

Interview

Clear the Clouds and See the Sun in the World of Vygotsky's Ideas: An Interview with James Lantolf

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Abstract

Lev Semenovich Vygotsky was one of the greatest psychologists of the twentieth century who, together with his close colleagues, Leontiev and Luria, created a new field of psychology: cultural-historical psychology. They proposed a solution to the crisis between theory and methodology in empirical research. Undoubtedly, he gained worldwide fame due to this contribution. Beginning with an introduction to Vygotsky's life, educational background, and academic experience, this paper briefly narrates his great achievements in the field of psychological research, as well as the historical development of his thoughts. However, due to Vygotsky's premature death, his thoughts are often misinterpreted by academia. Through an interview with Professor James Lantolf, a distinguished linguist from Pennsylvania State University, adjunct professor at Xi'an Jiao Tong University and pioneer in contemporary research on Vygotsky's thought, this article addresses the confusions of scholars in understanding his theoretical underpinnings.

Keywords

Cultural-historical psychology, methodology, consciousness, dialectics

Vygotsky is an internationally recognized psychologist and one of the most influential experts of the 20th century. He graduated from Moscow University in 1917 at the beginning of the October Revolution, which was a time of sharp political, economic, and ideological conflicts in the USSR. At the Second All-Russian Congress of Psycho-Neurology held in Leningrad in April 1924, he demonstrated his academic prowess through two lectures: "Reflexology and Psycho-Neurology in the Soviet Union" and "Methodology of Psychological Research", commenting on reflexology as the Russian version of behaviorism. Immediately after the conference, he was invited by Kornilov, the director of the Moscow Institute of Psychology, to join the institute and he became a full-time psychologist researcher. Over the following 10 years of his short life, he worked tirelessly, yearning with youth and wisdom for the birth of a new psychology. He exhibited the magnificence and splendor of his life with his strong desire for knowledge, his solid philosophical foundation and good academic upbringing, his faith in Marxism, and a persistent spirit of scientific exploration. He later became a member of the "New World Order of Psychology", which was a new type of psychology guided by dialectical materialism. Moreover, he was

actively engaged in criticizing traditional psychology and thus became a prominent figure in the struggle for a new theory. A group of young and promising psychologists at the institute soon rallied around him and became the backbone of the budding cultural-historical line of psychology.

Vygotsky's contributions to psychology were groundbreaking. His research and theoretical work covered a wide range of fields in psychology: social psychology, child psychology, educational psychology, psychology of art, psychology of thinking, psychology of personality, psychology of deficits, neuropsychology, pathological psychology, psycholinguistic illiteracy, psycholinguistics, psychotechnics, the history of psychology, etc. He was an expert among the world-renowned psychologists of his time—Wundt, Titchener, Münsterberg, Thorndike, James, Wertheimer, Koffka, Köhler, Sternberg, Freud, Jung, Adler, Külpe, Watson, Dewey, all of whom were prominent and influential in the Soviet Union at the time (Henley, 2017).

Between the 1920s and 1930s, in the face of the proliferation of schools of psychology in Europe and North America, Vygotsky, with extraordinary academic courage, wrote *Historical Meaning of the Crisis in Psychology: A Methodological Investigation* (1927/1997) in which he pointed out that traditional psychology was facing a profound crisis. His point of view manifested itself in the following ways: various schools of psychology attacked each other; the methodology was extremely confusing with idealism, materialism, mechanism, and dualism, which were in opposition to one another and so intertwined that they split into two separate and completely independent theoretical disciplines—the psychology of causality, and the psychology of relationships. Psychologists sit in the bastions of the academy, severely detached from social practice, with contempt for applied psychology, which has turned practice into a “colony of theory”, a “vassal” and an “add-on” to theory.

