The Cultural-Historical School

In working towards establishing a general psychology, Vygotsky (1927/1997) was intent upon eschewing any positivistic biases. As he pointed out, even the most highly immediate, empirical fact, derived through scientific procedure, contained an element of abstraction. Rather than being the raw, natural material that is selected from immediate experience, in view of particular features, scientific material is material whose raw form has been elaborated upon (categorized or conceptualized in some way). To the linguist, every word comprises a theory, and in science every fact that has been described is a theory. Even the most primitive of scientific facts must be recognized as concepts. To name an object is to apply to it a concept. Vygotsky (1962), in his final book, pointed out, "facts are always examined in the light of some theory and therefore cannot be disentangled from philosophy" (p. 11). This does not mean that such phenomena as scientific concepts are unrelated to objective phenomena. Every concept of a natural-scientific character is always possessing of an aspect that is real and concrete, regardless of how distant the abstraction is removed from empirical fact.

Vygotsky was strictly opposed to the notion that a real science will only deal with that which is provided through immediate experience, i.e., positivism. To limit scientific study to that was a serious error he argued. It was not the job of science to reduce everything to experience. Physics studies, after all, what is not available to direct inspection. Traces are studied and interpreted, and their meaning is disclosed, and that is a method that is equal to immediate observation in its fruitfulness. Analogy and direct evidence can be considered to be identical (as methods in assessing scientific truths) since both have to be confronted by critical examinations and each is as liable as the other to yield truth or deception. After all, Vygotsky reminded his readers, direct evidence informs one that the sun circumnavigates the earth rather than the other way around; the immediate perception/conception is the false one. Interpretation, as it applies to the case of psychology, is an indispensable necessity. The term empirical, Vygotsky recommended, has numerous interpretations, e.g., based on experience, or lacking a place for soul, or without countenance of metaphysics. This is largely a clarification of what such a psychology will not deal with rather than what it does deal with. Psychology is not a single empirical system, and all of those systems that exist are rooted in metaphysics.

Two questions arose from this for Vygotsky (1927/1997). First, there was the question of what it was that was common to each science, and second, there was the issue of what had caused the split of empiricism into a naturalist branch and an idealist branch. The materialist was rejecting dualism in favor of a psychology based on the idea of causality and the idealist rejected dualism emphasizing a psychology based on teleology (purposeful, intentional action in the world). A theory was needed that would help in understanding mind but one that was grounded in psychological materialism, one that would lead to a dialectical materialist psychology. As a dialectician, the path to current psychology would include the history of psychology, both its successes and its failures. In the end though, a true psychology will be one that avoids any non-scientific consideration of mind while, at the same time, incorporating mind within its subject matter.

Leontiev and Luria, who were collaborative members with Vygotsky in a working group called the "troika" or group of three (Luria, 1979), have reported that a scientific analysis, in the estimation of Vygotsky, had to preserve a deterministic approach to psychological phenomena (which should not be taken to suggest determinism); one must trace their origins,

and discover their characteristics (Leontiev and Luria, 1968). In this, such phenomena would be analyzed into units that were specific to them. Attempts to arrive at such units from the perspective of the idealist, to consider the units to be independent, conscious phenomena, were unacceptable since they would only preserve and deepen the crisis. Neither did Vygotsky accept the reduction of all psychological processes to the physiological, conditional reflex. Vygotsky would take a very different tack.

His solution was to go beyond the naturalistic study of the psychological activity of humans and to interpret it as a product of sociohistorical development. While not widely emphasized, in taking such an approach, Vygotsky and colleagues would be opposing the widespread support of the idea of individualism. Vygotsky's plan, according to Luria (1982), seemed rather paradoxical:

> *In order to explain the highly complex forms of human consciousness one must go beyond the human organism. One must seek the origins of human conscious activity and `categorical' behavior not in the recesses of the human brain or in the depths of the spirit, but in the external conditions of life. Above all, this means that one must seek these origins in the external processes of social life, in the social and historical forms of human existence*. (Luria, 1982, p. 25, emphasis in original)

The subject matter of human psychology is not just the person's inner life. It must be conceived of as involving the reflection, within, of the outer world—a reflection that develops and grows through active interaction with the external reality.

