

Is the Vygotskian perspective suitable for describing the development of signs?

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Abstract The paper focuses on the concept of *sign* in Lev Vygotsky's works. This concept, despite its centrality in the works of Lev Vygotsky, has received less attention than many of his other notions. Vygotsky introduced the *sign* as a mediator between the individual and social functions in the cultural development of the child in order to describe the process in which culture transforms the cognition and activity of the child to a qualitatively new level, the level of cultural meanings. According to Vygotsky, signs are *psychological tools*, which a developing child starts using to actively influence his environment and to master his own behaviour. Psychological tools include spoken or written words, numbers, diagrams, maps, and other conventional signs as mediators that function to communicate cultural knowledge and organize the behaviour of every individual. The developmental process leading to the acquisition and use of these tools is what Vygotsky calls the natural history of signs. By outlining the particular way in which Vygotsky uses the term *sign*, we show how *sign* can be applied to the problem of the symbolic threshold in general. In this light, through the term *sign*, first, the genetically different natural and cultural lines of development are described to show how signs, as cultural mediators, transform the lower mental functions into higher ones. Secondly, a set of cognitive changes, that the acquisition of symbol use theoretically implies, are shortly discussed. Further, the article introduces the different specific functions which Vygotsky attributed to signs in development: the emergence of arbitrariness, conventionality and instrumentality.

Keywords: L. Vygotsky, semiotics, acquisition and use of signs, psychological tools, symbolic threshold, history of ideas.

The problem of the symbolic threshold, the primary acquisition of symbolic signs during childhood, has been and still is important in anthropology, psychology, linguistics, philosophy and semiotics. On the one hand, the problem, both in its phylogenetic and ontogenetic aspects, is most closely related to the acquisition of language and speech, and to the use of linguistic signs, understood typically as arbitrary and conventional. On the other hand, in semiotics, the problem has also been approached more broadly, as the emergence of symbolicity in thought. It is commonly taken as something that brings along the human capacity to think about the world conceptually. In this view, the symbolic sign is in its foundations tied to the cognitive capacities of the human being. The relationship between speech and thought, however, has remained highly disputed to this day.

One of the most important approaches relating sign use during childhood to the development of human thinking finds its origins in the works of the famous Soviet

developmental psychologist Lev Semyonovich Vygotsky (1896-1934). The ideas of Lev Vygotsky have been reflected, some very openly, others between the lines, in many different approaches to semiotics and psychology over the second half of the 20th century. Despite its centrality in the works of Vygotsky, his concept of *sign*, has received considerably less theoretical attention in semiotics and psychology, than many other of his concepts. This article focuses on the semiotical in Vygotsky's (and his distinguished collaborators') works: in Vygotsky's cultural-historical theory, signs take the position of a mediator, that is, the focal point or the dominant, which brings together, into a whole, a series of scientific paradigms. From a theoretical point of view, Vygotsky's concept of *sign* is discussed here, and some aspects are brought out from Vygotsky's analysis of the development of the sign operation, or what he called "the natural history of the sign" (VYGOTSKY 1978¹, p. 46). Lev Vygotsky's works, in that respect, lead us towards the understanding of how signs, and especially arbitrary and conventional signs, are taken into use in development. The developmental processes, described by Vygotsky, are here followed particularly from the point of view of the problem of the symbolic threshold, which means bringing out the specific features of the symbolic sign in Vygotsky's general model that describes the development of symbols in ontogeny.

Vygotsky formulated and defended the fundamental terms of his theory in the 1920's and the early 1930's in the generally behaviouristic atmosphere of Soviet psychology, that disclaimed *concepts* (as ideas) as such from the subject area of scientific research. The common view of the behaviourists, both in the West and in the Soviet Union, was that human-specific psychological functions were based on some kind of mechanical combinations of stimulus-response reactions, or that the reactions were somehow accumulated to form the human-specific intellect. It was generally thought that human-specific mental functions were either the result of the maturation of the organism, or they were innate in the brain and only waiting to manifest themselves when some condition of the environment and specific organic maturation met, as the development reached a certain point. This view, however, failed to explain the origin of the symbolic function. It left the activity of speech as such unaccounted for, and separated it from practical activity. It also failed to bring out the human-specific in practical activity, as the behaviour of the *Homo sapiens* seemed so different compared to the behaviour of other animals in their natural environments (*ibid.*, p. 23). According to Vygotsky, the behaviourists left the individual mind untouched by social activity.

