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The problem of the cultural behaviour of the child

Alexander Luria

Man differs from animals in that he can make and use tools. This fact, recognized long ago, acquires a new meaning enormous in its bearing if we make it a starting point in working out the methods of child study from a psychological standpoint.

As a matter of fact, the tools used by man not only radically change his conditions of existence, they even react on him in that they effect a change in him and in his psychic condition. In the complicated inter-relations with his surroundings his organization is being differentiated and refined; his hand and his brain assume definite shapes, a series of complicated methods of conduct are being evolved, with the aid of which man adapts himself more perfectly to the surrounding world.

No development – that of the child included – in the condition of modern civilized society can be reduced merely to the development of natural inborn processes and the morphological changes conditioned by the same; it includes, moreover, that social change of civilized forms and methods which help the child in adapting itself to the conditions of the surrounding civilized community.

It is natural that these forms of cultural adaptations on the part of the child are far more dependent on the conditions of the environment in which the child was placed than on constitutional factors.

These methods and forms of conduct are instilled in him, first of all, owing to the demands made on him by his environment; these demands and conditions are precisely the factors which may either check or stimulate his development. In urging the child to work out new forms of adaptation, they may create sudden starts in his development. In fine, we obtain undoubtedly 'cultural formations' which play a most important part in the evolution of the child.

Modern psychology has, therefore, an important task to perform – to investigate the laws which govern the evolution of these cultural forms of adaptation, to establish that consecutiveness in which the predominance of certain manners and forms of cultural behaviour of the child is supplanted by others. In a word, we have to consider the *psychogenesis of the cultural forms of the child's behaviour*. No doubt psychology faces in this task a series of specific problems, the solution to which is hardly possible for a simple physiological investigation which limits its scope to the development of the

natural forms of conduct. It is precisely in the investigation of the change of separate cultural habits that psychology can successfully reveal its biosocial character.

In realizing these tasks we inevitably take another road to that of the classical school psychology. Psychology in approaching the study of a child was mainly interested in the changes of individual functions in the process of natural growth and maturation of the child. Classical works were devoted to the study of the evolution of children's associations, their quickening and widening, to the child's memory, development of attention and of ideas. The authors strove everywhere to study first of all the quantitative increase in these functions in the process of a child's growth. We are interested mainly in other matters. We consider that the development of the child's conduct can be reduced to a series of transformations, that these transformations are due to the growing influence of cultural environment, the constant appearance of new cultural inventions and habits, and that each invention of a new 'artificial' habit involves a change of structure of the child's conduct. Compare the conduct of a pupil in his first year at school with that of a pre-school pupil. Compare the course of mental processes of these two, and you will note two structures essentially different in principle. Compare a village boy with another boy of the same age who lives in a town, and you will be struck by a huge difference in the mentality of both, the difference being not so much in the development of natural psychical functions (absolute memory, the quickness of reactions, etc.) *as in the subject matter of their cultural experience and those methods which are used by those two children in realizing their natural abilities.*

This example enables us to show exactly the bearing of the investigations undertaken by the psychologists of the new formation on the work of school psychology. School psychologists based themselves on the accurate measurements of memory in the artificial conditions of a laboratory, and in consequence arrived at the conclusion that memory develops very slowly during the course of the child's growth, and that sometimes we witness even the deterioration of natural memory. It looks as if there is no perceptible progress in this most important psychic function, and we are at a loss to understand that enormous widening of the intellectual life of the child (the practical memory of the child) which we cannot ignore. The aspect will radically change if we look at the *methods* by which the child uses its natural memory. We shall see that it is precisely these methods, manifold and various, complicated and organized, that draw the line between a schoolboy and a pre-school child, a civilized man and a savage, an intelligent person and one who is mentally undeveloped. By teaching the child such cultural methods, by encouraging his peculiar inventive capacities, we can in a short time achieve an extraordinary development of the given function, and this development can be explained only by the fact that the child has mastered his natural psychic abilities, that he has mobilized those functions which he hitherto did not know how to use.

