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THE PRIMACY OF HISTORICAL AND MATERIAL CONDITIONS IN THE DEVELOPMENT OF COGNITION: A CRITIQUE OF "CROSS-CULTURAL" RESEARCH IN THE VYGOTSKIAN TRADITION.

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A Research report submitted to the faculty of Education University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Education by Coursework.

Johannesburg, 1999

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ABSTRACT

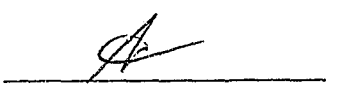
This research report compares the orientation and findings of the socio-historical research initiated by Vygotsky (1978) with that of various Western researchers. Specifically, the report attempts to establish whether there is a continuity between the tradition of research inspired by Vygotsky on the one hand and the cross-cultural research tradition, on the other. The report concludes that there are fundamental differences between the two traditions and argues that Vygotsky's focus on material conditions in the development of cognition is significantly different to a focus on culture as the determinant of cognition.

KEYWORDS

Dialectical-historical materialism, Socio-historical, Socio-cultural, Cognitive competency, Scientific concepts, Spontaneous concepts, Universalist, Relativist, Context-specific, Cognitive performance.

DECLARATION:

I declare that this research report is my own, unaided work. It is being submitted for the degree of Master of Education in the University of the Witwatersrand, Johannesburg. It has not being submitted before for any degree or examination in other University.



Matsiliso Mary Tlokotsi

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INTRODUCTION

This research report focuses on Vygotsky's (1978) socio-historical theory which was formulated on the basis of Marx's theoretical ideas, namely, historical and dialectical materialism. The report will review Marx's theory, and more specifically, the ideas of Marx, which influenced Vygotsky's thinking. Following this review, I will present an exposition of Vygotsky's theory. This will be followed by Luria's (1976) research conducted in Uzbekistan, to verify Vygotsky's ideas on the socio-historical origins of mind. In the third part I review the studies conducted by a number of Western researchers in different non-Western and Western communities because these researchers viewed themselves as working within the socio-historical framework initiated by Vygotsky (1978).

On the basis of the foregoing, this research report will attempt to evaluate critically the interpretations of Vygotsky's and Luria's work by the Western researchers. Specifically, the study will analyse and compare the theoretical presuppositions and empirical findings of the Soviet and Western research traditions. Following from a comparative analysis of the two traditions, I will show that the two research traditions emerged from different theoretical perspectives. For example I will argue that the Soviet research tradition

emerged from the historical perspective and the Western research tradition of Gay & Cole (1967) and Cole et. al. (1968) was formulated within a cultural framework.

Consequently, the Soviet and Western researchers conducted their research utilising different theoretical frameworks. Given the differences in approaches I will argue that there is no continuity between the Soviet and Western research traditions and I will further argue that the research conducted by the Western researchers is not similar to the research conducted by Luria. Finally, I will argue that, in developing their *research tradition* Cole et. al. omitted the essentially *Marxist* basis of Vygotsky's theory, thus removing the fundamental dimension of the socio-historical tradition. Consequently, these researchers *misconstrued* Vygotsky's and Luria's original ideas.

VYGOTSKY' S SOCIO-HISTORICAL THEORY OF MIND

The socio-historical theory of mind initiated and developed by Vygotsky (1978), embraces the study of the nature and development of higher mental functions and processes. In developing his theory, Vygotsky was primarily interested in the study and analysis of specifically human forms of behaviour, language and consciousness in particular. Vygotsky's thinking was influenced by the theoretical ideas of various theorists, and according to Valsiner & Van der Veer (1991), Vygotsky was specifically influenced by Marx's dialectical and historical materialism. In order to elucidate Vygotsky's theory I will first look at Marx's historical and dialectical materialism. And thereafter I will discuss Vygotsky's theory of the development of higher mental functions.

MARX'S HISTORICAL AND DIALECTICAL MATERIALISM

Dialectical materialism from the Marxian perspective refers to a theory of development and the universal laws that govern the development of all phenomena in the world, namely nature, human society and thought (Rius, 1976). Marx considers these phenomena as being in movement and in the process of perpetual change, and given their nature he proposes that all phenomena be studied as processes in motion and in change (Rius, 1976;

Scribner, 1985). According to Marx these phenomena, have a history and this history is characterised by changes, which are both qualitative and quantitative. Thus, confirming the view that the essence of a dialectical approach is to study something historically, reconstructing its origin and course of development from its earliest beginnings to its presently manifested form (Vygotsky, 1978).

The central idea of Marx's theory is the notion that the human species differ from all other species, because through their manipulation of nature they are able to free themselves from biologically determined psychological processes and functions. To explain how the human species freed themselves from biologically determined psychological processes and functions, Marx asserts that when humans began to engage collectively in productive activity, they learnt how to control the natural environment as well as themselves (Mclellan, 1975). He further argues that by changing the natural environment humans also change their own nature. As such productive activity plays a crucial role in transforming the natural world and concomitantly, human nature (Rius, 1976).

To explain how labour brings about changes in human nature, Marx contends that productive activity is material in nature and changes historically, and that any historical changes in society and material life bring about changes in human nature. In turn these historical changes transform the elementary processes and

functions into higher mental processes and functions. The development of higher mental processes and functions, in the Marxian sense mark the development of human consciousness, more particularly human thought and language.

Human consciousness according to Marx represents the highest form of the reflection of reality, shaped by the continually evolving human activity. It is important to mention that the relationship between human consciousness and concrete human activity is dialectical in nature. In the sense that human beings by participating in this continually evolving and changing material activity of people, they constantly develop and produce more advanced technical tools for the mastery of nature. This in turn lead to the development of more advanced and sophisticated psychological tools for the mastery of human nature. The relationship between the material activity and psychological activities has been confirmed by Newman & Holzman (1993) by indicating that various authors in the field of philosophy, psychology and political science, viewed Marxian dialectics as involving ' unity of opposites '.