In this context, Vygotsky reformulated some basic assumptions in the research on human ontogeny and expanded the field-work from inside the closed laboratories out to the actual social and cultural environment of the child. He claimed that the so-called higher mental functions, characteristic to the modern *Homo sapiens*, were fundamentally of social origin, and therefore depended on the specific culture, in which the child was developing. It can therefore be said that in the Vygotskian perspective, culture also plays a species-specific part in the formation of the biological human being. The acquisition of signs as a particular kind of tools mediates the evolution of the so-called higher psychological processes in *Homo sapiens*, or the human specific forms of cognition, as opposed to the lower processes,

¹ For this source, we don't indicate any original publication year for the following reasons: in this form as it is presented in 1978, the book had never been published before; besides, the main source of this book ("Tool and Symbol in Child Development" [1930]) was translated from Russian into English in its manuscript version.

attributed by Vygotsky to the behaviour of other animals, most importantly, to the anthropoid apes, observed by Wolfgang Köhler.

On the other hand, the research into language development, most notably the works of William Stern and Jean Piaget, did not connect the symbolic activity in language to the individual capabilities of the child either. Practical activity was not researched from the point of view of language development, because speech, taken as a purely abstract referential system, was not approached as a part of the whole system of human activities. In this respect, the ability to use signs would appear as a pure *res cogitans*, outside of the history of development. As Vygotsky puts it, the common view at the time “attributed sign use to the child’s spontaneous discovery of the relation between signs and their meanings” (*ibid.*). Language or the linguistic sign, although understood at the time as communicative, was ignored in its function of concept mediator and also in its cognitive reflexive function, that is, in its function of generalizing experiences (VYGOTSKY 1934 [1986, p. 6]).

Vygotsky, who saw the separation of practical activity from speech as a crisis in psychology (for further reading about the historical context surrounding this issue, cf. VAN DER VEER, VALSINER 1991, pp. 141-155), stresses that the analysis of the relations between thinking as a practical activity and speech must take into account both its communicative (or social) function and its intellectual or organizing function. In social interaction the child’s whole practical activity is transformed, including the use of tools, solving tasks and symbolic activity onto a new level of organization:

Although practical intelligence and sign use can operate independently of each other in young children, the dialectical unity of these systems in the human adult is the very essence of complex human behaviour. Our analysis accords symbolic activity a specific *organizing* function that penetrates the process of tool use and produces fundamentally new forms of behaviour [...] the most significant moment in the course of intellectual development, which gives birth to the purely human forms of practical and abstract intelligence, occurs when speech and practical activity, two previously completely independent lines of development, converge (VYGOTSKY 1978, p. 24).

Thus, in ontogeny, signs start to mediate the so-called natural and cultural lines of development. According to Vygotsky, the individual mind of the child is intertwined in development with specific systems of tools and signs (gestures, language, writing etc.), which have evolved in societies over the course of human history. Vygotsky introduced the terms *mediation* and *sign* to describe the process in which culture transforms the cognition and the behaviour of the child onto a new qualitative level of cultural meanings, and the child himself actively shapes his relationship to the environment within the environment. By their social nature, these culturally shared signs can be considered conventional. The acquisition of these culturally shared systems of signs and tools through social interaction and (individually) through the formation of higher psychological functions, enables the child to master his environment and his own behaviour. Therefore, signs grow to mediate the active influence of the child on his environment, and on himself. The child’s system of activities, attention, memory and perception, develop in accordance with his organic growth and his natural experience of the world, and is structurally intertwined on the symbolic threshold with the system of culturally shared meanings by the acquisition of mediating symbols.

The acquisition of the cultural sign system makes it possible for the child to use his environment to his own benefit, while the behaviour of other species is, according to the Vygotskian model, mostly determined by the conditions of the environment. In psychology, the term *higher mental functions* or *higher behaviour* refers to a certain combination of tool and sign use (*ibid.*, p. 55), which is exclusive to humans among other animals. The use of symbolic signs and speech are useful activities that affect the environment and solve the problems within that environment in the same way as a coordinated movement or a controlled look, as they always imply the aspect of the stimulus within them.

For Vygotsky, the sign is still a much broader concept than words in a language. Even so, to his view, language remains the prototype of a sign system, since language seems to be the foundation of many other sign systems, which also have a profound effect on the cognitive development. The development of sign operations is not limited to the development and use of speech; the changes in development manifest themselves in different ways in sign usage, which also includes gestures, drawings, pictures and practical operations with different objects the child comes in contact with. Different sign systems have a different kind of influence on the structure of memory (VYGOTSKY 1929 [1994]), for instance, memorizing something by cutting signs into trees differs from a written note. The level of the possible abstractness in sign systems differ. The higher level of abstractness in thinking seems to correlate, for Vygotsky, to the social maturation of the child in industrial societies. In other types of societies, almost absolute abstractness, such as thinking mathematically, or using so-called scientific concepts, for example, might never come to its full realization.