With a high degree of academic consciousness, Vygotsky realized that the crisis marked a historic turning point in the development of psychology. He also criticized traditional psychology's introspectionism, dualism, and naturalism, and began to lay the methodological groundwork for the construction of a new psychology. Furthermore, Vygotsky realized that the principle of dialectics could not be imposed on psychology from the outside, but that it should be “found within psychology”. Just as the universal principles of dialectics can be effectively applied to the fields of history and sociology, it is necessary to create a similar intermediate discipline as historical materialism as being used effectively in the field of economics, similar to the creation of Capital (McLellan, 1973). In this sense, Vygotsky's statement that “psychology needs its own Capital” addresses the “humanization” of traditional psychology (Tuleski, 2015). Naturalistically inclined, Vygotsky developed a theory of the cultural-historical development of psychogenesis and of the development of the psychology of humans. He distinguished between two types of psychological functions: higher and lower psychological functions. The lower psychological functions include involuntary attention, mechanical memory, lower emotions, impulsive will, etc. The development of these functions follows through the biological evolution. Each new lower mental function is accompanied by a change in the structure of the organism. Unlike the lower psychological functions, the higher psychological functions include attention, logical memory, conceptual thinking, higher semantically based emotions and anticipatory will, which are the result of a change in both the mind and the body. The developmental process is a psychological “humanization” process, subject to the constraints of the cultural and historical developmental laws of society. The process is developed in the course of human activities and is realized through their interaction with one another. The various advanced psychological functions of human beings are the internalized products of these forms of interaction and activities. Vygotsky argued that any and all higher psychological functions are brought to the stage twice in the development of the child: the first time as a collective; the second time as an individual activity of the child's mind ascending as internal psychological functions. (Lantolf & Poehner, 2014; Lantolf, et al., 2018)

Just as human practice is mediated by the tools of labor, the higher psychological functions of the human being are advanced because they are mediated by language or by the use of the other signs.

These “psychological tools”, known as symbols, are the means of mediation, which are themselves generated in the course of human material production and human interaction, as well as the product of sociocultural-historical development. They carry with them the historical and cultural experiences accumulated by human beings in the trajectory of their common activities. As the individual human being masters and transforms these psychological tools or symbol systems, he or she forms the basis of the original psychological functions. The higher psychological functions can be seen as arbitrary, abstract and mediated functions. If animals adapt to nature by changing the natural organs of their bodies, human beings adapt to nature by improving their organs as well as their tools, and by transforming their surroundings.

Vygotsky’s cultural-historical view of higher psychological functions, its closely related activity concept—internalization—and the principle of mediation are ideas that formed the cornerstone of his theory and the social origin of the human mind. With the joint efforts of his colleagues and students, these ideas later took shape into a new psychology which was completely different from traditional psychology. The establishment of the Vygotskian School, named after its highest and most prominent core members, including, in addition to Vygotsky, Leontiev and Luria, was the best acknowledgement of their achievements. Vygotsky borrowed the concept of historical dialectics from Marxist philosophy to explain the cultural-historical development of the human mind. He used dialectics as a methodological principle of psychological research in all fields of psychology, and applied the historical methodology (i.e., the genetic method) to the study of human psychology. The introduction of this methodological principle into the study of psychology corrected the naturalistic tendency of traditional psychology, which did not distinguish between humans and animals, and brought a new look to the development of the psychological discipline.

It is truly a pity that such an exceptionally talented thinker as Vygotsky died so young, at the age of 38. In his short academic career of less than 20 years, he left a valuable legacy to psychology, including 186 monographs and other works. The American scholar Tolmin once called Vygotsky “the Mozart of psychology”, saying that if one does not understand Vygotsky, one is not a modern psychologist (Tolmin, 1978).

As we all know, Vygotsky’s premature death prevented him from expounding his theoretical views and expanding his early empirical work. We suggest that Vygotsky’s thinking can be better understood based on core principles that transcend all aspects of his work. Therefore, we interviewed Prof. James P. Lantolf (1947–), professor emeritus from Pennsylvania State University, and currently adjunct professor at Xi’an JiaoTong University. He is a pioneering scholar closely related to the development of the second language acquisition in the research paradigm (Vygotskian) of sociocultural theory (SCT). In order to help scholars understand Vygotsky’s theory more accurately, Dr. Qin Lili interviewed Professor James Lantolf addressing three general questions: what to study, how to study and where to collect data in doing SCT research.

What have been the problems for psychology in its historical development as a discipline?