Following from the notion that changes in material life influences changes in human nature, Marx proposes that human nature, including cognition is determined by social being and is rooted in practical activity (Vygotsky, 1978).

Thus, Marx's dialectical and historical materialism influenced Vygotsky's thinking, to an extent that he emerged as one of the first psychological theorists to attempt to relate Marx's method to concrete psychological questions.

VYGOTSKY'S THEORY

Proceeding from Marx's dialectical and historical materialism, Vygotsky (1978) developed a socio-historical theory, which attempted to explain how higher mental processes and functions developed in the course of human history as well as the way they are formed within an individual's lifetime. Vygotsky contends that various schools of psychology formulated methods of study for analysing human behaviour but none of these schools succeeded in providing a firm foundation for establishing a unified theory of human psychological processes and functions. Proceeding from Marx's assumption that human nature including cognition is (a) social in nature, (b) has its origins in the social activity of labour, (c) is determined by practical activity, and (d) that changes in society and material life bring about changes in human nature, consciousness and behaviour in particular, Vygotsky developed the socio-historical theory of mind.

On the basis of the above assumptions Vygotsky (1978) explains the social and historical origins of cognition by creatively elaborating Engels' notion of the use of technical tools to transform nature. Specifically, Vygotsky argues that,

just as technical tools mediate and transform nature, psychological tools mediate and transform psychological processes. According to Vygotsky these psychological tools are not inherited genetically, but are artificial formations. Their emergence may be understood firstly in the phylogenetic evolution of the human species, secondly in humanity's social history, and lastly in the process of internalisation at the ontogenetic level of the development of human cognition.

In his analysis of the process of development at the phylogenetic level, Vygotsky distinguishes between two phases of human phylogeny. These are biological evolution as described by Darwin in his theory of evolution, and the socio-historical evolution of humanity as described by Marx and elaborated by Engels in his theory of labour. Following from Darwin, Vygotsky argues that the physical substrate of specifically human higher mental functions evolved during man's phylogenesis and in the process human beings developed elementary processes and functions as the means of survival and adaptation to the environment (Valsiner & Van der Veer, 1991). Vygotsky contends that, these elementary processes and functions are purely biological and governed by natural laws, but this purely biological behaviour was however taken over by social history.

To explain the process of psychological development at the socio-historical level, Vygotsky (1978) contends that, humanity's purely biological evolution was superseded by socio-historical evolution, the latter resulting from man's need to engage in collective productive activity to satisfy basic physical needs. According to Vygotsky, this process of historical development brought about new forms of activity, e.g., social labour, which necessitated the development of technical tools. Following Engels, Vygotsky contends that first primitive flint tools were created due to man's involvement and cooperation in collective productive activity and these tools helped in the mastery of nature.

The emergence of collective labour did not only create a need for the development of technical tools but some form of communicative means as well. Rudimentary speech developed and was differentiated into codes which were later transformed into sign systems which Vygotsky calls psychological tools. Vygotsky further asserts that the use of these psychological tools mark the difference between human beings and animals because, while animals depend on the inheritance of genetically based traits, human beings rely on historically developed tools and signs.

Vygotsky (1978) views historically developed tools and signs as being analogous though not identical in their functioning and orientation. Specifically, he believes that technical tools are outwardly directed to mediate and transform

labour activity while psychological tools are inwardly directed to mediate and transform mental behaviour. In view of this contention Vygotsky argues for a tie in the mastery of nature and the mastery of human behaviour and conclude that the emergence of labour and the creation of technical and psychological tools determined the historical development of human beings and the concomitant emergence of specifically human, sign mediated higher mental functions.

Vygotsky explains the emergence of higher mental processes and functions by focusing on the development of cognition in the individual (ontogenesis). At the level of ontogenesis Vygotsky distinguishes between two lines of development, the natural line bound to the organic growth and maturation of human behaviour and the cultural line linked to the individual's higher mental processes and functions. According to Vygotsky, in the natural line of development individual human beings develop elementary processes and functions, and these are determined by biological laws. These biological laws however are necessary, but not sufficient to explain the development of specifically human forms of behaviour.

To explain the development of specifically human forms of behaviour, Vygotsky (1929) argues that it is necessary to look at the natural and social lines of development and their interrelation in ontogenesis.

The schematic triangle below will be used to elucidate this interrelation:

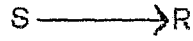
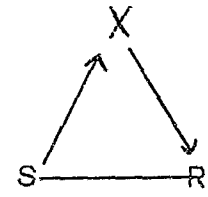
Fig.1 

Fig.2 

The stimulus response relation in fig. 1 represents the natural line of development. Vygotsky (1929) contends that by introducing socially created psychological tools (signs) into this stimulus response relation, new connections are created within the stimulus response relation, and this is evident in (Fig. 2: SX and RX). The connections are not different from the original S-R relationship because in their functioning they produce similar results but in a " roundabout way" . The psychological tool X according to Vygotsky, extends the biologically given functions and places them under the voluntary control of the individual.

According to Vygotsky (1929) the inclusion of psychological tool in the S-R relationship allows human beings to subjugate their original reflexes to their will and consciousness, and remodels the whole structure of psychological functioning.

To illustrate exactly how the psychological tool remodels the elementary functions, Vygotsky looked at, amongst others, the child's memory before and after the introduction of a psychological tool. He contends that when children are required to memorise a number of items they are only capable of retaining a small number of items in their short term memory. However if they memorise these items with the aid of culturally developed mnemonics (signs) they may remember a greater number of items. Vygotsky (1978) argues that sign mediated higher mental processes and functions are specifically human forms of behaviour, and occur on two planes, firstly on the social plane and later on the psychological plane. To explain the transformation from the social to the psychological plane, Vygotsky posits the general genetic law of cultural development. This law stated that:

> "any function in the child's cultural development appears twice: first on the social level, and later on the individual level; first between people (interpsychological), and then inside the child (intrapsychological)" (Vygotsky,1978, p. 57).