The higher mental functions are the result of *mediated* activity, in which the mediation is carried out by *psychological tools*. The main function of these tools is that they allow a certain freedom to the mind from the concrete environmental situation, which makes it possible for humans to organise and construct their environments to a much higher degree, and in a qualitatively higher level, than other animals. This can be seen as Vygotsky's model of the symbolic threshold: symbolic signs are mediators, which bring social and intellectual functions together, but also, as tools, they are mediators between the human being and the environment. In development, these two aspects are brought together into symbolic activity in such a way that it transforms the entire activity of the child onto a new level of organization. *Symbolic activity* is another central term to Vygotsky's theory. This term describes an activity that uses the sign as a mediator, therefore it is a mediated activity. The same way as tools mediate the child's practical activity in his environment, signs mediate symbolic activity. It is an instrumental sign-operation intertwined with elementary level activity, in the continuous flow of unstoppable flux of thought (VYGOTSKY 1934 [1986, pp. 244-245]). Occasionally, Vygotsky uses the term *symbol* instead of the word *sign*, and his usage is hereby adopted in order to link his terminological traditions to the semiotic one, just to stress that for Vygotsky signs are particularly conventional and arbitrary. Symbolic activity can be taken as symbolic *semiosis*: sign as a mediator in this particular use by Vygotsky is rather a *representamen* in commonly used terminology in semiotics that derives from Charles Sanders Peirce.

This means that sign-using activity in children is neither simply invented nor passed down by adults; rather it arises from something that is originally not a

sign-operation and becomes one only after a series of qualitative transformations (VYGOTSKY 1978, pp. 45-46).

Vygotsky tries to show that signs have a specific function in the practical activity of human beings; signs offer an intermediate link in joining the mental forms to elementary reflexes in practical activity and thinking. The main idea in reflexology (the name given to the behaviourist project in the Soviet Union), was that every elementary form in behaviour is associated *directly* to the task the organism has to solve. During an operation, a situation is a stimulus for a certain behaviour or reaction ($S \rightarrow R$). For Vygotsky (*ibid.*, p. 39), sign operation brings an intermediate link (X) (a word for example, or any kind of external aid) into this form of elementary behaviour, a secondary stimulus on a higher level, which he calls sign. This second-level stimulus is brought actively by the organism into the operation, where it takes a distinctive function, different from the first level stimuli, and creates a new relationship between the situation and the reaction.



Figure 1. The scheme of the sign operation. S – stimulus, R – reaction, X – sign (VYGOTSKY 1978, p. 40)

By introducing this intermediate link, the direct impulse is inhibited and the operation is carried out with the help of this external stimulus, or of the sign. This new kind of sign operation is not merely a process with two stages that are related to each other via a sign as some kind of mechanic link. Nevertheless, both the relationships between the external stimulus and the original stimulus and between the external stimulus and the reaction are still based on an elementary operation; the sign changes actively the operation or the process as a whole in changing the relationship between its original counterparts. The sign influences both the stimulus and the reaction in some particular way. The result is a controlled sign operation.

The sign in this operation is understood by Vygotsky as a cultural tool which can actively influence the environmental stimulus. In development, this culturally given aid is internalized in development to become fully a psychological tool. The active use of these external stimuli makes it possible for the human being to control his behaviour from “outside”. Both the language, which the child learns, but also other auxiliary aids, are at the beginning external to the child, in his social and physical environment, and not separated from the individual activity. It is after a long series of transformations in the development of the child, that these auxiliary aids become fully internalized intramental forms. On the symbolic threshold, speech and thinking, as activities, are separated from the direct environment by the symbolic environment. The culture-specificity of these higher mental functions means, that the unique human-specific cognitive construction of meaning is, according to Vygotsky, intertwined with meanings, which are fundamentally socio-culturally constructed. Yet, these cultural meanings are always embedded in the environment and the activity itself, thus, culture creates nothing that is outside of the nature, it only

transforms it to meet the ends of the human beings. The development of these socio-culturally shared meanings in ontogeny is constrained by laws quite similar to those of the history of culture, which does not mean that the history of culture somehow recapitulates in ontogeny, for there is always the aspect of organic growth in the latter. Further, signs mediate the transmission and accumulation of knowledge in cultures from one generation to another; by doing so, they make continuity in the history of culture possible.