It seems to me that psychology as a discipline has confronted numerous problems over the course of its turbulent history. I believe the most complex and intractable problem was pointed to by Vygotsky in his 1925 publication, *The Historical Meaning of the Crisis in Psychology*—and this is the fact that psychology is not a unified field and to this day it continues to be a potpourri of subfields comprised of different theoretical and methodological perspectives. Vygotsky tried to create a unified general psychology with a specific object of study—consciousness or higher forms of uniquely human mental functioning, a specific unit of analysis—word meaning—and an effective research method—historical development, often concretized as the genetic method, the instrumental method, the method of double stimulation, or the experimental-developmental method. Unfortunately, while he was successful at laying

the foundation for a unified psychology, the field itself has not managed to create a unified approach to human mental life. Hence, most psychology departments are comprised of subfields that do not have much in common other than the fact that they engage in the study of psychology. Depending on the university, the country, and the proclivity of those who established psychology departments one can find subunits such as cognitive psychology, developmental/child psychology, clinical psychology, neuropsychology, social psychology, industrial psychology. And of course, one also finds in some universities psychologists in other departments, including education, anthropology, communication, and even on occasion applied linguistics.

How is Cultural-Historical Theory related to Cultural Psychology and Psychoanthropology?

Let me first define Cultural Psychology and Psychoanthropology. Cultural psychology is the study of the relationship between culture and the psychological processes manifested by the members of a particular culture. It proposes that mind and culture are integrated and cannot be separated without compromising each component. The relationship goes both ways and can be represented as follows: culture \leftrightarrow psychology. Psychological anthropology belongs under the heading of anthropology and for some it constitutes the fifth subfield of the discipline along with cultural anthropology, biological anthropology, linguistic anthropology, and archeology. Its concern is similar to cultural psychology (as a subfield of psychology) and as such it is interested in how membership in cultural groups shapes thinking, emotion, beliefs, motivation, etc. CHT (cultural-historical theory) is intended by its founder, L. S. Vygotsky to be a general theory of higher human mental life. Similar to cultural psychology it argues that there is an inseparable connection between culture and psychology; however, this connection is understood to be dialectical in nature. More importantly, CHT attempts to understand how humans are dialectically speaking simultaneously animals and not animals. That is, our consciousness emerges from the integration of biologically determined factors, such as innate instincts that we share with higher primates, and culture, which we do not share with other animals. A particularly distinguishing feature of CHT is its research methodology, which is derived from Marx's approach to the study of political economy—the genetic method that applies to five domains of human evolution and development: phylogenesis, sociocultural history of humans on earth, sociocultural history of individual societies, ontogenetic development of individuals, and microgenesis of specific processes. CHT was not intended to be a subfield of psychology; rather, it was and is intended to be a theory and approach to all forms of human consciousness. Consequently, it has investigated the psychological consequences and processes that unfold in all domains of human life.

What, why, where, and how do we study human cognition/psychology with sociocultural theory in general? In comparison with other subfields of psychology?

If one is a clinical psychologist, one studies the subconscious mind and human personality. If one is a cognitive psychologist one studies various forms of cognition—language processing, memory, attention, perception, facial recognition, etc. If one is a psycholinguist one studies how people process language. If one is a developmental psychologist, one studies the process through various aspects of cognition, emotion, thinking, imagination, personality, etc. developed throughout childhood. SCT does not study cognition per se. Its focus is consciousness, which is the integration of such cognitive processes as memory, perception, attention, emotion, beliefs, creativity, imagination etc.(that is, the elements of consciousness, without which there could be no consciousness). For Vygotsky, to study each process separately without regard for its contribution to the general functional system that is consciousness or without regard to how the overall system that is consciousness affects each component makes no sense.

This is because Vygotsky approached things from a dialectical perspective—the parts in the whole and whole as reflected in the parts of a system. Modern cognitive psychology in my view has two research methods both of which are at variance with SCT. One is controlled experiments that harkens back to the days of behaviorism where a participant is asked to respond to a particular stimulus and the researcher either measures the accuracy and/or some type of reaction time (e.g., time, pulse rate, eye movement, galvanic skin response, etc.) or all of these. In contemporary research Stimulus-Response (SR) methods are not acknowledged of course because behaviorism from which S~R arose is out of favor. Today S is called the independent variable (IV) and R is called the dependent variable (DV), but I don't see much difference between IV, DV and SR research. The other hot area of cognitive psychology is usually referred to as cognitive neuropsychology, which attempts to study brain processes through some form of physical measurement such as ERP, PET Scan, or fMR (Ferro-Magnetic Resonance) in the hopes of finding out something about brain processing, which to me is very interesting. The danger I see with this is the tendency to reduce the mind and consciousness to physical processes in the brain. All that happens in the brain, as Luria, the father of neuropsychology and the most important colleague of Vygotsky, understood. One needs a brain, and a human brain at that, to have a human mind, but in itself this is not sufficient. Said in another way—brain is a necessary but not a sufficient condition for consciousness. Culture is also necessary.