Overcoming the Crisis

Psychology had to be built afresh. According to Vygotsky (1962), so long as there was lacking a generally received system that incorporated the available psychological knowledge, new and important factual findings would lead, inevitably, to the generation of a new theory to account for those facts. The result would be an overabundance of mini-theories. To arrive at his general theory, Vygotsky concluded that he had to go beyond the naturalistic study of psychological phenomena, that is its biological basis, and to interpret it, instead, as a product of sociohistorical development (Leontiev and Luria, 1968). The nature and structure of consciousness would have to be studied as a product of social history.

> The chasm between natural scientific explanations of elementary processes and mentalist descriptions of complex processes could not be bridged until we could discover the way natural processes such as physical maturation and sensory mechanisms become intertwined with culturally determined processes to produce the psychological functions of adults. We needed, as it were, to step outside the organism to discover the sources of specifically human forms of psychological activity. (Luria, 1979, p. 43)

Historical materialism (the Marxist theory of society) had proposed that complex psychological phenomena were the product of community life and that consciousness is a historical product (Leontiev and Luria, 1968). It was Vygotsky who was the first to relate that proposition to concrete psychological research.

Vygotsky's basic premise was that a distinction had to be made between two levels of psychic processes—*natural* and *cultural*. The differentiation is readily apparent in a comparison between human and animal. Human activity, unlike that of the animal, is based upon the material and social mediation of behavior and the use of means, i.e., tools, symbols, and language. With the appropriation of such means, humans were, are, and will be liberated from the demands of the immediate environment. Physical and intellectual tools or instruments intercede between the immediate environment and how that environment is dealt with. Animals are almost wholly dependent on their inherited traits but humans learn to master cultural products, e.g., tools and language, acquired through social interaction, and through them, they are liberated from enslavement by nature. Vygotsky took inspiration from a statement by Marx (Luria, 1979):

> A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour-process, we get a result that already existed in the imagination of the labourer at its commencement. He not only effects a change of forming the material on which he works, but he also realises a purpose of his own that gives the law to his modus operandi, and to which he must subordinate his will. (Marx, 1887/1954, p. 174)

Vygotsky came to realize that the fundamental difference between human and animal was the onset of culture. That meant, further, that the evolution of the human psyche was conditioned by, besides biological evolution, the laws that drive the historical development of social organization.

Higher Mental Processes

Whereas the adaptations that an animal makes to the changing conditions of the environment results in biological changes in the organism, humans have, as a central trait, the active alteration of the environment through their own engagements with it. Such an active alteration of nature was the foundation of human history and it presupposed some sort of alteration in human behavior. For instance, whereas the web construction of the spider suggests instinct or species-specific behavior patterns that are inherited, the work of the weaver suggests intent and design, i.e., the final product is worked out mentally before the work is engaged in; there is an active engagement with the objective environment rather than mere reactive, stereotyped responses. This active alteration of nature could not, in Vygotsky's assessment, be based on signalization since that was a passive registering or reflection of natural relations.

The creation of artificial, external connections (signs) for the regulation of behavior was due to the co-occurrence of two factors (Vygotsky, 1977). The first was the conditional reflex (conditioned response). The second, and this is what was decisive to higher psychological functions, was social life and the interpersonal relations that undergirded, and prepared the way for, the appearance of new regulatory principles in behavior. It was in the evolving social activity that humans created psychological connections that were highly complex systems of signs, created artificially, and which, along with the first factor, made a new regulatory principle possible.

In social life the behavior of the individual is subordinated to the requirements of society by the actions of the social-others. Through the generation of complex signifying systems (systems that support communication) the connections formed in each individual's brain could be guided and regulated from without. The influence of speech upon another person thus fit into the pattern of the conditional reflex. Reflexologists had maintained this in conceiving of the word as a conditioned command, e.g., when a dog is commanded to sit and does so. Pavlov called speech the "second signaling system" and he conceived of it as the highest means of regulating human behavior (Luria, 1957). The capacity to understand speech is, as Vygotsky (1977) emphasized, more complex than the mere responding to a command, as with the dog, and to truly understand human speech one must attend to its active use (not mere responding to verbalizations). Human activity, moving beyond the forces of nature, took an active role in effecting mental processes. This was a new evolutionary process beyond natural selection—that of cultural evolution, and it was this that was responsible for higher mental activity.