The developmental approach in Vygotsky's work is especially designed to bring out a process, in which the individual mind of the child is transformed by culturally shared meanings onto a higher level of these cultural meanings in such a way, that the child becomes a member of that culture, and the emergence of higher mental functions is made possible. Sign systems, in a culture, mediate the development of the child to a member of that culture. Signs also carry the process of internalization of the socio-cultural meanings in development, which is what creates contiguity between the earlier forms of behaviour and the later, higher ones.

Vygotsky also observed different psychological functions, such as memory, perception, attention and practical thinking in relation to the development of higher functions, mainly the development of speech. He found that the functions change significantly in development due to the acquisition of cultural sign systems. With the help of words, the child can infer or deduce without relying on his own perception. Symbols in their conceptualized nature make thinking about things out of one's direct perception possible. Symbols *catch attention* in an act of speech by organizing the perceptual structure around their meanings. Furthermore, symbols have the advantage of also allowing the *coordination of an action* in some distant future, and an action at another place, not only at some present setting. By symbols people share thoughts with other people.

Conversely, signifying the environment makes the organization of practical activity, memory and perception possible, so as to serve the ends of intramental symbolic activity itself. For example, it makes the anticipation or imagination of some particular future possible by relating it to some selected events from the past that might cause that future. They syntactically organize events by aligning them in some logical sequence, thus organizing *memory*. Using different kinds of semantic organization of symbols, one can give meaning to the same event from basically uncountable points of view and one can choose a relevant operation to solve one particular problem. Or just as importantly, it makes thinking about thinking itself possible. Vygotsky said that "child is both the subject and the object of his behaviour" (*ibid.*, p. 27).

In this perspective, most importantly, signs, through the process of generalization of sign usage, allow a certain detachment of the mind from the situation of the environment, making it possible thereby for the human being to adapt and apply different sign systems, such as, for example, mathematics or maps, or throwing the dice, to ever new contexts. As Vygotsky pointed out (VYGOTSKY 1934 [1986, p. 6]), words do not refer to one object, they refer to a class of objects, thus generalizing experiences. "Generalization is a verbal act of thought" (*ibid.*) and it reflects reality quite differently from thought that is unorganized by symbols. The acquisition of language, similarly to all other symbol systems, when shared in a particular culture, guides the mind of the child onto the level of culturally shared meanings, which are applied on the situation of the environment wherever the child happens to be, including an exile from that culture, or solitude. In essence, symbols

bring a fundamental change in the relation of the thought to its environment, that is, it is a qualitative change in the pragmatics of thinking.

Psychological functions, such as reading, writing, logical thinking etc., are not homologous through the development of the child into becoming a member of a culture. The functions are ever changing in relationships between changing socio-cultural situations or contexts, and other psychological functions. Accordingly, the function of signs as a mediator in these relationships changes. There is a profound development in both the structure of the symbol and in the structure of sign systems in the course of the development of the child into a cultural being. Instrumentality in the thought of the child, for example, develops through several stages, according to Vygotsky, on the example of problem-solving in children (VYGOTSKY 1978, pp. 32-33), as the natural and cultural lines of development increasingly intertwine. First, the child is determined by the sign as an intermediate link in quite a similar way how the stimulus in the original stimulus-reaction reflex determined the reaction directly, and thus giving way to associative, uncontrolled meaning-making. Only during his development are the child's thoughts organized in such a way that he can make a useful, logically structured plan to solve his problem or achieve his goal.

The relationship between the sign and the first-level stimulus changes in the process of increasing instrumentality. The motivated relationship, dependent on some particular direct necessity between the concept and the sign, is slowly substituted by an arbitrary relationship where this characteristic connection between the sign and its object is missing, and the sign operation is carried out from the position of an abstract system. In this process, the communicative sign-process develops into a sign-process that organizes the user himself. Thus, the environment, or situation, becomes mediated by a sign-system, which the child can use for himself, signifying the situation independently of the determination from that particular situation, if necessary.

To conclude, Vygotsky's work is important for semiotics in describing the acquisition and development of the use of symbols in childhood. As the concept of sign and symbol are both central in his works in many domains, his work opens up for semiotics to describe the change in the symbolic sign through the course of ontogeny by describing the specific features of the symbolic sign emerging step by step through a series of transformations. Also, it relates the symbolic signs to other forms of natural knowing. In that, the Vygotskian perspective offers an exclusive point of view on the problem of the symbolic threshold.

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