without taking into account the developmental processes can only habituate them to an external activity, such as typing. In order to create a zone of proximate development, i.e., to generate a series of internal developmental processes, properly constructed teaching processes are required (Vygotskij, 2018a, p. 400).

Teaching – and education in general – creates the tension between present and future, between what children already knows how to do and what they will have to know how to do and towards what they are oriented and oriente themselves, taking as a point of reference what Vygotski calls in certain places ideal forms of the final product of development. These can only come from the cultural environment, especially through adults. The driving force of development is lacking and the movement stops: the tension between outside and inside is quickly released. For in fact: “The very essence of such development (by evolution and revolution) is thus the conflict between the evolved cultural forms

of behavior with which children comes into contact and the primitive forms that characterize their own behavior” (Vygotskij, 1974, p. 190).

If we consider, as Chevallard does, that “the teacher is the servant of the didactic machine, whose motor is the contradiction between old and new” (1985, p. 71), we can isolate several aspects in the functioning of this machine which is essentially based on the difference between the processes of teaching and development. First, the teacher knows what students need to know, and thus, in a sense, control their future. As we have seen: “The school process is regulated by a program and a timetable” (Vygotskij, 1985a, p. 266). Students have the freedom to learn, they are the owners of their own development, but it is the teacher who knows what knowledge to build. Secondly, this does not at all mean that teachers control learning and development processes step by step. “It would be wrong to believe that if in this semester students learn something in arithmetic, they will consequently, in the same semester, make the same progress in their internal development. New demands, new situations are proposed while students are not yet ready to master them alone. It is in this sense that a contradiction between current abilities and new demands is created. Thirdly, the teaching process operates as if development were a steady, advancing process of building new capacities to master new situations. But in fact, the development process is of a different nature: it proceeds by reconstruction and sudden restructuring of learned contents, the latter being reinterpreted in a new structure of knowledge and know-how.

The development curve rises [...] abruptly and may eventually be ahead of the next links in the teaching process, which will then be assimilated quite differently from the previous ones. At this point in the teaching process, an abrupt change in development has occurred (p. 266).

The concept of zone of proximal development is not, therefore, an operational concept that would make it possible to define a precise moment for teaching of this or that content. On the contrary, it serves to think both of the fact that the teacher or educator fictitiously thinks about and evaluates the zone that is the zone of coming development and teaches as if the latter would automatically follow from their teaching, and of the fact that development, while effectively dependent on this fiction, does not take place according to the laws that it proposes, but according to laws of their own, through the sudden restructuring of knowledge and know-how, starting from the accumulation of contents and techniques for solving local problems¹⁷. The zone would thus make it possible to think at the same time of the constraint and the freedom of development¹⁸.

Conclusions

The originality of Vygotskij’s point of view of teaching and school lies in the fact that he integrates teaching, and more broadly education,

in his theory of development which is the *artificial development*. The latter, by the very result of the point of view of psychic functioning, has the effect of transforming its own conditions, the relation with the environment as its external motor being modified by the very fact that new stages are crossed by children. School and teaching constitute such a new relationship that it transforms the modalities of learning and development, these new modalities being the very basis of construction for new psychic systems. In this configuration, the teacher's work plays a central role, guided by *ideal forms*, constituted by the knowledge organized in school disciplines and by the tools of action of students that these disciplines make available. These tools are those that allow the formation of a zone of proximal development in and through which the student can (or cannot) develop: a space of freedom for students for their own transformation. Far from considering their interests and abilities as an essential point of reference - of course they must be taken into account - Vygotskij, in showing that teaching must precede development, considers the work of teachers as a *struggle* for creating tensions between what already exists in students and what they must achieve: this is the core of teaching. It does not exclude the use of multiple techniques to give meaning to school learning and to support it through multiple regulatory gestures¹⁹.