> It is not, of course, that biological evolution has come to a stop and that the species "man" is a stable, unchangeable, constant quantity, but rather that the basic laws and the essential factors which direct the process of biological evolution have receded to the background and have either completely fallen away or have become a reduced or sub-dominant part of new and more complex laws governing human social development. (Vygotsky, 1930/1994, p. 175)

Two Periods in Human Evolution

Natural selection and the struggle for survival, the two factors that guide animal evolution, are stripped of their decisive importance in passing to the stage of human, historical development. The course that human history will follow is now under the regulation of new laws. Human phylogeny (species development) takes place during two periods (Leontiev and Luria, 1968). First there was biological evolution, as dealt with by Darwin, which had a genetic basis and which was restricted to the lower processes. Second was human history or sociocultural evolution, as Marx and Engels had conceived of it, and which pertained to the higher psychological processes. Developed during human history, it was these that had to be mastered by children through processes of social interaction. We see operative here a reliance on the quantity/quality dialectic and, as Luria (1979) indicated, the acceptance of the troika's German contemporaries' (e.g., the Gestalt school) emphasis on the emergence of increasing complexities in psychological phenomena. It was through the active use of signs that natural psychological processes were transformed into higher psychological processes.

The Importance of Tool and Sign

The use of tool and sign were, for Vygotsky, extremely important to the transformation of biological human into socialized human, to the shift to humans that were operative at a higher level of organization and activity. Both tool and sign involve mediated activity (Vygotsky, 1977). A tool has the function of being a conductor of the human influence upon the object of the activity, it is oriented externally, and it has the effect of rendering changes in objects; in this it is a contributor to the human mastery of the environment. Early tools, for instance the

digging stick and the club, increased the power of the human to act in the world; the less powerful fingers and nails were replaced by the strength of the stick in digging, or the less effective fist was replaced by the more durable and destructive club in the delivery of a blow. The tool is thus a physical mediator between the action of the human and that which is acted upon.

Unlike the direct, mediating effect of the tool, the use of a sign belongs to the category of indirect activity since it is the essence of the sign to effect alterations in behavior through stimuli (signs) that act according to their psychological natures. This changes nothing in the object but is a means of altering internal, psychological activity. Tools are oriented externally but signs are oriented internally. Through the use of artificial means, there is a transition to indirect activity and that changes the whole psychological operation in a way that is comparable to how tools alter the natural activity of the body. Furthermore, tool use defeats the idea that development is simply a matter of the unfolding of a biologically predetermined activity system. The use of signs is indicative that the organic activity system is not the same for every psychological function. Mediated memory through the use of mnemonic devices, as an example, differs from natural, biologically based memory. Vygotsky, from the beginning, was forced to reject the notion that the higher mental processes had the same representation in the cortex as the elementary, physiological processes did (Luria, 1966/1967).

The relations that form in the brain as a result of mental development involved adjustments to social/historical organizations and the appropriation of signs and tools (Luria, 1966/1967). That meant that the so-called localization of higher functions in the nervous system had to be considered a result of development; there was no innate predetermination of cerebral organization in higher mental functions.

> In forming society and using tools, man created new, indirect forms of relationship to the external world to which he had formerly accommodated himself and which he now controlled. The formation of language during the process of social development provided him not only with a new, hitherto unknown method of communication but also with a new tool for ordering his mental processes. The higher mental functions which originated in social labor and speech enabled man to rise to a new plane of organization in his activity. By adapting the methods created for verbal communication to his own needs, he developed those forms of intelligent perception, voluntary attention, active recall, abstract thought, and voluntary behavior which had never existed in the animal world. (Luria, 1966/1967, p. 54)

It is in the process of objective activity in the world and through communication with adults that the child undergoes mental development; it is not simply a maturing of innate tendencies.

