

**THE ORETICAL AND METHODOLOGICAL ISSUES  
IN CULTURAL-HISTORICAL PSYCHOLOGY**  
ТЕОРЕТИКО-МЕТОДОЛОГИЧЕСКИЕ  
ОСНОВЫ КУЛЬТУРНО-ИСТОРИЧЕСКОЙ ПСИХОЛОГИИ

## Speech in the debate on the report by K.S. Lashley (Moscow, 20 April 1931)<sup>1</sup>

L.S. Vygotsky

**Abstract**

This is the first publication of the transcript of Lev Vygotsky's speech during the debate on American psychophysicist Karl Lashley's report. After outlining the key innovations in Lashley's theory concerning the localisation of psychological functions and the relationship between brain mechanisms and intelligence, Vygotsky proceeds to challenge the conventional view of the brain as a telephone switching station. An alternative to this view is the hypothesis of the "dynamic-structural nature" of the brain's work. At the end, Vygotsky presented his long-standing idea of "psychological physiology" for the first time: the study of the brain should "proceed directly from data discovered in psychology".

**Keywords:** psychoneurology, localisation, psychological physiology, brain and mind, human behaviour

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## Выступление в прениях по докладу К.С. Лешли (Москва, 20 апреля 1931 г.)<sup>2</sup>

Л.С. Выготский

**Резюме**

Впервые публикуется стенограмма выступления Л.С. Выготского в прениях по докладу американского психофизиолога Карла Лешли. Осветив основные новации учения Лешли относительно локализации психологических функций и связи механизмов мозга и интеллекта, Выготский переходит к критике традиционного представления о работе мозга по образу телефонной станции. Альтернативой этому представлению является гипотеза о «динамически-структурном характере» работы мозга. В конце своего выступления Выготский впервые публично излагает давний замысел «психологической физиологии»: исследование работы мозга должно «исходить непосредственно из данных, открываемых в психологии».

**Ключевые слова:** психоневрология, локализация, психологическая физиология, мозг и психика, человеческое поведение

<sup>1</sup> Russian Academy of Sciences Archive, Fund 351, List 2, Case 57, pp. 1–25. The transcript and notes were prepared for publication by A.D. Maidansky.

<sup>2</sup> Архив РАН. Ф. 351. Оп. 2. Д. 57. ЛЛ. 1–25. Подготовка стенограммы к публикации и примечания — А.Д. Майданский.

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The name of Prof. Lashley first gained recognition among psychoneurologists as that of a very courageous researcher who applied the method of conditioned reflexes to humans, and Lashley's capsule<sup>3</sup> is probably more widely known than his recent publications.

Meanwhile, the initial stage of his work<sup>4</sup> and its current stage represent a striking contrast. The tremendous shift in thinking between these two stages in the development of some of the basic ideas of psychoneurology constitutes an entire epoch. It is enough to compare these two stages to see how the historical turns and breaks experienced by science itself are reflected in the biography of an individual researcher.

Today, Lashley is renowned as one of the most courageous and fearless pioneers in psychoneurology, especially in the study of the localisation [of psychological functions], which is one of the key areas of the broader study of personality, thought, and the brain.

He is a bold debunker of the traditional doctrine of localisation. He is attempting a novel approach to the fundamental problem of localisation and, in this respect, he is a leading figure in a whole trend in modern psychoneurology.

What is the main methodological significance of the line of research represented by Prof. Lashley's work?

It seems to me that the main methodological feature of these works is as follows. While traditional teaching contented itself with a purely empirical establishment of the existence of a connection between known behavioural disorders and brain disorders, new research does not settle for a simple empirical statement of fact or the existence of such a connection. It asserts that simple empirical research into these connections is often sufficient for clinical practice. It is possible to make a largely correct conclusion about the location of an injury, tumour, or inflammatory process in the brain, but the very fact that there is a connection between a particular lesion in the brain and a particular specific behavioural disorder does not tell us anything about how the mechanism of normal brain activity is organised and how this particular brain function and the brain as a whole are connected with a particular effect, a particular psychological function during normal activity.

Attempting to penetrate these empirical connections and ask questions about the nature of these connections and the nature of the mechanisms that govern human behaviour – this, it seems to me, is the main methodological attitude that characterises these works.

In particular, I believe this feature is characteristic not only of Lashley's work, but also of other psychoneurologists working in the same field. Another pioneer of clinical psychoneurology and a radical advocate for changing traditional attitudes, K. Goldstein emphasises the importance of understanding the connections between specific brain activities and behavioural functions.

Of the unique and novel ideas that Prof. Lashley's experiments have brought to this field and theory, I believe the three main ideas mentioned in today's report should be highlighted.

First, these experiments have shown a correlation between the amount of damaged brain tissue and the severity of behavioural disorders observed in humans. In other words, the severity of the behavioural disorder appears to depend more on the extent to which the activity of the brain as a whole is impaired than on the location of the damage.

A series of brilliant experiments, as described by Prof. Lashley in his renowned work<sup>5</sup>, are devoted to the problem of intelligence and brain mechanisms. Today, this was also one of the main cornerstones on which the new hypothesis about the connection between brain activity and behaviour is based.

The second idea is more specific, yet still of serious methodological importance: the hypothesis that functions associated with spatial perception and localisation are the most spatially organised in terms of their implementation in the brain. In other words, everything related to objective spatial perception is organised according to a spatial principle in our brain's activity, whereas other functions that reflect different aspects of reality are not organised in a spatial way.

Finally, the third and last idea, which is expressed with sufficient clarity for the first time in this report, is that not all parts of a given area of the brain or the brain as a whole may be necessary for a particular function to work properly. However, if these regions are not damaged, they are all involved and participate in developing the corresponding complex action. While new skills can be developed without certain brain regions, those developed with these regions present will be disrupted and suffer if they are extirpated.