The transition to civilized habits of conduct is thus reduced to the alteration in the main scheme of behaviour: instead of applying directly its natural function to the solution of a definite task, the child *puts in between that function and the task a certain*

auxiliary means, a certain manner, by the medium of which the child manages to perform the task. If he wishes to remember a difficult series, he invents a conventional sign, and this sign, being wedged between *the task and memory*, assists in the better mastering of that task. The direct, natural use of the function is replaced by a complicated, cultural form. The simple reactive form of psychics is replaced by a complex 'instrumental' form.

This fact is the most important from our standpoint; it determines the technique we should apply in investigating the evolution of cultural forms of a child's behaviour.

If we desire to study that evolution by experiment, we can choose one of two methods. We can place a child in difficult situations, give him a task so difficult that he cannot solve it without the application of some special technical means. We are urging him to search for such means, to enter the field of inventions. In offering the child the corresponding material which he could utilize as such means, we are making such research visible and render it capable of being observed.

However, we know that at various stages of development a child can master different forms of methods. If our task is to find out which category of cultural methods and 'instruments of behaviour' can be mastered by a given child, we must substantially change our technique. We must place before that child a series of ready methods and watch to what extent these methods are up to him.

In both instances the process of using artificial methods is carried outwards; but in the first instance we set a problem and watch the child inventing a means of solving it, in the second case we set a ready method and watch how the child applies it. Both methods differ from school psychological experiments in that the forms are being investigated with the help of which the child masters his conduct and, furthermore, these methods are constructed on the principle of wedging between the task and its fulfillment an intermediate function – 'the executive instrument' on the principle of 'double stimulation'. It is precisely in view of this latter feature that we think it right to call this method 'the method of instrumentally psychological research'.

Along with the purely external methods which help the child in solving different problems, we must recognize the existence of a huge number of internal methods and habits evolved in school and which are due to character and surroundings; we place under this head all the child's habits connected with speech, thought, logic; in short, using the expression of Claparède, the whole of his 'inner technique'.

Our experimental task consists in demonstrating these forms of adaptation, in giving the child under examination not only the fundamental series of stimuli which copes with the problem set to him, but also a second series which plays a functionally different part and which serves him as an instrument in solving this problem. The problem of 'double stimulation' ('I shall tell you certain words by means of these signs – paper, pictures, etc.; you must remember them') serves to cause a new form of behaviour on the part of the examinee which is complicated by the functional use of the stimuli. In observing the various degrees of such methods we come nearest to the description of those phases of cultural development through which a child has to pass.

Our experiments are largely based on the classical investigations carried out by Köhler. That author has demonstrated that even animals (apes) are capable of instrumental use of the objects of the outer environment. Having studied the manifestations of the intellect at this primitive stage of development, he elucidated its dependence on the structure of the field of observation; the use of instruments and the success of mental operations of the ape depended on the relative situation of its aim and its instruments.

We observed in children the same dependence of primary intellectual operations on the outer form of the object, and we can suppose that it is precisely the conception of form which predetermines the success of the intellectual activity at the primary stages of development.

If we throw building blocks before a child haphazardly and make him count them, it will transpire that the task will not be so easy for the child. It will be different if we place these blocks in a definite form, let us say a cross, a square, etc.; then the child will be able to count the blocks quickly and without mistake as elements of a single system. Experience has taught us that the right system will enable a child of seven or eight to count. Let us place the blocks in the shape of two intersecting lines, in the shape of a cross; let us make the child count them and the following rule will always be observed: the child counts the block as many times as there are systems of which the block is part. Therefore that block at the crossing of a cross or at the intersection of two squares (see figure 4.1) will be counted twice, a block in a star forming part of three lines will be counted three times, etc. A child's counting system at that age entirely depends on the natural laws governing his field of observation; at that stage counting is a function of form. Only considerably later is the cultural process of counting emancipated from the field of observation, and the child counts correctly elements independently of their situation.