Many different research communities have tried to integrate Vygotsky's thoughts into their ideological traditions. What do you think of this in terms of the theory's promotion?

In principle I don't have too much of a problem with people borrowing various concepts and principles of the theory, provided the concepts and principles are not distorted to fit into some other research tradition. This is what I think happened with scaffolding, and the ZPD, as Xi Jiao and I argue in a paper that we recently published in the *Journal for the Theory of Social Behavior* near future. People have also tried to equate ZPD with Krashen's $i + 1$, which is utter nonsense. Having said this, as with any theory, extracting bits and pieces of it does not do justice to the theory and so I much prefer to work within the theory itself whereby the concepts, principles, research methods remain intact and therefore enhance the power of one's research findings.

**What is the essence of understanding Vygotsky as a methodologist and a psychologist?
How to distinguish them?**

In order to resolve the crisis, Vygotsky argued that before we can even begin to build a new and unified theory, it is necessary to establish a methodological framework within which the theory can be constructed. Therefore, he proposed three key notions that a general theory of psychology needed to satisfy to be a legitimate scientific theory: clearly defined object of study—consciousness; unit of analysis (or what to study to be able to understand the object of interest)—word meaning and later *perezhivanie*; research methodology—genetic method, which consisted of uncovering the origins of consciousness in the five different domains that I mentioned above. Once a framework is established, research then can begin at both the empirical and at the theoretical level. Specifically, Vygotsky focused much of his own research on children in ontogenesis. In this regard he was both a methodologist and a psychologist. Keep in mind though that the reason Vygotsky was interested in studying children was because he saw their performances as revealing of those processes that remain hidden in fully formed adult consciousness. Here he followed Marx's method of doing history backward. That is to understand and analyze modern capitalism, the most advanced political-economic system devised by

humans at the time. It was necessary to uncover its origins; so he had to go back in time to discover those processes at work in earlier political-economic systems that would result in the emergence of capitalism—so he studied slave societies, tribal societies, and feudal societies. Vygotsky did something similar in order to study human consciousness. Where does a psychologist look to uncover processes that remain hidden in adult thinking? Childhood as these processes are being formed, was one of the important answers to this question formulated by Vygotsky. He also recognized that one could also study the processes when they were somehow deformed as for instance in the case of children with neurological issues, or who were culturally deprived, as happened in the case of street children in the 1920s, or children raised in orphanages. Luria did his part by studying what happened to consciousness when adults suffered brain damage or when they lived in traditional societies without formal schooling or written language—the peasant communities in Uzbekistan during the 1930s.

What is exactly the methodological framework constructed by Vygotsky for the study of human as a social being and their consciousness?

I believe it is important to distinguish Vygotsky as a methodologist and the method he used in his psychological research. So, what I explained above describes his methodology—object of study, unit of analysis, historical change. As for his research methods for conducting empirical research he proposed what he variously referred to as “experimental-developmental method”; “instrumental method”; “method of double stimulation.” Said in a slightly different way, this method he used for empirical research is a version of the ZPD. That is, he would ask participants, adults, children of different ages, to carry out a task that was in some way difficult and likely to be slightly beyond their ability to do independently. Then we would offer them various forms of mediation to determine if and how they used mediation to carry out the task. The idea of course is based on the theoretical principle that human consciousness is mediated by sociocultural artifacts, including above all language. In this way he would discover something of the process of internalization of mediational means, which for adults, in most, though not all cases can be done without overt external support. Why SCT matters is because it is focused on what makes humans unique from all other forms of life. No other species has the kind of consciousness that humans do nor can than do with their versions of consciousness what humans can—intentionally change nature and humanize it.

What does language mean to Vygotsky’s theoretical underpinnings?