According to Vygotsky the transformation of the interpsychological to the intrapsychological, indicates that the individual has internalised the interpersonal, social activity which has now become intrapsychological mental

activity. Consequently, Vygotsky defines internalisation as a process by which:

> " an operation that initially represents an external activity is reconstructed to occur internally ". (Vygotsky, 1978, p. 56).

It is important to mention that the development of higher mental functions depend on the internalisation of signs, because once the individuals have internalised sign systems and begin to use them for regulating their behavior and the behaviour of others that means the process of psychological development from a lower level to a higher level has taken place.

In conclusion Vygotsky (1978) contends that, tools and signs develop in the process of historical development and change historically, meaning that any changes in historical conditions, lead to changes in human nature. As a result individuals who are exposed to different socio - historical conditions display different forms of thinking and reasoning. To verify this contention Luria (1976) conducted research in Uzbekistan, in the Soviet Union during 1929-1933 and in the next section I will look at this research.

LURIA'S RESEARCH IN CENTRAL ASIA BETWEEN 1929-1933

This section focuses on the cross-historical research conducted by Luria (1976), under Vygotsky's inspiration, specifically the section will review the areas of thought, namely perception, syllogistic reasoning, problem solving, etc, which Luria investigated to verify Vygotsky's (1978) contention outlined above. Luria's (1976) research was conducted in Uzbekistan, a remote region of the Soviet Union between, 1929-1933. Uzbekistan was one of the backward communities of Russia, which witnessed a radical restructuring of its social structures. Before the revolution the Uzbeki people lived a rural agriculturally-based lifestyle and in general they remained illiterate until the Russian revolution when they experienced a period of radical restructuring characterised by the emergence of a more complex socio-economic system. These changes included the beginnings of collectivisation, the development of a centrally planned economy, and the institution of network of schools.

Luria (1976) contends that these new forms of activities brought dramatic changes in the life of the Uzbeki people who began to participate in these new forms of productive and social activity. For example (a) individual labour and rural agricultural farming was replaced by collective labour and farming, (b)

peoples' economic activities were no longer planned locally and individually, but became part of a centrally planned economy and (c) short term courses, kindergarten courses as well as a three year teacher training courses were introduced. Luria (1976) asserts that the Uzbeki residents participated in these new forms of activities and were introduced to theoretical and systematic instruction. He further asserts that people living in the remote villages of the mountains were not influenced by these rapid socio-historical changes, as a result they remained illiterate.

Thus, Luria's research coincided with a period of historical transition and this enabled him to make his study historically comparative, since the Uzbeki society was now comprised of both undeveloped and culturally advanced groups. Consequently, in order to test the hypothesis of the socio-historical origins of mind Luria selected research subjects from the abovementioned groups and divided them into five sub groups:

1. Ikhari women who never participated in modern activities.
2. Male peasants who practised individual farming.
3. Collective farmers who attended short term courses.
4. Women students who attended kindergarten courses.
5. Women students who attended a teacher training course.

The subjects were given tasks on different areas of thought and these tasks were designed in such a way that the subjects could either solve them graphically or in an abstract way. Luria (1976) hypothesised that people with no schooling (illiterate subjects) would display forms of thinking and reasoning directly related to their immediate practical experience. By contrast those who became involved in modern activities such as schooling would display forms of thinking and reasoning that are abstract and logical because of their new materialist and social conditions.

AREAS OF STUDY

Luria's (1976) study investigated the following areas of thought, namely, perception, generalisation and abstraction, syllogistic reasoning and deductive reasoning, problem solving, imagination, self analysis and self awareness.

PERCEPTION

On perception Luria (1976) focused his study on the way in which people linguistically code basic categories of their visual experience such as colour and shape.

(a) Naming and classification of colour

In this activity people were given skeins of wool and instructed to name

and classify them. The non-literate subjects named the hues of wool by names of similarly coloured objects in the environment. For example, the hues of green were given names of plants in spring, mulberry in summer, and young peas. When they were instructed to name and classify colours which were almost similar in colour the non-literate refused to name them and argued that they were not the same. The literate subjects by contrast, adopted a mode of operation which was dominated by categorical colour names.

(b) Naming and classification of geometrical figures

In this task the subjects were given different shapes of geometrical figures such as a triangle, circle, rectangle etc, and instructed to name and classify them. The non-literate subjects named the geometrical figures using concrete names like plate, bracelet, clock, window frame, etc, while the literate subjects used abstract names like circle, triangle to identify various shapes.

GENERALISATION AND ABSTRACTION

To test their ability to generalise and perform abstractions, the subjects were shown pictures of different objects and were instructed to classify

and group them. The non-literate subjects performed the tasks using procedures drawn from their daily practical activity, they named objects in isolation assigning them individual functions. The literate subjects performed the tasks using a theoretical mode of grouping, finding it comparatively easy to shift from the situational to the abstract mode of grouping objects.

SYLLOGISTIC REASONING

In this area of thought the subjects were presented with two types of syllogisms. The first type of syllogism was based on peoples' practical experiences and the second one was based on abstract thinking and reasoning. The subjects were requested to present the major and minor premises and later present the entire syllogism. The experimenters observed the subjects to see if they could make proper deductions. The findings of Luria revealed that non-literate subjects presented forms of deductive reasoning which were dominated by immediate practical experience and in some instances they refused to respond, saying they could not make inferences about things they were not familiar with. While the literate subjects did not experience any difficulty when performing tasks related to deductive reasoning, instead they produced correct syllogistic phrases and conclusions.

PROBLEM SOLVING

To test peoples' problem solving skills Luria designed a programme comprised of activities which corresponded to the subjects' practical experiences and those which were completely unrelated to their practical experiences. In performing the tasks the non-literate subjects gave responses associated with their immediate environment. These forms of responses were influenced by their inability to separate conditions of the problem from practical experience. The schooled subjects performed the tasks independently of their own practical experience, they displayed forms of thinking and reasoning which showed that they possessed the capacity to solve conditional problems using logical operations.