Mastering social inheritance, rather than being mastered by inherited traits, is the deciding factor. In that way, the use of tools and signs was essential to the forming of consciousness (Leontiev and Luria, 1968). Human history is both the history of the growing dominion over nature through tool invention and technological perfection but also the gradual control of oneself through the creation of the technique of signs. Elementary mental functions and higher mental functions were different and there were four criteria by which they were demarcated by Vygotsky (Wertsch, 1985). First, control over the function shifts from outside, from the external environment, over to the individual, on the inside, and it becomes voluntary self-regulation. Second, the individual becomes consciously aware of those mental processes. Third, the higher functions are rooted in social interaction and, finally, signs mediate the

higher mental functions. As their central characteristic, the elementary functions were determined directly by environmental stimulation. The central feature of the higher functions is the involvement of self-generated stimulation; artificial signs are created and used and become the immediate cause of behavior. Think of making a list for shopping as an example. The use of signs like maps, numbers, and words to master internal psychological processes means that humans master themselves as they master nature—from the outside (Leontiev and Luria, 1968). The psychological exploration of consciousness had to begin with a study of the laws of the evolution of mediated mental processes since consciousness is created by forces outside of the individual through practical activity in the world. The problem of phylogenesis and ontogenesis could not be overlooked in the effort to come to grips with developed human consciousness. Taking a developmental approach to psychological phenomena would be central to the efforts of the proponents of cultural-historical psychology.

The Genesis of Behavior

From his perspective, Vygotsky believed that it would be necessary to recognize that all mental functions have a history and that to understand them fully they must be looked at and considered with that in mind. There were three main levels or lines in the development of human behavior—evolutionary, historical, and ontogenetic (Vygotsky and Luria, 1930/1993). The culturally developed person possesses behavior that is a product of these three developmental lines. It is necessary to consider all if one is to establish a scientific understanding and explanation of human behavior.

The evolutionary line was that of Darwin. It will not be considered further except to mention that it was the necessary precursor to that transitional point that led to the reorganization of the behavioral processes of the ancient humans. The invention and use of tools marked the end of the organic stage in behavioral development and would take further development along a new route that would create the main prerequisite, psychologically, for the historical development of behavior.

Cultural Evolution

The question of cultural evolution was most clearly confronted by Vygotsky and Luria (1930/1993) in a text on the history of behavior. The issue of central importance was that of critical stages or turning points. This was addressed through a focus on tool use by apes and the use of signs and labor by primitive humans (meaning culturally underdeveloped) humans. Additionally, they considered the dual lines of psychological development in contemporary infants; those involving natural and cultural forms. Each turning point, in line with the quantity/quality dialectic, is differentiated upon the basis of something new having been introduced. In the case of the cultural stage it is, of course, culture that is new. It would be appropriate to ask then, what is culture? What distinguishes a cultural behavior from natural behavior, from the perspective of modern anthropology, is that it involves behaviors that are 1) learned, 2) involving abstractions, generalizations, ideas, and concepts, 3) active, extragenetic transmission (not inherited biologically), and 4) intentionally constructed objects

or artifacts (Park, 2000). This is certainly consistent with Vygotsky's conceptualization of culture.

Research in Uzbekistan

Luria (1976) provided an account of a research project that involved two expeditions (1931 and 1932) to Soviet Central Asia and the region known as Uzbekistan (a brief account is available in Luria, 1971). The aim of the expedition was to examine the differences that might exist in the psychological processes of people who were living in a relatively primitive social environment and to note any changes in psychological functions that arose due to changing social conditions (Luria, 1932). A further intent was to test the validity of the Gestalt proposition regarding the universality of the structural laws of perceptual organization as a natural component of human cognitive processes (Luria, 1976). It is worth noting that Kurt Koffka, one of the founders of Gestalt psychology, went on the second expedition in which Gestalt theory was being challenged for its assumption of universality (Luria, 1934).

The Hypothesis.