Language is crucial because it is the glue that holds the elements of consciousness together. The development of language in ontogenesis is what frees humans from being controlled or regulated by immediate context. As the semantics of language develop as children pass through different ages, they develop a way of thinking about reality that extends the temporal and spatial constraints of their immediate environment. They can learn and think about aspects of reality that they do not and most likely will never experience—something that schooling provides for us. And as the meanings of language expand beyond the here and now, we find ourselves able to communicate with others about aspects of reality that we did not experience directly. This happens when someone tells you a story about what happened to them, but you did not witness directly. If your meanings are limited to the here and now you will not be able to understand the meaning of what someone else says to you unless they limit what they say to about the here and now. This is why it is difficult for children to talk about or to understand adults when they discuss the past and the future. As Vygotsky discovered, young children, before language emerges are trapped in visual thinking. That is they can only think about what they can see. This is why when young children close their eyes they think what they were looking at disappears. They have no

sense of object permanence. When language emerges, children begin to think symbolically and through the categories available in their language.

People are often confused with Unit, Unity and Element, what are the differences between them according to Vygotsky's thinking?

Unit is comprised of two or more components or elements that represents the object of study and make that object manageable to study. So, Marx reasoned that if one wants to study capitalism, one could not possibly study the entire system at once. It is just too large and complex. Therefore, he needed a unit of analysis that was infused with what he considered to be the essence of capitalism—commodity, or value form. Vygotsky recognized the importance of a unit of analysis for psychology. Given that the object of study is consciousness and consciousness is a functional system comprised of many subcomponents that together were complex, he proposed a unit that should reflect consciousness but at the same time would be manageable. He proposed word meaning. This is why language was so important for his thinking. In the development of word meaning during ontogenesis one could see evidence of the development of consciousness. The components of word meaning that form the unit are thinking and speaking. That is, he reasoned that when one wants to communicate to someone else, it is necessary to push your intentions into the language you have available. If you don't have language available, as in the case of young children, you have a hard time expressing and even coherently forming your thinking. So, we can say that for Vygotsky the unit of analysis for the study of consciousness is word meaning which is comprised of two elements: thinking and speaking. These cannot be broken down further as is the case with all elements. If one thinks one speaks to oneself and if one speaks one must think. Therefore, the unit of analysis is a unity comprised of two elements—thinking and speaking. Later in his theoretical thinking and just before he died in 1934, Vygotsky formulated a second unit of analysis of consciousness comprised of the unity of emotion and intellect—*perezhivanie*.

What is *perezhivanie* exactly in Vygotsky's view? And how do we apply it to SLA studies, i.e, where do we look for it, and how to collect and analyze the data?

In Vygotsky's writings, *perezhivanie* meant two things. In his early work, especially the psychology of art, which was his doctoral dissertation exploring how and why works of art, in particular literary works, have an emotional impact on people. How do authors infuse their works with emotion and why in some cases there is an impact on some readers, viewers, or listeners, and not on others? Later, toward the end of his life, he reintroduced the concept but with a new theoretical meaning that isn't found in the everyday Russian term that he used in his dissertation on art. This new meaning was essentially a new unit of consciousness comprised of the unity of emotion and intellect and was intended to capture the interaction between the person and the environment (Social situation of development). In childhood, children are at some point dominated by their emotions, if they are unhappy they cry, if they are happy they laugh, if they don't like something (i.e. a specific kind of food) they refuse to eat it, etc. As they mature, and begin to develop their language and the meanings that it imparts from the society, they begin to understand the world and its relationship to us through the mediation of meanings. At first these meanings are very much context-bound and very concrete. Over time they become more generalized across contexts and also include abstract concepts including those that describe emotions. This means that at first children do not know or understand consciously what specific emotion they may be experiencing. They just know that they experience something. When they are able to assign meaning to the emotion as they acquire words such as happy, sad, angry, frightened, joy, love, hate, etc., they come to not only experience

emotions but they understand what those emotions are; and they cannot just experience them somatically but can understand them semantically through their developed intellect. This means that they now have an enhanced capacity to control their emotions, which gives us volition and free will. Adults may feel an emotion, such as anger, fear, hatred, love, etc. but because they understand what they are feeling in a given situation (SSD=social situation of development) they have a greater chance of controlling and intellectually dominating the emotion. And we can even talk about loving or hating someone or something, or fearing someone or something without experiencing that particular emotion at the time of speaking. And we can separate feeling from affect whereby we can experience contradictory emotions such as when couples have arguments over a particular circumstance but continue to love each other. Similarly, we can say we like studying or teaching languages but at the same time because of a particular circumstance in which we don't like the teacher's approach or a learner's behavior we can experience and express negative emotions toward the circumstance.

In what ways does human consciousness differ from that of animals? What is essential or special about human consciousness? What makes humans unique?