IMAGINATION

To test the imaginative processes of his subjects Luria instructed his subjects to pose questions and direct them to the experimenter. The findings revealed that the illiterate subjects refused to pose any questions which were not related to their immediate environment. The subjects told the experimenters that they did not know what to ask, alternatively they requested the researchers to pose questions which they could answer. The schooled subjects formulated the questions with no hesitation and their questions were expressed in a much

broader content. Their questions were based on the knowledge which the subjects possessed and which was related to social life and stable cognitive interests.

SELF AWARENESS AND SELF ANALYSIS

In this area Luria was interested to find out if the subjects could make their own mental qualities the object of study. The subjects were instructed to ask themselves questions which would allow them to analyse their inner life in a generalised sense, and identify both their positive and negative traits as well as the shortcomings within themselves. In responding to the instruction the illiterate subjects refused to mention any positive or negative traits about themselves. The subjects analysed their inner life on the basis of what people said about them or chose to describe themselves on the basis of concrete or material aspects of their life. The schooled subjects analysed and singled out their inner qualities on the basis of their relation to life's social demands.

On the basis of the foregoing findings Luria concluded that in all the areas of thought investigated the subjects yielded similar results, in the sense that in their performance and responses to the tasks they followed a similar pattern. Thus, providing a clear evidence of the influence of the socio-historical conditions in the development of

cognition. For example the pattern of responses presented by the schooled subjects, indicated clearly that there was a significant shift from graphic functional thinking to abstract ways of thinking, which parallelled the changes in the socio-historical conditions.

Given the above findings Luria (1976) concluded that the practical activities that people engage in, are extremely influential in the development of their cognition and these findings consequently supported Vygotsky's (1978) contention that changes in socio-historical conditions lead to changes in cognition.

THE WESTERN RESEARCH TRADITION

This section looks at the cross-cultural research conducted by a number of researchers working within, what I have called, the Western research tradition. The research to be reviewed was conducted by Gay & Cole (1967) and Cole et. al. (1968; 1971) and the study focused on the relationship between culture and thought. Specifically, this research emphasised the importance of culture, and more particularly the role of specific cultural contexts and contents in the development of human cognition.

The second research area to be reviewed focuses on the studies which were conducted by the researchers in the Laboratory of Comparative Human Cognition (1983). These researchers followed Gay & Cole (1967) and Cole et. al. (1968;1971) in adopting an approach which was culture and context sensitive, to explain the relationship between culture and thought. The third research area which will be reviewed include excperts of studies presented by Lave & Wenger (1991). The researchers review excerpts of studies which were conducted within the Legitimate Peripheral Participation Framework. According to Lave & Wenger the researchers who conducted these studies viewed social - cultural practices as providing a context for learning. In my review I will discuss the theoretical ideas of the three research areas

outlined above and their respective empirical findings. This will be followed by Cole & Bruner (1971), Cole (1988) and the LCHC's (in Moll, 1994) criticism of Luria's (1976) research.

The research initiated and developed by Gay & Cole (1967) and Cole et al. (1968;1971) was carried out with different cultural groups from Western and non Western communities. The aim of this research was to verify the notion that cultural factors, more specifically context embedded situational and cultural factors play a primary role, in the development of human cognition. Specifically, it attempted to identify a range of skills and knowledge which specific cultural groups acquired while participating in specific socio-cultural practices prevailing in their specific cultural contexts. The research of Gay & Cole (1967) and Cole et. al. (1968;1971) was carried out in Liberia among the Kpelle people who lived in the small villages of Sinye, Gbansh, Gbariga and the Leper Colony.

The Kpelle people were agriculturists and practised rice farming as their main economic activity and basic means of survival. For comparative purposes the researchers included in their research group schooled American children from the middle class neighbourhood and poorly educated American adults from the working class background. This study was comprised of tasks based on formal and informal mathematical activities. The research subjects who participated in the first part of the study consisted of four groups,

with the first three groups comprising thirty Kpelle research subjects respectively and the fourth group consisting of twenty five American subjects from the middle class community. The research subjects were classified as follows :

1. Illiterate Kpelle children who never participated in school activities.
2. Schooled Kpelle children who attended school for a period of six years.
3. Illiterate Kpelle adults, who were rice farmers and didn't speak English.
4. Schooled American children from the middle class neighbourhood.

Gay & Cole (1967) and Cole et. al. (1968;1971) hypothesised that non-literate people lack particular skills which are considered routine activities in school, but have acquired general skills. The researchers further hypothesised that people become skilled in forms of activities that they have to engage in very often, this therefore means that differences in mental processes will be domain and content specific.

In the first part of the study, Gay & Cole (1967) and Cole et. al.(1968; 1971) focused on formal mathematical tasks. The subjects were given mathematical tasks, dealing with the identification of geometrical shapes. The tasks were designed in such a way that objects could be sorted following three principles, of number, colour and form. The subjects were given different

identification problems, comprised of sixteen different instances and each instance was presented twice. The subjects were instructed to solve the problems by choosing proper classes of the concepts presented in the experiment. The experimenter drew either a circle or triangle on the board with one representing the correct answer and requested the subjects to identify the correct one. The illiterate Kpelle adults and children found the entire task difficult, while the schooled Kpelle and American children solved the task with ease.

In the second part of the study, Gay & Cole (1967) and Cole et. al. (1968;1971) looked at the mathematical operations occurring outside the school context, more particularly on the domain of measurement of the Kpelle people, such as the measurement and estimation of the volume of rice. The subjects were selected from the following groups:

1. Twenty Illiterate Kpelle adults who practised rice farming.
2. Twenty schooled Kpelle and American children.
3. Eighty poorly educated American adults from the working class.