Sometimes the conception of form does not determine a child's counting; it simply takes the place of counting. Make a rectangle of four blocks (see figure 4.2) and ask

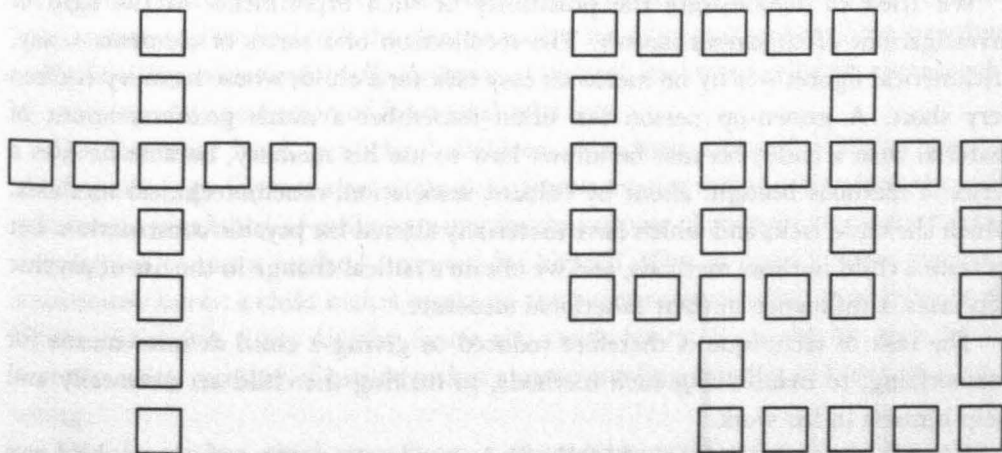


Figure 4.1

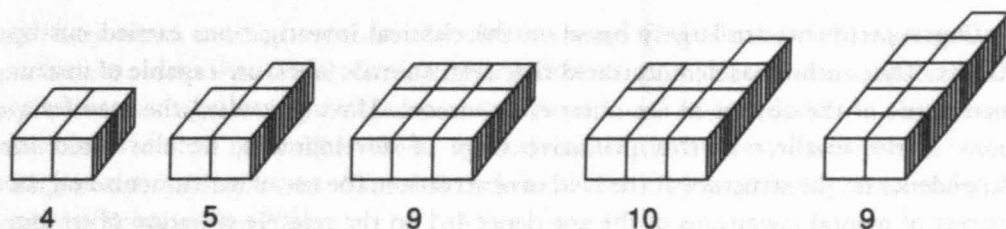


Figure 4.2

the child whether the number of blocks is odd or even. The child says at once that it is even. If there is an incomplete rectangle of five blocks, the child will also say at once that the number of blocks is odd. We observe the rapidity with which the child can answer these questions and arrive at the conclusion that it is due not to counting nor drawing any complicated conclusion, but to a simple conception of a regular (complete) or irregular (incomplete) form. To prove this let us offer a child of seven or eight nine blocks forming a regular square; he will say at once that the number is even; if we add a tenth block or change the form to make it irregular, the child will say that the number is odd. This is by no means merely a defective notion of odd and even, it is precisely that stage of development when cultural methods of counting are subservient to the natural laws of form.

How are we to examine methodically the origin of these children's cultural forms of adaptation? How can we make manifest their hidden mechanism? How can we evoke them in the process of experiment in order to master completely these processes? We are facing here a problem of great pedagogical importance. We must create in the process of experiment a model of cultural behaviour.

It is obvious that first we must put before a child a problem which he is incapable of solving and afterwards induce him to solve it by means of some methods which are brought to the surface and registered in detail.

We tried to demonstrate the possibility of such experiments in the field of investigations of children's *memory*. The recollection of a series of elements – say, arithmetical figures – is by no means an easy task for a child, whose memory is often very short. A grown-up person can often remember a much greater amount of material than a child, because he knows how to use his memory, because he uses a series of methods brought about by culture, association, mnemotechnical methods, which the child lacks and which have materially altered his psychic construction. Let us train a child in those methods, and we obtain a radical change in the use of psychic processes, a difference in their functional structure.

The task of technique is therefore reduced to giving a child definite means for memorizing, to manifesting such methods, to making the child act externally and help himself in his work.

We tried to experiment in the following way. In the process of play a child was given a series of ten figures to memorize, coupled with the task of repeating them in

a given order. A series was given orally, and the child usually found that he could not memorize it. Then we gave him some material and asked him to use it for the purpose of memorizing these ten figures. A child was obviously in need of that material as a means of memorizing, making by that means certain signs and notes which stimulated him in the course of recollection. It was then a question of the necessity of somehow utilizing that object functionally, to invent in the process of experiment some cultural sign, some system of writing.