Humans and higher primates and other higher forms of animal life, and according to some neurobiologists, all forms of animal life, from high to low, have a degree of consciousness meaning that they are at least minimally aware of their surrounding and maybe even of themselves. What makes human consciousness unique is twofold: (1) we are aware not just of the environment and that we may be doing something in it, but we are also aware of the specific action we are performing and what its purpose is. To use an example from Vygotsky, we can be aware not only that we are tying our shoes or eating dinner, but we can also become aware of the actual movements involved in those processes—e.g., how we move our fingers to manipulate the laces or how we pick up pieces of food with chopsticks and place them in our mouth to chew and swallow. Because we are aware of this we can control the process, especially when something goes wrong (2) what Vygotsky called the “double experience”; that is, humans can act mentally (i.e., plan an action) before carrying it out a second time in the material world and we can contemplate our actions after the fact and revise them as necessary in the future. This reduces the risk of making mistakes or committing errors that can be costly, in terms of money and/or bodily harm. Animals do not have this type of consciousness. Their actions are not planned mentally before being carried out physically.

Is Vygotsky's consciousness the same as cognition? What are the differences and similarities?

Consciousness is not the same as cognition. Consciousness is a functional system comprised of various interacting elements, such as perception, attention, memory, imagination, belief, creativity, emotion, and speaking. These are individual cognitive processes that cannot be reduced to something more elemental. They are the components that operate together to form the system that is consciousness. If any of the elements is removed, then consciousness is disrupted if not destroyed altogether. In contemporary psychology, researchers study memory, attention, perception, speaking as if they were independent processes. Their study as such then compromises the system that is consciousness. While one can study each element separately, unless it is also studied in terms of how it relates to, and interacts with, the other elements and thus contributes to consciousness it is not fully understood.

What did Vygotsky mean by saying consciousness is a functional system or a unity?

What unites the elements in the system, how are they united as a unity and how does the unity/

functional system work? I think I explained this in my earlier answer on unity and unit of analysis. A functional system, such as consciousness, or in the case of our bodies, the respiratory and digestive systems, is comprised of individual elements (memory, perception, attention, speaking, etc. in the case of consciousness; nasal passage, trachea, lungs, intercostal muscles, diaphragm, in the case of the respiratory system). The system has a specific function that is invariant: consciousness, to regulate and plan our activity both mental and physical; respiratory, to exchange oxygen and carbon dioxide in the body. If any component of the system is damaged for some reason, we can often compensate by either offloading the function of the damaged system onto the other systems or by bringing to bear some external form of mediation. You can read about how this was done by Luria in the case of brain-damaged people in his 1973 book *The Working Brain*. In the case of the respiratory system we invented machines to help people breathe, such as the so-called iron lung from the time when polio was a pandemic in the 1950s before a vaccine was developed.

Is it the brain or your mind that is thinking? What makes the difference? Why does Ilyenkov (2012) say “brain is not a candidate for explaining consciousness”? How did Marx distinguish between mind and brain? What influence did Marx’s ideas have on Vygotsky’s?

This is an enormous question that I cannot answer adequately in the current format. I will try to at least respond in part to each of the questions. The brain doesn’t think any more than the heart thinks. It is an organ that generates electro-chemical impulses. The mind doesn’t think either. The person thinks and to do so, as Arievitch (2017) notes, requires a body and a world and without these components thinking is not possible doesn’t happen. What we experience as consciousness is then a consequence of the entire functional system comprised of body (that includes the brain) and the world (culture that is the world as idealized by human activity). The reason Ilyenkov makes his comment about brain is because the brain doesn’t think. It is a system that thinks. Without idealized nature humans would not think either, at least not as humans. I am not sure if Marx said anything about the brain. Vygotsky wrote a good deal about the brain as a functional system especially in the case of childhood. He and Luria both had medical degrees because they knew it was important to understand the entire functional system responsible for consciousness. Marx’s influence on Vygotsky is seen primarily in his approach to science, especially with regard to what Vygotsky called “methodology” (not research method), how to go about building a science of human psychology on dialectical materialist principles. He understood, as did Marx, that one could not just borrow the raw principles of dialectical materialism—the famous principles of unity of opposites, quantitative > qualitative change, negation of negation; thesis, antithesis, synthesis. One needed an intermediate theory. For Marx this was historical materialism, which focused on analysis of the most advanced sociopolitical system of the time—capitalism. To carry out the analysis Marx understood one needed concepts, units of analysis and a research method. The concepts for Marx include wage labor, capital, credit, circulation, modes of production, production-consumption, etc. Unit of analysis as I explained earlier is the smallest and therefore most manageable unit that reflects the whole and that can be used to analyze the system. For Marx it was value form (commodity). Marx argued that to understand a sociopolitical system that was highly complex and functioning more or less smoothly required going back in time to uncover those factors that resulted in its formation. So, he set out to study history backwards, as I explained above. Vygotsky, following Marx, knew that psychology also was an intermediate theory, but he knew he could not just borrow historical materialism as formulated by Marx because the concepts and principles necessary to understand sociopolitical economy would not apply to psychology. So he needed a new set of concepts and principles as well as a different unit of analysis (word meaning, and later *perezhivanie*). He also borrowed Marx’s concept of history as a research methodology