The subjects were given measuring canisters which varied in size and instructed to measure the volume of rice using these measuring canisters. In responding to the tasks the illiterate Kpelle adults were extremely accurate,

displaying sophisticated mathematical skills in estimating the volume of rice. The poorly educated American adults were generally inaccurate and the schooled children displayed an intermediate level of accuracy which was more similar to that of the Kpelle adults. The empirical findings of the studies reviewed, confirmed the view that specific cultural contents and contexts play a primary role in the development of human cognition. And this was demonstrated by the way the subjects displayed their skills and knowledge in activities that featured prominently in the specific cultural context to which the group belonged. Given the level of accuracy and the range of skills and knowledge which specific groups displayed in contextualised tasks, the studies confirmed further the Western researchers' view that, mental development is domain and content specific.

This section reviews the studies which were conducted by the researchers in the Laboratory of Comparative Human Cognition (LCHC,1983). These researchers asserted that any psychological theorist of cognitive development interested in analysing human nature, should engage in cross-cultural research taking into account that abstract / decontexualised thought is to be discovered in specific culturally organised activities of local community contexts.

Serpel (in LCHC, 1983) looked at the development of perceptual skills in

Zambian and English children in order to distinguish between specific and generalised representational ability. He selected four perceptual tasks, i.e. mimicry, moulding, modelling and drawing. Analysing the subjects' activities and evaluating their performance, Serpel discovered that both groups were familiar with mimicry and modelling and performed equally well in these activities. In tasks related to drawing the English subjects performed the tasks fairly well, and same was true with the Zambian children, they also performed tasks related to moulding fairly well. As a result Serpel concluded that each group performed well in activities which were part of their daily life and linked to their socio-cultural practices.

Lantz (in LCHC, 1983) evaluated Bruner, Olver, and Greenfield's (1966) suggestion that, rural unschooled children may lack symbolic representational skills because their linguistic skills are tied to their immediate context. Lantz distinguished between the absence and presence of symbolic representational skills in different contexts. She selected a coding task that would measure communicative accuracy as well as classificatory skills and memory. The subjects were rural unschooled and schooled Indian children and schooled US children. The tasks were based on two different stimuli, that is, a colour chip array and a grain and seed array. Through this study Lantz revealed that rural unschooled childrens' performance was higher than that of schooled children, when performing tasks

based on the grain and seed array. The unschooled children coded and decoded the grain and seed array with no difficulty. The American schooled children scored significantly higher on tasks based on the colour chip array.

Similarly Kearins' study (in LCHC, 1983) based on the comparison of spatial memory skills of Anglo Aboriginal and Anglo Australian children, agreed with Lantz's findings. She established findings which showed that Aboriginal Australian children performed activities with ease and scored significantly higher in activities related to the natural and artificially created objects. By contrast, the Anglo Australian children performed well i activities linked to artificially created objects only, and their scores were significantly lower than the scores of the Aboriginal Australian children. Irwin et. al.'s research in (LCHC, 1983) with unschooled Liberian children and schooled American children, also confirmed the validity of the context specific approach. The subjects were given tasks which required them to estimate the volume of rice, and classify geometrical figures. Each group displayed its expertise in tasks related to the their cultural context.

A third group of researchers, Carraher et. al. (1985) focused on particular cultural activities such as street vending. These researchers conducted research in Brazil with children of street vendors who assisted their parents

in their daily business activities. The researchers argued that during business transactions, these children solved a large number of mathematical problems involving, addition, multiplication, subtraction etc, and in the process acquired mathematical skills which allowed them to solve mathematical problems effectively.

Carraher et. al.'s (1985) study included four boys and one girl, who briefly attended school, and were required to respond to a number of tasks. The first set of tasks were based on informal mathematical activities and the subjects were required to perform these tasks while they were involved in their daily business activities, enacting sales transaction. A week later the researchers requested the same subjects to participate in a set of formal tasks, that is the nature of tasks which were not linked to the subjects' cultural context. In presenting their empirical findings, Carraher et. al. (1985) established that the subjects solved the informal mathematical problems with ease, but failed to solve the formal tasks effectively.

The studies conducted by the LCHC (1983) researchers confirmed the importance of cultural context in cognitive development, because all the subjects who participated in these socio-cultural tasks performed fairly well in contextualised tasks but failed to solve most tasks which were not linked to their context.

This section focuses on the excerpts of studies on apprenticeship in different cultural - historical traditions. These excerpts of studies were reviewed by Lave & Wenger (1991) and were conducted within the Legitimate Peripheral Participation (LPP) framework. The section will first explain the LPP and then present a review of three excerpts of studies related to three cultural groups whose members emerged as apprenticed midwives, tailors and quartermasters by participating in socio-cultural activities.

The Legitimate Peripheral Participation focuses on social - cultural practices as providing a context for learning, which lead to the development of specific skills and knowledge. These skills and knowledge enabled people to become apprenticed in specific socio-cultural practices, by moving from peripheral participation to full participation within those practice. Lave & Wenger(1991) asserts that in the three areas of study to be reviwed the research subjects were elderly and more experienced apprenticed midwives, tailors and naval quartermasters. hese experienced apprentices interacted with young members of their communities who participated in the socio-cultural practices mentioned above. The novice apprentices were guided and supervised on socio - cultural practices linked to their specific cultural contexts. Lave & Wenger (1991)

asserts that these new apprentices gained knowledge and developed skills which enabled them to carry out the practices independently andconsequently supervised the new apprentices.

Lave & Wenger's (1991) review of the studies conducted by Jordan (1989) describes how young girls, due to their interaction with apprenticed midwives moved from peripheral to full participation in midwifery. Lave & Wenger provide an example of a Mayan girl whose mother or grandmother is a midwife, and it is most likely that she may become a midwife, since midwifery is handed down in family lines. Girls in such families absorb the essence of midwifery practices and specific knowledge about the procedures entailed in midwifery in their process of growing up. Lave & Wenger (1991) explained how in the process of her apprenticeship, the girl (a) became familiar with the midwifery by seeing her mother go out at all hours of the day and night, (b) listened to stories related to pregnancy which men and women consulted her mother about, and (c) familiarised herself with herbs and remedies.