Luria's purpose in going on this expedition was not so much to test the universality of Gestalt principles but, instead, to test the validity of Vygotsky's theory. Unlike some of his contemporaries, e.g., the Gestalt psychologists, Vygotsky was of the view that, in order to understand the nature of higher psychological processes of humans, one would have to go beyond the limits of the organism and seek the roots of these processes (e.g., abstract thought and active attention) in the environment as it has been formed historically (Luria, 1971). The elementary processes of sensation, movement, attention, and memory, Vygotsky proposed, were transformed into higher processes (e.g., voluntary attention and voluntary memory) by forces external to the individual. The natural child is refashioned into a cultivated human being through active engagement with the sociocultural environment. The child takes part in the historically formed processes of culture and takes possession of them through communication with adults, objective relations with objects and tools, and the appropriation of language. Objective activities, with others and with things, become internally organized activities and result in a new psychological category—*higher psychological processes*. According to Luria (1976), consciousness is "not given in advance, unchanging and passive, but shaped by activity and used by human beings to orient themselves to their environment, not only in adapting to conditions but in restructuring them" (p. 8).

For Vygotsky it would no longer be sufficient to study the isolated individual; psychology would have to be a social-historical science. Consciousness is not a given, it is a formation; it forms through adaptation to not only nature but the immediate sociocultural environment. Having adapted to it, and having appropriated it, the individual is oriented to the objective world, which includes other people and, potentially, can change it.

The position taken by Vygotsky and Luria was that the psychological exploration of consciousness should begin with the study of the laws of the evolution of mediated mental processes. This was because consciousness is created by conditions external to the sphere of consciousness and through practical activity in the world (Vygotsky, 1978). Human history is both the history of the growing dominion of humans over nature, through tool construction and use, as well as the gradual control of one's self through the invention and use of signs (mediated means): language, counting, writing, maps, symbols, etc. In appropriating sign

usage, the person's natural psychological processes are transformed into functions at a higher level of development. Natural memory, for instance, becomes logical memory using mnemotechnical devices (memory aids like notches in a stick), impulsive action becomes intentional, willful, controlled action, and nonverbal thinking becomes verbal thought.

Given their theoretical position, Vygotsky and Luria hypothesized that if a group of people live under drastically altered changes in their sociocultural environment that these alterations should manifest as changes in consciousness and in higher psychological processes.

> Our initial position also forces us to assume that significant social-historical advances connected with a change of social-historical forms, and their accompanying fundamental cultural changes, lead also to fundamental changes in the structure of psychological processes along with the fundamental restructuring of activity. (Luria, 1971, p. 266)

This was not a view that was in line with the more classical understanding of psychological processes (Luria, 1976).

Traditional psychology had treated visual perception as a natural process and maintained that the laws of its operation were not influenced by social practice nor would they change over time. This was a view that could be attributed to the Gestalt psychologists; they paid no heed to the possibility of cultural-historical forces upon the development of individual consciousness (and perception). As a result, they lacked sensitivity to what Luria thought was a biased sample. This was because their study of geometrical perception used well-educated, usually university students as subjects, people who had a thorough knowledge of geometry and psychology. As far as Luria was concerned these were subjects who had undergone highly specialized training but such training was not universal. Perhaps sensitivity to the Gestalt principles of organization was not universal but was, instead, due to the historical forces of culture and enculturation. If so, then a group of humans bereft of such training may not display the same sort of perceptual processes.

Since the Russian Revolution Uzbekistan was being transformed from a feudal society to a communist society. This was marked by a transition from an illiterate collective to one in which schooling and collective agriculture were being introduced. The transition, at the time of the expeditions, was only partially engaged; some of the people remained illiterate while others were undergoing education.

Research with Geometrical Figures

In the research into perception, geometrical figures and some paper and pencil illusions were utilized. The subjects, speaking generally, could be classified as either 1) non-literate or as 2) what Luria called "culturally advanced." In one phase of the research the stimuli were geometrical forms that were complete or incomplete (its *law of closure* being assessed) and geometrical shapes formed on the basis of the *law of similarity* (composed of identical elements, e.g., triangles made of dots or X's). Subjects were required to divide the stimuli into groups upon the basis of similarity and to name each object. Luria anticipated that different classification processes would attend the non-literate subject and the culturally advanced subject with the non-literate grouping being upon the basis of a concrete schema (real-life experiences with objects) and the culturally advanced would classify upon the basis of abstract, geometrical concepts. One group should have, as the basis of their preferred mode

of classification, practical experience with objects (e.g., shovel, moon) and the other group an abstract, conceptual classification (e.g. circle, square).