and so established the 5 genetic domains I discussed earlier and used these domains to study history of consciousness backward—from adults to children, from humans to primates, from technologically developed societies to tribal and traditional societies, from a function to the point where the function didn't exist. One final point is that for Vygotsky the mind emerges from the penetration of the brain by external sociocultural activities. Thus, children are of course born with a brain, but they don't really have much of a mind until they begin to appropriate and internalize the concepts (every-day and academic) of their cultures through the social interactions they engage in with others as mediated by symbols and signs, most pervasively imparted through language.

Where does consciousness come from according to Vygotsky? What role does language play in our consciousness development?

Consciousness results from the dialectical unity of biology and culture. Our biological inheritance that emerged through evolution and our cultural inheritance that emerged from history. Language, or more properly, speaking, is essentially the glue that holds the elements of consciousness together. Its development, especially with regard to meaning, allows us to communicate with others and therefore come to know events and objects in the world that we have not ever experienced and it frees us from the constraints of the here and now. In short, it comes, as I said in my previous response, from the internalization of the concepts created by humans as they humanize nature. This internalization process restructures the brain and forms the function system that is consciousness.

Would you elaborate on what Luria (1982:25) says “one must seek the origins of conscious activity in the external processes of social life, in the social and historical forms of human existence”?

This is the core of the theory—it is the claim that higher human thinking (consciousness) is the unity of biological inheritance and our cultural inheritance. So, it means that a human biological body is a necessary condition but not a sufficient condition for consciousness to emerge. It requires participation in humanized nature—that is human cultural activity. Given that meaning is at the heart of human development, we ask, where do meanings come from? They come from culture as presented to children through social interaction in everyday and schooled life. They don't come from our biological bodies, as is implied in Chomsky's theory. There is no organ of language in the brain from birth.

What do you see as the role of explicit/implicit instruction in children's first language acquisition and adults' second language acquisition? From the point of view of Vygotsky's thought, how are they different or similar?

For Vygotsky education as a form of development makes what is hidden visible. If the world were organized the way it appears to our senses and our common sense understanding we would not need education and we would not need science. What we are exposed to in school is the findings of scientific (i.e., rigorous research) in any object of study, including language. The issue then is how we make knowledge explicit to children and to adults. Adults can deal with representations such as graphs and diagrams that children usually cannot. So we need to use objects, such as cartoons, dolls, etc. for children to enter into interaction with explicit knowledge. In first language development, Vygotsky makes it clear that one of the consequences of formal education is to make language visible, as happens when

children learn to read and write in school. When things become visible to us we are likely to enhance the understanding and control we have over them, including, but limited to, language. Education also makes hidden features of the material world visible to us in ways that everyday life does not, or perhaps, cannot.

What is the significance of culture for human psychological development? What does he mean by “culture”?

Culture is history with us in the present. That is, it is the result of the humanization of nature (idealization, in Ilyenkov’s terms) by purposeful human activity. It results in the creation of physical objects, such as tools or even entire cities as well as symbols including art, music, painting, and language. Culture enables human to say NO to events in the world that impact on us in a negative way. Right now medical science is focused on developing a vaccine to protect us from the scourge that is the corona virus. This is a collaborative effort of human scientific culture. Animals don’t have this option of saying NO, other than through the course of biological evolution. If a lethal virus attacks an animal population there is a great risk that the entire population could be wiped out. If some manage to survive because of a mutation that allows some individuals to resist the virus they will survive and reproduce the population over time—a population that should be resistant to the virus. Humans have the option of using their culturally developed consciousness to produce an external form of resistance that we then internalize through vaccination.