As the girl grew older the mother began to involve her in the activity by allowing her to pass messages, run errands, and fetch supplies for the patients. Eventually the girls' mother paid a postpartum visit with the girl and performed the day's activity in her presence.

Once the girl had grown up and given birth to her own child, she would then be invited to administer prenatal massages and other treatments related to prenatal care. As time went by the girl, having acquired the skills and knowledge required engaged in the actual activity of midwifery.

The study of Hutchins (reviewed by Lave & Wenger, 1991) describe how members of the quartermaster corps moved from peripheral to legitimate participation. Hutchins said the process started with limited duties but moved on to more complicated procedures under the supervision and guidance of a apprenticed quartermaster. The new quartermaster learnt to plot the ship's position alone at sea or in collaboration with other quartermasters moving around the harbour. Hutchins said the trainees took a year to learn the basic skills, he argued that their training took place at a specialised institution. He said in these specialised institutions the trainees were exposed to basic terminology and concepts related to the field. Although the trainees attended specialised institutions for their training, Hutchins said the senior quartermasters preferred to work with trainees who didn't acquire any prior training, but learn and acquire their skills and knowledge practically, that is on the job situation.

In the job situation the new quartermasters participated in joint activities and performed all the duties of the watch starters, closely monitored by more

In the job situation the new quartermasters participated in joint activities and performed all the duties of the watch starters, closely monitored by experienced watch starters. The novice quartermasters attended training and went through six stages to complete their training. During training the novice quartermasters were expected to produce a competent performance and to perform the activities independently of supervision. It was only after they had completed these stages and produced a competent performance that they would be recognised as apprentice naval quartermasters and allowed to perform the activity independently and supervise the novice quartermasters in the field.

Jordan's (1989) study (reviewed by Lave & Wenger, 1991) describe how West African children learned subsistence skills such as tailoring from an early age. The children were introduced to subsistence skills such as tailoring by parents of the same sex. The movement from peripheral to legitimate participation started with part time specialism and moved into a specialised occupation under the guidance of a specialist master. The earliest steps involved learning (a) to cut the garment, (b) to sew by hand and (c) to sew with a treadle machine and to press the clothes. The process occurred in two phases, that is the " way in" and "practice" phases. The "way in" phase involved observation and attempts to construct a fixed approximation of the garment, the "practice" phase involved the reproduction of the product from the beginning to end.

The studies presented above also confirmed the important role played by context embedded socio-cultural practices in the process of human development. In the sense that particular socio- cultural practices under the supervision and guidance of more experienced apprentices provided a context of learning which enabled people to move from peripheral to legitimate participation. Thus, the studies of Gay & Cole (1967), Cole et. al.(1968, 1971), LCHC (1983) researchers, and the studies reviewed by Lave & Wenger (1991) verified the notion that culture plays a crucial mediating role in the process of human development. Consequently these researchers concluded that any differences in cognition between specific cultural groups reside more in context than in the mental processes.

(a) Criticism of Luria's research

Following from the Western research approach and a number of studies outlined above, Cole & Bruner (1971), Cole (1988) and the researchers in the Laboratory of Comparative Human Cognition (in Moll, 1994), criticised Luria's (1976) research proposals, methods and empirical findings.

In their analysis of the different types of cross - cultural research on cognition Cole & Bruner (1971) argued that Luria (1976) uses a deficit model. According to Cole & Bruner (1971) the deficit model rests on

that of the minority groups are disorganised and this disorganisation reflects itself in various forms of deficits. The researchers working within the deficit model argued that these forms of deficits were evident in the lowered scores and academic performance of children from impoverished ethnic minority backgrounds. Consequently the Western researchers concluded that ethnic minority group from non-Western community backgrounds suffer linguistic and cognitive deficits when compared with their "more advantaged peers" from the mainstream community.

On the basis of their review of the theories and data which was not in agreement with the deficit hypothesis, Cole & Bruner (1971) cast doubt on the conclusion that deficits exist in minority group children. The researchers were even doubtful to accept that any nonsuperficial differences exist among different cultural groups. Guided by their theoretical approach Cole & Bruner objected to (a) the approach and theoretical ideas presented by the researchers working within the deficit model, (b) the content of their study and the way cultural comparisons were made, (c) the data upon which such comparisons were based, and (d) the results obtained by the researchers. Cole & Bruner contend that such approaches allow the researchers working within the deficit hypothesis to compare performance and competence of the groups in question on the basis of their participation in particular socio-cultural activities. Cole & Bruner asserted that such approaches

allow the researchers working within the deficit hypothesis to compare performance and competence of the groups in question on the basis of their participation in particular activities which are not related to their culture and which the subjects are not familiar with.

Thus, Cole & Bruner concluded that, an approach which considered cultural and situational factors in its study, prevent researchers from distinguishing cultural differences on the basis of traditional experimental approaches.