I believe these three points form the cornerstone of today's report.

If we consider the central hypothesis on which today's report and all of Prof. Lashley's work in recent

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<sup>3</sup> Воронка This is a cup for collecting saliva from the parotid gland in humans.

<sup>4</sup> Behaviourist stage. At the start of his career, Lashley collaborated with John B. Watson.

<sup>5</sup> See Lashley, 1929; Lashley, 1933 (in Russian).

years is based, it can be expressed extremely clearly and simply in negative terms. Prof. Lashley vehemently opposes the still prevalent view that the activity of the cerebral cortex is organised according to the type and principle of a telephone exchange and that the process of excitation in the brain and the formation of new cerebral connections occurs according to the principle of closing and connecting of wires in a centralised telephone exchange.

In this regard, I find it interesting to recall that while this analogy between the workings of the brain and those of a telephone exchange is often presented as a hypothesis explaining the emergence of higher forms of behaviour in the most materialistic way possible, it is essentially the neurological concept from which Bergson proceeds in his work *Matter and Memory*. This is precisely his idea, and he proceeds from the same comparison between brain activity and a telephone exchange in his constructions<sup>6</sup>.

So, the main content of this [Lashley's] concept is the struggle against the idea that nerve impulses flow through conductors like an electric current through a wire, and that new forms of behaviour emerge when different conductors connect like a telephone exchange. At the same time, [there is] a struggle for the idea that new formations in the brain have a dynamic-structural nature.

However, if we follow these ideas to their logical conclusion, it becomes immediately clear that they are closely related to the ideas they are directed against.

The first and main point of interest here, I believe, is the fundamental idea underlying all of Prof. Lashley's work. This idea was touched upon in passing in today's report and seemed to be in the background, but it is nevertheless central to all of his arguments. This idea is that there are no fundamental differences between the activities of the brain and the spinal cord.

Contrary to Sherrington's view that the brain, particularly the cortex, functions differently to the spinal cord (i.e. the lower levels of the brain), Prof. Lashley argues that there are no fundamental differences between the two.

This naturally leads to a significant narrowing of development prospects. Further elaboration of this idea

leads to the conclusion that there are no significant differences between lower and higher forms of mammalian animals, and that rats have the same nervous activity mechanisms as anthropoid apes and humans. Thus, it transpires that no new conditions for the activity of the central nervous system arose during development.

In the fifth thesis of today's report<sup>7</sup>, we read: "Work with monkeys and clinical research (Goldstein, Gelb, Fuchs, Poppelreuter) make it likely to assume that the conditions existing in higher forms are, in principle, no different from those we find in rats."<sup>8</sup>

As Comrade Sapir said, the real achievements made in the processes of biological development and brain evolution are reduced to nothing here<sup>9</sup>. Moreover, the fundamental uniqueness of human brain activity compared to that of animals is negated.

In his report at the International Psychological Congress, translated by our journal *Psychology*<sup>10</sup>, Prof. Lashley states that there is a strong argument for believing that the number of physiological modes of brain activity is not less, but equal to the number of psychological modes of behaviour<sup>11</sup>. Obviously, it is assumed that all the basic forms of human behaviour are already given together with the inventory of brain functions, that there is a complete correspondence between the two.

Failing to consider the fundamental issues [of interconnection and specificity] in biological and historical development seems to me to be one of the most serious difficulties (in methodological, theoretical and experimental aspects) encountered by Prof. Lashley's work at this stage.

The fact is that at every step, it is necessary to analyse experimental data and compare it with data obtained through observations of people with various types of brain damage. This requires not only caution in handling factual material when transferring data from animals to humans, but also the methodological and theoretical consideration of the fundamental differences in the organisation of brain activity in both cases from the outset.

It seems to me that this difficulty is all the more regrettable given that Prof. Lashley's work represents a genuinely new trend in modern psychoneurology. To briefly express my thoughts in comparison, whereas Wundt sought to construct a physiological psychology,

<sup>6</sup> "In our view, the brain is nothing more than a telephone exchange; its role is to transmit or delay messages. It does not add anything to what it receives" (Bergson, 1999, p. 430).

<sup>7</sup> The abstract of Lashley's report could not be found in the Russian Academy of Sciences Archive.

<sup>8</sup> Vygotsky added the quotation beginning with brackets in his own handwriting. In his book, Lashley expressed the same idea more cautiously: "But aside from this function of spacial orientation, there is little evidence of a finer cortical differentiation in man than in the rat" (Lashley, 1929, p. 156).

<sup>9</sup> I.D. Sapir's final conclusion: "Experiments conducted on animals can, with extreme caution, be transferred even to the human neurophysiological apparatus, not to speak of the behavioural apparatus of humanity as a whole" (Russian Academy of Sciences Archive, Fund 351, List 2, File 57, p. 11).

<sup>10</sup> Speech by K.S. Lashley at the IX International Psychological Congress in New Haven on 4 September 1929. See Lashley, 1930.

<sup>11</sup> Lashley formulated this idea as a hypothesis: "It is possible that the modes of organization in the brain are not less numerous and diverse than the types of behavior to which they give rise. We have little direct evidence as to the nature of these central processes" (Lashley, 1930, p. 12).

Lashley is oriented towards the creation of psychological physiology. He attempts to proceed directly from data discovered in psychology, in complex living psychological formations, and then reveal their physiological organisation – much like a chemist solving biological prob-

lems. Just as it would be absurd to try to create chemical biology, but reasonable to create biological chemistry, so in this new trend we are witnessing the replacement of the erroneous concept of physiological psychology with the concept of psychological physiology.

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