There are three forms of mediation: self-regulation, other regulation, and object regulation. Could we say regulation and mediation are the same?

As we know that in cognitivism, they have the term of self-regulation too. Is that self-regulation the same as in Vygotsky’s thinking? Let me answer the self-regulation question first. Yes, both cognitive psychology and SCT deal with self-regulation and in some ways they use the concepts in a similar way. However, as far as I know, the cognitive perspective does not link SR to earlier forms of regulation, that is object and other regulation; moreover, it does not assume that the origin of all forms of regulation reside in social relations. Instead it considers SR to be a process that arises from inside the individual. With regard to SCT, mediation and regulation are similar concepts, however, what is missing from the conception of mediation is “control”. In other words, mediation is a general assumption that higher forms of human psychological functioning, (i.e., consciousness) is shaped by the particular social relations and artifacts that a culture makes available and that are internalized during the process of development. In the earlier stages of ontogenesis of children into adult life, specific forms of mediation tend to dominate and therefore control the child. By the time adult consciousness emerges we develop the ability to exert greater control over the forms of mediation that we use to regulate (control) our own behavior, both mental and physical. In early childhood, thinking is largely controlled through visual input. That is, children think through the objects and events they perceive around them. If they can’t perceive something, they can’t think about it and for the child it doesn’t exist. This is why children are trapped in the present and are unable to think about the past or the future, which are not directly visible. It also explains why when they close their eyes or turn their backs on an object, they assume it disappears. Consequently, they need the assistance of others, usually parents to help them find their way in the world. This would then be other regulation—that is they need the mediation provided by others to control their own mental and physical behavior. For example, when children learn to walk, they often need to hold on to a parent’s hand to support themselves. When they learn to eat with utensils, chopsticks, they need the help of an adult to know what the utensils are for and how to use them. Once we become adults, much most of our behavior, mental or physical, is now under our own intentional control (reflexes of course are automatic and non-planned behavior), but because we have internalized cultural ways of thinking and

doing things, even though we are in control (SR), we use cultural ways of behaving. This is why Asian ways of eating and preparing food are different from Western ways of eating and preparing food. But even when we become adults, we can encounter difficulties that necessitate the assistance of others or artifacts and then we re-access other or object regulation in order to regain our SR.

Would you elaborate on the genetic law of cultural development?

This law simply states that our higher functions arise from our interactions with representatives of our cultures, either other individuals or the artifacts that they have created, including symbolic artifacts. Thus, the law states that in order for higher functions to develop, we must participate in social relations. Said another way, intrapsychological behavior develops from interpsychological activity.

How can genetic and dialectical methods be used for the methodology of SCT research according to Vygotsky's ideas? How do they differ from the hard science approach?

The genetic method argues that explanation is not about predication but about uncovering the history of a process. The history involves both our biological genes as well as our cultural genes that become dialectically intertwined as children grow into adulthood. So, the method requires going back in time when adults were children and tracing how children develop into adults from newborn status through early childhood, to pre-school, then school age, adolescence and eventually to adults. At each stage of the process we encounter different social relations and artifacts as our environment expands, and this shapes and reshapes our consciousness. This is tracing history in real time. Another way of examining the process of history is through "apparent time", whereby we engage people of different ages in the same task and assess the extent to which they can carry out the task independently, and if they cannot, we offer them different forms of mediation to assess if they are able to use this mediation to regulate their behavior in order to complete the task. This approach Vygotsky referred to as the instrumental method or method of double stimulation. According to Vygotsky, the method must be compatible with the object of study. Borrowing methods designed to study others aspects of reality (e.g., physical reactions in inert reality, cellular processes in living reality) is problematic because, as Davydov (1982) argues that the natural sciences approach, owing to the successes it has made possible in the study of inanimate objects, creates the illusion that the problems of psychology, too, can be tackled in terms say, of biochemistry and physiology.

History has a profound impact on human cognitive development, according to Vygotsky, what about future? Is it overlooked in his thinking?

The key to the future for Vygotsky is the ZPD. Here we do see prediction which states that what someone can do today with assistance/mediation he or she can do tomorrow without assistance, or independently. In a sense the ZPD is a way of bringing Marx's notion of history forward into psychology.

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