Following from the above Cole & Bruner (1971) and Cole (1988) identified Luria's (1976) research with the deficit model, the researchers argued that Luria's research displayed all the characteristics of the deficit model. The researchers argued that, in conducting research, Luria did not recognise situational and cultural factors as primary determinants of cognitive development. Cole (1988) further argued that Luria's (1976) research in Central Asia failed to fulfil the methodological requirements of the socio-historical tradition. Cole asserted that this was confirmed by the fact that Luria (1976), (a) adopted an approach which was not grounded in an analysis of culturally organised activities, (b) failed to account for the specific cultural context which influenced the nature and development of cognition of the subjects he studied, and (c) failed to include the practical activity systems of

the Uzbeki or Kazaki people in his research. Thus, Cole (1988, p.147) concluded that:

> "Soviet research emerged from an approach which emphasised broad historical changes at the expense of synchronic variability rising from differences across concrete activity systems."

it is important to mention that, specifcally, Cole (1988) in criticising Luria 's (1976) research and empirical findings, he asserted that Luria's research and empirical findings were not based on on the ideas of the soci-historical theory initiated by Vygotsky(1978). This results from the fact that in his analysis of the central thesis of the socio-historical tradition , Cole (1988) interpreted Vygotsky's thesis as emphasising culture not history as the crucial factor and primary determinantof cognitive development. Cole (1988,p. 138) confirmed the validity of his interpretation by referring to a number of statements in the socio-historical tradition which according to him :

> ".....clearly stake out the central role of culture and the concomitant emergence of a qualitatively new structure of psychological processes as defining characteristics of homo sapiens according to the Ideas of the socio-historical tradition."

In conclusion Cole (1988) asserted that Luria (1976)'s research approach and empirical findings were interpreted as undermining the thinking of the Uzbeki people. Finally Cole indicated that Luria was severely criticised for insulting the intelligence of people living in Central Asia.

Luria's (1976) empirical findings and conclusion about the relationship between culture and cognition were further questioned by LCHC researchers (in Moll, 1994). These researchers questioned Luria's conclusion that the recorded transformation in thought amongst the Uzbeki people was simply a product of fundamental changes in the mode of production. The researchers also doubted the notion of a grand cultural leap from graphic - functional thinking to theoretical and abstract forms of thinking. The LCHC researchers asserted that Luria (1976) incorrectly viewed formal abstract cognitive competence as an historical product of collectivised production, mechanization and literacy.

Given this assertion the LCHC researchers concluded that in all cultural domains, including that of the Uzbeki people differences in cognition across the specific cultural domains, is determined by the nature of activity within which formal abstract cognition is manifested not its general presence or general absence. Thus, the LCHC researchers (in Moll, 1994, p.8) concluded that the nature of research which Luria

conducted rests on :

" the myth..... that the " primitive mind " is highly concrete whereas the " Western mind " is highly abstract. "

A CRITIQUE OF THE WESTERN RESEARCH TRADITION

In his review of cross-cultural psychological research, the American psychologist, Michael Cole (1988) claimed that the studies of Gay & Cole (1967) and Cole et. al. (1968) were developed and conducted within the socio - historical tradition initiated by Vygotsky (1978). Similarly the researchers in the Laboratory of Comparative Human Cognition (1983) Cole in making this claim, and Lave & Wenger (1991) in their review of the studies conducted within the LPP claimed that these studies were also conducted within the socio - historical framework. Given these claims the following questions arise:

(a) Is there continuity between the Soviet and Western research traditions ?

(b) Is the research conducted by Cole et. al. similar to the research conducted by Luria ?

To answer these two major questions, I will analyse the theoretical presuppositions and empirical findings of the Soviet and Western research traditions, and attempt to show that there are very important theoretical and methodological differences between them.

Given these differences in approaches, I will argue that in developing his research programme, Vygotsky (1978) intended to demonstrate that changing historical and material conditions lead to changes in human nature and that this change in cognition is made possible by a particular kind of socio-cultural transformation, namely schooling. By contrast, the western cross-cultural research tradition of Gay and Cole (1967) and Cole et. al. (1968) intended to show that context embedded socio-cultural practices prevailing in specific cultural contexts play a crucial mediating role in the process of cognitive development. As such, I will question the assumed continuity between the Soviet and Western research traditions.

In the Soviet research tradition Luria (1976) identify historical and material conditions as primary determinants of human cognition. By historical and material conditions the Soviet researchers refer to, historically developing concrete material activities / social activity of labour that people often engage in, to satisfy their material needs. Luria identifies two forms of labour activities, namely traditional and modern labour activities and draw a distinction between them on the basis of their nature, role and influence in cognitive development. Luria says traditional labour activity comprises individual labour and agricultural farming, and state that this form of activity is " primitive", relatively stable, and not undergoing any process of historical development or change. He further contends that due to their nature these traditional

labour activities lead to the development of elementary psychological processes and functions and " primitive " (graphic) forms of thinking and reasoning.

The modern / culturally advanced activity by contrast, comprises collective labour and farming and according to Luria this labour activity is dynamic in nature, and in a constant process of development and change. Given its nature this form of labour activity transforms elementary psychological processes and functions from a lower level to a higher level of functioning and lead to the development of abstract forms of thinking and reasoning. From the foregoing discussion it is evident that material conditions, more specifically labour activity play an important role in Vygotsky's and Luria's thinking.

In the Western research tradition of Cole et. al., historical and material conditions are not acknowledged as primary determinants of human cognition, instead cultural practices are given greater influence in the development of cognition. In fact Gay & Cole (1967) are quite clear that they are developing an approach which is neither historical nor developmental, but an approach which is cultural and pragmatic, and which focuses on cultural content and context as primary determinants of human cognition. These researchers developed this approach in the belief that all cultures irrespective

of their nature and level of development, produce individuals who are competent in terms of specific cultural contexts.

Therefore, Gay & Cole (1967) and Cole et. al. (1968) do not draw a distinction between everyday practices and school learning, because they view socio-cultural practices prevailing in the school and everyday contexts as playing an equally important role in the development of human cognition. As a result school based and everyday socio-cultural practices are given equal status and seen as equal determinants in cognitive development.

By contrast Vygotsky(1962), following from the notion that traditional and modern labour activities lead to different forms of thinking and reasoning, presupposes that these material activities are mediated by different socio-cultural processes. He identifies two forms of mediation, namely informal and formal forms of mediation and argues that traditional / everyday activities and modern / school activities utilise different forms of mediation. Vygotsky contends that learning in school is mediated by school / scientific concepts, while everyday activity is mediated by everyday / spontaneous concepts. School concepts according to Vygotsky regulate behaviour and transform the basic psychological processes and functions in individual human beings. But everyday concepts can not regulate behaviour beyond the elementary level, therefore individuals who are regulated through these concepts, retain their

undeveloped and elementary psychological processes and functions. The fact that school learning and everyday activity develop level of awareness of concepts which differ, Vygotsky does not treat everyday life and learning in school equally, he insists that learning in school transforms human cognition.