A child was given different materials: paper, strings, counters, blocks, pins, hailshot; the whole process of manipulation was taken outwards, the experiment was based on the principle of the functional use of stimuli, and we had an opportunity to observe how separate conditions, such as age, development of the child, the material offered, etc., influence the process of invention and the functional use of material offered.

These experiments of ours brought us face to face with the following fact; if the child passed from a simple, natural memory to artificial means of memorizing, the task of memorizing ten or even 15 figures in a definite order became easy and the whole structure of the process was reconstructed. Simple, natural memory was replaced by a system of signs and their subsequent reading, and the maximum work was usually shifted from recollection to a recognition of series.

However, this process was not equal for all ages in facility or structure; the older children were not only capable of *better* adapting themselves to our experiment, not only did their memory work better, but their remembrance was of a *substantially different kind*; in observing them we found that the development of the child not only affects his growth, but his *refitment* with new psychological habits.

Let us put the above-mentioned problem to a pre-school child of six or seven who cannot write or count in writing. We usually observe the following course: at first, the child does not retain in memory the series offered to him in the usual way and refuses to memorize it with the aid of a piece of paper or of a string. The functional application of the material offered is not clear to him; a piece of paper or a piece of string has nothing to do with the task given. The younger and backward children stop at that, and we find that the clearest indication of mental (cultural) backwardness is the *inability to use functionally the means at disposal*; backward children are incapable of grasping the conception of functional relations.

On the other hand, pre-school children, who have attained a higher stage of development, go farther; after some time (some require more, others less) the child guesses the possibility of utilizing paper for the purpose of memorizing and straightaway begins to use a method invented by himself. This is usually some system of *quantitative marks*: a child makes marks on the paper corresponding in number to the figure stated (six times for the figure six, twice for two), or else he tears off the corresponding number of bits or makes a corresponding number of knots on a bit of string.

This is a process which reproduces in an experimental fashion the string letter or the scoring sticks, etc., which were used in the early days of human culture, the only

exception being that here the task of functional utilization of the material was set by us, whereas in the historical instance it was evolved under the influence of economic life and growing culture.

It is noteworthy that the invention does not take place at once, but, so to say, passes through two phases. At first the child guesses that he must make marks, but he does not guess how to make them distinguishable. He tears off bits of paper or counts hailshots and puts them in a heap; he makes knots, but leaves no intervals between them to denote figures. Obviously when he tries to reproduce them he finds himself helpless; his work was lost labour. Then, after some fruitless efforts, the child usually guesses that his notes must assume a different shape; he *differentiates* his marks in little heaps, in groups. Once the child has made that discovery, he outlines his work without difficulties, and can reproduce it after the lapse of several days; he has mastered the functional use of means and now can perform his task with the aid of any material put before him. Using objective methods the child increases enormously the productivity of his psychic activity.

We can easily discern in these experiments processes very much like those which Köhler observed among the apes (sudden decisions and 'Aha-Erlebnis', functional use of outside objects, the perpetuity of acquired habits, the changes of their structure).

In one or two sittings we have shown the child the way to use new methods and thereby have materially altered the course of his psychological processes and achieved a great increase in his productivity. We have really carried out a pedagogical experiment which enables us to study more closely the ways in which the transformation of natural psychological functions into cultural ones takes place.

By varying the material (starting from the simplest 'leading' question to a pre-school child concerning hailshots, grains, etc., and ending with the most difficult one), by varying the problems (including in the series of figures zero or double figures), we are enabled to observe in detail the application of cultural methods on the part of the child to the simplest mnemonic operations. One thing proves really interesting in these series: the experiment proves that the difference between the intellectual operations of a pre-school child and a schoolboy is not of a purely quantitative kind, that the schoolboy is armed differently from a pre-school child in terms of quality, that the structure of his processes is essentially different.

To prove this let us set the same problem to a schoolboy of the first or the second year of study, and we shall witness something very different. It is quite natural that a child who has mastered the writing of letters and figures will not attempt to invent a new system of signs, but will rather apply the ready-made system of writing, as evolved in the history of culture. This system he will apply in spite of any difficulties. In fact, a child who is given a strip of paper for the purpose of memorizing will first of all attempt to make on it the signs of figures; by tearing out of that strip pieces which roughly represent figures he simply inscribes the series set to him, only instead of using a pencil he does it in a different way.