The subjects who were culturally advanced grouped objects upon the basis of categorical names like circle or square and designated, thereby, abstract geometrical principles guiding cognitive, organizational schemes. The non-literate subjects did not use categorical names (abstract geometrical terms) referring instead to concrete objects like a watch, a door, a house, and so on. As Luria expressed it, they had a decidedly concrete, object-oriented assessment of the abstract geometrical shapes. This tendency to perceive shapes in an object-oriented, concrete manner was, to Luria, evidence that their perception of shapes did not correspond with the Gestalt laws of structural organization. Squares or triangles, composed of crosses or points, were seen as beads, watches, stars, but not, generally, broken representations of squares or triangles. Incomplete triangles or circles were not seen as incomplete geometrical figures but as bracelets or measuring devices or other concrete objects. While Luria does not emphasize this, it seems to me that closure was evident. An item like /_\ could be completed and regarded as a triangle or a spade; closure occurred but how it was classified was different (a cognitive rather than a perceptual difference). On the other hand, as Luria argued, there is reason to believe that the laws of *good form* (elements will be perceived as a group if they form simple, symmetrical percepts—Gray, 2002) were not evident nor was *good continuation* (elements will be perceived as a group if they follow in the same direction—Coren, Porac, and Ward, 1979). These were only present in subjects who had mastered the geometrical concepts but not in the object-oriented subjects, e.g., a triangle composed of stars being seen as stars (a collection of individual items like stars in the sky) rather than a triangle or spade.

Research on illusions

I think a more telling finding in support of the non-nativist, experientially based, and culturally based view of perception comes, however, from the work with illusions. According to Luria (1976), the *classical view of perception* took the universality and stability of perceptual illusions to require an explanation that appealed to physiological mechanisms that all people shared in, i.e., innate, biological mechanisms. Very few considered the possibility that the illusions may have a cultural basis and may appear with differing degrees of susceptibility at different stages of historical development. Rivers, according to Luria, was the first to suggest that optical illusions have cultural origins. Rivers (1905) had found that the Toda of India were not as susceptible as Europeans to geometrical visual illusions—the *Müller-Lyer* and the *horizontal–vertical*. According to Rivers such differences reflected not just physiological processes but the addition of experiences derives from "civilized life" (such as training in geometry) or what we would today refer to as differing cultural conditions. This was the idea that Luria would put to the test.

Luria (1976) theorized that there is a complex semantic structure to all visual perception and that it will undergo change with historical development. How one perceives is determined by a system of culturally developed meanings and, as new meanings develop, perception is altered. I should emphasize that this does not imply any physiological changes in the retina or brain. Luria's hypothesis, in his work with the Uzbeks, was that there is a change in visual perception with a shift to more complex historical conditions that shape cognitive processes (bearing in mind the general theory that higher mental processes are due to forces of enculturation, education being a prime example). Specifically, Luria predicted that as people are trained in geometry they may become more susceptible to geometric illusions such as the *Müller-Lyer* (two lines of equal length appear to differ in length if the ends of one line have

inward turning wings and the other has outward turning wings) and the phenomenon of *linear perspective* (parallel lines appearing to converge as they recede into the distance). Luria conceded that there are illusions based upon simple physiological processes (although he does not give examples, afterimages, I would think, are examples of the type of phenomena that he had in mind). Luria's focus would be on illusions that he believed were associated with learning in a cultural environment, such as the aforementioned geometrical illusions.

Luria presented the Uzbeks with various two-dimensional line drawings that had been found to elicit illusory perceptions/judgments in Western Europeans. His findings were that optical illusions were not universal. The number of instances of susceptibility to the illusions dropped in accordance with the individual's educational qualification but, even among some of the students, only 70–80% were led to a misjudgment of the stimulus. The presence of an illusion thus varied from group to group. One illusion, however, the *Müller-Lyer*, was evident among 66% of all of the subjects regardless of educational background. Luria admitted that his results were preliminary but he was of the opinion that "our data clearly show how perceptual processes hitherto regarded as purely physiological (and thus universal) are influenced by sociohistorical development" (Luria, 1976, pp. 43–45).

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