It is important to mention that the Soviet research tradition is predicated on four assumptions, namely that human cognition is social in nature, historically developing, culturally mediated and a product of practical activity. The Soviet researchers also generated evidence supporting this theoretical position from the same areas of knowledge, that is the socio-cultural, practical and historical areas. The fact that these researchers included the concept of "culture" in their explanation, shows that they acknowledged the role of "culture" in cognitive development, but culture in the Vygotskian sense is seen as an added element and a secondary factor which provides a secondary explanation in the whole process of cognitive development. In contrast the Western researchers make "culture" the central explanatory category of their explanation of the development of cognition

Following from the above it is evident that the Soviet and Western researchers adopted significantly different approaches and consequently, in their empirical research they utilised different methodological frameworks.

Luria's (1976) research focused on one cultural group, which lived in a rural and agriculturally based community. The community was in a period of historical transition, hence Luria's study allowed for within-group comparisons. The group was divided into two sub-cultural groups, namely the traditional and the culturally advanced / schooled groups. Given the division of the main group into two sub-groups, Luria (1976) tests the forms of thinking and reasoning of the two sub-groups, using tasks which gave the researchers access to the general forms of thinking and reasoning of the research subjects. He formulated them in such a way that they were compatible with the cultural understanding of the group he was studying. Luria used " culturally congruent " set of tasks and set of tasks which were not in any way related to their cultural context. The tasks enabled Luria to identify different forms of thinking and reasoning within the same cultural group.

By contrast, Gay & Cole (1967), Cole et. al.(1968) the researchers in LCHC (1983) and Lave & Wenger (1991) focused on different and many cultural groups from the Western and non- Western communities. In all the studies conducted the groups were not in a period of transition , but in relatively stable conditions. This therefore shows that there is no notion of historical transition and change. This result from the fact that the researchers never considered the nature of material and historical conditions which influenced and determined cognitive processes and functions of the group they were studying. The tests

used by the above researchers were culturally congruent (e.g., rice farming activities and tasks of the Kpelle tribe were used for identifying the concept of measurement) because the researchers tended to focus on specific cultural practices and activities rather than general forms of thinking and reasoning. These tasks allowed the researchers to identify specific cognitive skills and knowledge which the subjects in specific cultural contexts acquired.

Following from the comparative analysis of the theoretical presupposition and the empirical research findings of the Soviet and Western research traditions, it is evident that the researchers working within the Soviet research tradition viewed changing material and historical conditions as primary factors which lead to changes in human cognition. The researchers make a universalist claim about the way cognition develops in human beings, and posit a universal law, that if material conditions change, human cognition also changes. The Soviet researchers contend that people who are exposed to changing material conditions, will change in terms of their reasoning, regardless of the prevailing culture. In other words, in the Soviet tradition cognition is a function of the material, social, cultural and historical conditions, consequently they present a non-reductionist explanation of human cognition.

By contrast in the Western research tradition, the researchers focused on differences in thinking between cultures. The researchers explain cognitive

development from a relativist perspective, and posit the idea that human cognition is conditioned by culture, hence the reasoning and thinking differs between cultures. This lead to the conclusion that in the Western research tradition, human cognition is viewed as the function of the cultural conditions only. In their exclusive focus on culture, the Western researchers present a reductionist explanation of human cognition.

On the basis of this comparison it is clear that there are significant theoretical differences between the Soviet and Western research traditions. These differences demonstrate clearly that there is no theoretical continuity between the Soviet and Western research traditions. I contend that the omission of Vygotsky's Marxism is one possible reason why there is no continuity between the Soviet and Western research traditions. Consequently this lead to the conclusion that the research conducted by Cole et. al. was not similar to the research conducted by Luria (1976). This result from the fact that, in developing their research approach the Western researchers omitted the essentially Marxist basis of Vygotsky's theory, as a result they removed the fundamental dimension of the socio-historical tradition.

In the nature of their research designs and foci, it is evident that the Soviet and Western traditions are fundamentally different. For example, Luria's research was cross-historical whereas Cole et. al.'s research is cross-cultural. Similarly,

for Luria an important consideration is the fact that society under investigation should be going through a process of change. By contrast the Western researchers focused on relatively stable societies. From this it is evident that research conducted by Cole et. al. cannot be similar to that of Luria.

CONCLUSION

This research report reviewed the theoretical ideas of the Soviet and Western researchers to assess the validity of the claim made by the latter researchers, that their research was inspired by Vygotsky and Luria. To this end I focused on Vygotsky's socio-historical theory, with specific reference to Marx's theory of dialectical-historical materialism, and argued that Marx's theoretical ideas formed the basis for Vygotsky's socio-historical theory.

The review of Marx's theory was followed by an exposition of Vygotsky's socio-historical theory, and here I tried to show that for Vygotsky historical and material conditions play a primary role in the development of human cognition and changes in these conditions lead to changes in human cognition. In this regard I then discussed the research conducted by Luria in Uzbekistan to verify Vygotsky's theoretical ideas.

In the second part of the report I provided an exposition of the Western research tradition, and showed the importance of culture for these researchers. In the third and final part I compared and analysed the theoretical presuppositions and the empirical research findings of the two research

traditions and argued that the two traditions are based on different theoretical presuppositions and their research was conducted within different methodological frameworks. Consequently, I argued that there is very little continuity between the Soviet and Western research traditions and concluded that the research conducted by Cole et. al. is not similar to the research conducted by Luria. As such I contend that, the Western researchers have misconstrued Vygotsky's and Luria's original ideas

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