In the course of the experiment this representation of figures becomes more schematic. In the end they lose the delineation of figures and acquire the form of some

code; in the process materials of various types may be used simultaneously, such as matches, pens, blocks, paper, etc. However, everywhere the signs represented will have the common feature of integral signs, and not be a mere quantitative inscription representing the number.

It is extraordinary how children always represent figures in that way. The same tendency is exhibited by children when they are given material such as strings, counters and pins, out of which they attempt to form figures although it would be easier in that case to adopt the system of knots and scoring-stick marks; it is interesting to note that if you forbid them to represent figures you will make them quite helpless to cope with the task, and we have hardly ever seen among children of these school groups any instances of reversion to the method of quantitative counting so characteristic of pre-school children. For that very reason the material easiest to handle for pre-school children, namely hailshots, grains, etc., often becomes the stumbling block for schoolboys. A pre-school child inscribes by laying aside in heaps the corresponding number of hailshot; a schoolboy, on the other hand, tries to lay them in the shape of a figure. The former invents scoring-sticks; the latter uses the time-honoured system of recording, of figures representing numbers. We are here witnessing by way of experiment the process of evolution of cultural methods of writing which resuscitates before our eyes the most ancient primitive forms of writing; we see how our schoolboy refits himself with new weapons and how the whole of his psychic condition is being reconstructed under the influence of such refitment.

The cultural-historical development of psychology goes along the path of complication of cultural methods and habits; the history of culture starts with a primitive outward technique and ends with a complicated psychological technique. It inevitably develops in man the functional utilization of his own conduct. It is this latter process of changing one's own attitude to psychological processes functionally used in their new qualitative forms which we observe in experimenting. We can demonstrate this, for example, in our experiments with memory, in the course of which a child learns how to use the most important internal mechanism — *the structural connection*.

A child who can hardly memorize five or six words of the series read out to him is asked to commit them to memory with the aid of pictures laid out on the table (e.g. lotto). Not one of the pictures actually reproduces the word in question, and the task can be performed only if the child connects in one structure the word in question with one of the pictures. It is obvious that for such an experiment it is essential somehow to evidence one's power of association in order to direct associative ideas every time in a definitely fixed direction. We note that such mastering of the ideas of association can be acquired, but by no means by all the children.

It is an obviously impossible task for a child of five or six or a backward child during his first years at school to establish a connection between the word 'village' and the picture of a house, between the word 'tail' and the picture of a dog, and, what is most important, to appreciate truly that connection and use it so as to memorize the material offered to him; on the other hand, a well developed child will perform that

task without great difficulties. We had occasion to observe how a child in establishing and utilizing such connections could, by looking at the cards, reproduce 25–30 and more words after one reading, while his natural memory could fix five or six at the most. Moreover, the connecting links were established with extraordinary subtlety. Thus, in order to remember the word 'spade' the child chose a picture of chickens picking up grains 'because they picked it just as the spade digs the earth'; for the word 'theatre' the child chose the picture of a crab on the seashore 'because the crab looks at the pebbles in the sea, and they are just as pretty as a theatre', etc.

The experiment with memory can be transferred from the plane of natural processes, 'stimulus-reaction', to the plane of instrumentality by wedging between the words and their repetition the stimulus of the second kind, with which the given word is artificially connected, a stimulus that serves as a means, as an instrument of memorizing. In so doing we reconstruct the whole structure of the process and reach the maximum heightening of productivity. We are attempting to reach here that which could hardly attain with an animal: the functional instrumental use of one's own psychic processes for the problem set in the experiment.

By operating with auxiliary means, by artificially connecting with them the stimuli in question, the object of our experiment learns how to use his natural capacities to the utmost by replacing their direct application by a complicated cultural application.