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Notes

- 1 Periodizations of Vygotskij's work are numerous, depending on the perspective the researcher adopts (Gonzalez-Rey, 2011; Zavershenva, 2014; Yasnitsky, 2012; Jantzen, 2019; Keiler, 2012). Close to Van der Veer and Zaverschneva (2018), we distinguish 4 periods, the last one initiating notably with his text *About Psychological Systems* (Keiler, 2012), characterized by a "semiotic" turn with meaning at its core, but also with a new theorization of pedology (see Leopoldoff Martin, 2014); landmark publications are his third volume of *Adolescent Pedology, Lessons in Pedology, Lessons in Psychology, and of course Thought and Speech and Theories of Emotion*.
- 2 Of course, he had already, with an entirely different theoretical framework, addressed the issue in depth in *Educational Psychology*, written probably between 1922 and 1924 (Keiler, 2012); see Esteban-Guitart (for an interesting analysis of this text).
- 3 We shall therefore not proceed here with a systematic review of the immense literature, but rather mention a few texts that seem significant to us.
- 4 Note that we refer to the original Russian texts which we always situate in their moment of production or publication; we cite the translations that we consider to be the best.
- 5 For a detailed presentation of this academic field, see Schneuwly (2020).
- 6 Since Vygotskij's concepts evolve deeply and rapidly, we always put in the references the time of publication of the text (or, when it is a published shorthand of a conference, as in this case, also the year of the conference).

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- 7 Extract from a course. Cédérom Jean Piaget, Geneva, University of Geneva, 1996: no reference. A more detailed discussion of these theses of Piaget can be found in Autor (autor, p, 89ss).
- 8 This statement deserves careful verification and discussion. We would willingly defend the hypothesis that the reading of Vygotski is deeply Deweyian in the United States; and perhaps even the success of Vygotski was made possible because of the existence of this foundation of pragmatist thought (Garreta, 2013). Duarte (2001) goes a step further in trying to show that we can speak of a neoliberal appropriation of Vygotskij by socioconstructivist approaches, according Piaget.
- 9 On the fundamental differences between the new education approaches and Vygotskij's position, see Hofstetter and Schneuwly (2009). Note that Gramsci's position is very similar to that of Vygotskij (Bernhard, 2009).
- 10 *Orudiami ili instrumentami* (tools or instruments), writes Vygotskij (2014, p. 567), without differentiating them. The distinction is not operational in the theoretical framework we develop here, based on Vygotskij's work.
- 11 We have undertaken extensive studies to describe teacher tools for teaching grammar, written text production, or literature: see in particular Schneuwly e Dolz (2009); Ronveaux e Schneuwly (2018).
- 12 "These academic concepts are part of a systematic, scientific domain of knowledge. In the context of school learning, academic concepts are called scientific", not because their contents are scientific, but because they are systematically learned. As Haenen, Schrinemakders and Stufkens (2003, p. 250) pertinently state: and Rochex (personal oral communication) replaces the word "academic" or "scientific" concept by "taught concept".
- 13 We are talking here about school disciplines; the German translation translates as *Fächer*, corresponding to discipline.
- 14 We have shown this transformation of the relationship to the own psychic processes through the analysis of teaching of texts considered literary to 11, 14 and 18 year old students: students "discipline" their relationship to the reading of these texts and at the same time they also transform their relationship to their emotions, mediated by discourses and texts (Leopoldoff Martin, 2018).
- 15 See the work of Leopoldoff Martin (2014) who devoted her thesis to this question. A selection of texts (translated by Martin) that demonstrate this desire to define pedagogy in this way can be found in Vygotski (2018d).
- 16 Clará (2017) seems to follow a similar idea in trying to "depersonalize" the concept of ZPD and conceive of it as a tension that contradictory semiotic systems create. See also Chaiklin (2003) for a dynamic presentation of the zone of proximal development.
- 17 By following Vygotskij's thought as we do here, we are led to give a unilaterally progressive vision of the school and its possibilities, in the tradition of the great humanists, then of Comenius and Condorcet or Herbart. The disciplines are the place in which the contradictions of school are expressed in an emblematic way. Vygotskij explores one dimension. His very optimistic vision of the school also appears in his 1933 conference, where he analyzes the leveling effect of differences between social classes (Vygotskij, 2021).
- 18 In a stimulating article, Eun (2019) proposes to use the concept of ZDP as an encompassing one, synthesizing in a way many others such as internalization/

externalization, every day and academic concepts, culture and nature. It allows us to grasp, without having to follow it in detail, the importance of this concept. We have shown elsewhere that it allowed him to overcome the dead ends of his theory of development (Schneuwly, 1999)

19 See in this respect the numerous comments on Vygotskij's texts concerning imagination that we have just translated and edited (2021).

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