Experiments carried out by us in accordance with that method gave the following interesting results. The use of pictures and the 'cultural' memorizing when applied to schoolboys of ten to 12 gives a 60 per cent increase in the productivity of their memory as compared to the ordinary memory of a 'natural' kind; the same method on mentally defective schoolboys produced no effect whatsoever in improving their memory, and when applied to weak minded children it even caused 20–30 per cent deterioration of their 'natural' memory. It is clear that the difference in efficacy of this method is due to the fact that a weak child is not able to grasp the mnemonic method which is thoroughly mastered by a normal child of nine or ten. It is this difference in ability to use functionally cultural methods, which we are inclined to regard as a test which determines whether the child is intellectually normal or backward.¹

In the course of investigation of the child's behaviour we came to the conclusion that it passes through several stages, each of them differing in quality. We can mention roughly the following stages:

- 1 The child is not in a state to perform the task by the complicated auxiliary means. He is incapable of connoting the objects offered as the auxiliary means and fails to remember a series of words 'with the aid' of cards; such is the *pre-instrumental* stage of development.
- 2 The child begins to attempt to use the objects offered as the means for attaining the object, but does it clumsily, without attempting to establish a rational connection between the task and the auxiliary means, looking at the latter as a sort of magic. For example, in wishing to memorize a series of words he puts

before himself a series of equal nails, in no way differing from each other, and no longer troubles to remember the set words; each of these nails must, so to say, be a reminder of a definite word. It is obvious that such 'method' proves inadequate and the result is disappointing to the child. This phase is characterized by a purely formal attitude to the method adopted, a blind faith in its efficacy though it is thoroughly inadequate. This phase (which we have observed in children of five to seven though it may appear in later years) we can call the magical or the *pseudo-instrumental* phase.

- 3 Finally, much later, we observe the *real instrumental* stage in the development of the child, the main features of which are the complicated structure of acts of behaviour, the ability to adapt one's self to difficult tasks by using adequate means and the outer auxiliary stimuli. It is precisely this part of behaviour which develops most in a schoolboy and the modern civilized man, and is of utmost significance.

It is obvious that the above classification of phases is arbitrary; it emphasizes only one, perhaps not the most important though in any case essential, feature in the evolution of man's conduct. Their dynamics, characteristic features and limits will be the subject of my other article.²

Let us sum up the method applied by us and once more indicate its main features.

We believe that the principles of investigation submitted by us open up new and important prospects in the science of psychology. This method investigates the cultural forms of adaptability of man and thus raises questions of great pedagogical importance. The development of a child at school is after all reduced to his refitment with new cultural arms and the forging of new psychological weapons. It is by studying the cultural forms of behaviour that we acquire the faculty of mastering and of regulating them. The scientific analysis of laws which underlie the cultural behaviour of the child can help us in framing a series of concrete pedagogical and didactical measures. A further working out of this method can bring us to the framing of a series of tests which, instead of evaluating the natural qualities of the child, will be devoted to the analysis of their degree of cultural utilization. The precise measurements of these features, hitherto consistently ignored, will now certainly have the greatest pedagogical and pedological importance.

Finally, we are inclined to regard in the instrumental-psychological investigation great progress in objective technique. In connecting the performing of tasks with a series of external operations we are carrying outward whole systems of psychological processes and acquire the possibility of observing objectively how their structure is changed under the influence of inoculating new instruments, and new cultural methods. And, what is most important, we obtain by this method a key to the problem of how the child's behaviour is transformed into the behaviour of a cultured adult living in complicated industrial-cultural conditions and armed with a complicated social-cultural outfit.

Notes

Originally published as Luria, A. R. 1928: The problem of the cultural behavior of the child. *Pedagogical Seminary and Journal of Genetic Psychology*, 35, 493–506. The article formed the first in a series of three presenting the cultural–historical ideas of Vygotsky and his associates to the foreign reader. As always, it was Luria – who joined the editorial board of the *Journal of Genetic Psychology* – who was instrumental in making foreign publication outlets available to Vygotsky and his colleagues. Meanwhile, amidst the countless publications on rat learning scores the articles seem not to have made much impression. The present editors, at least, know of no Western article or book from the 1920s or 1930s that refers to them.

- 1 The results of this work will be presented in detail in another article [original footnote].
- 2 This article was never published but Vygotsky's and Leont'ev's subsequent articles in the same journal provided additional information to the English readership.